CEMASTEA

CENTRE FOR MATHEMATICS, SCIENCE AND TECHNOLOGY EDUCATION IN AFRICA

STRATEGIC PLAN

2023 - 2027

Innovation in STEM Education

KENYA VISION 2030

CENTRE FOR MATHEMATICS, SCIENCE AND TECHNOLOGY EDUCATION IN AFRICA

STRATEGIC PLAN

2023 -2027

Centre for Mathematics, Science and Technology Education in Africa

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MANDATE

Develop capacity in STEM education, training and research.

VISION

An empowered, creative and innovative STEM society in Africa

MISSION

To continuously develop capacity in STEM education for sustainable development through training, research, innovation and partnerships with related ecosystems

CORE VALUES

In pursuit of our Vision and Mission, we are guided by: Excellence, Inclusivity, Innovation, Integrity, and Sustainable Impact

OUR MOTTO

Innovation in STEM education

Foreword

Dr. Pius Mutisya, OGW
Chairman,
Board of Governors

Since inception in 2004, the Centre for Mathematics, Science, and Technology Education in Africa (CEMASTEA) has made great strides in establishing Continuous Teacher Professional Development framework for Science, Technology, Engineering and Mathematics (STEM) educators at national and continental levels. The Centre is a reputed Pan-African institution in promoting STEM education through training and research. The rationale for developing the fifth-generation Strategic Plan is to set strategic direction to achieve Centre's long-term goals and objectives. The Plan is a roadmap outlining Centre's Vision, Mission, Core values, and Strategies to achieve desired future state.

The Plan aligns with Government's call to equip every learner with world-class skills, knowledge, creativity and innovativeness necessary for socio-economic development and thrive in the 21st Century. The Plan captures accountability statement on strategic objectives and aspirations of the Centre in the next five years. The development process made reference to Kenya Vision 2030, the Bottom-Up Economic Transformation Agenda, the Constitution of Kenya, the 4th Medium Term Plan and relevant policies and laws. Moreover, the process considered Global and regional perspectives including; the United Nations Agenda 2030 Sustainable Development Goals (SDGs), African Union Agenda 2063 and East Africa Community Vision 2050.

Indeed, the Plan outlines CEMASTEA's strategic direction and focuses on enhancing quality of STEM education in Kenya and the rest of Africa. In particular, it addresses how resources will be applied to support implementation of strategies and initiatives. It considers stakeholder engagement and communication, including government, educational institutions, teachers, students, and community in the implementation of the Plan. Furthermore, the Plan considers mechanisms for monitoring progress and evaluating success of strategies and initiatives. The Strategic Plan was developed through a participatory and consultative approach involving inputs from Board of Governors, management, staff and other key stakeholders. The valuable perspectives were considered and integrated, ensuring relevance of strategies. Implementation of

the Plan, will strengthen Centre's role of excellence in STEM education in Africa and contribute to improving educational outcomes and developing future generations of African scientists, engineers, and innovators. I therefore call upon all stakeholders and partners to support the strategic direction and focus of the Centre towards the realization of her mandate.

Preface and Acknowledgement

Mrs. Jacinta L. Akatsa, HSC
Chief Executive Officer, CEMASTEA

The Strategic Plan is a roadmap for achieving CEMASTEA's Vision and Mission. It outlines strategic objectives, strategies, and resource requirements for the 2023-2027 strategic period. The Plan enables CEMASTEA to focus its efforts, allocate resources effectively, and measure progress towards desired outcomes. The Strategic Plan 2020 – 2024 had twelve strategic objectives and the Centre achieved 80% of the planned activities. The accomplishments were mainly in areas on; competency development in Science, Technology, Engineering and Mathematics (STEM), with a total of 86,173 (92%) teachers and curriculum implementers participating in In-service Education & Training (INSET) programs. The Centre enhanced capacity to conduct quality research and knowledge management realizing 88% of planned programs. In addition, the Centre enhanced advocacy, networking and partnerships, to realize considerably increased partnerships and strengthened continental secretariat functions.

The drafting process considered the situational analysis report on the achievements, challenges, opportunities and recommendations arising from Strategic Plan (2020-2024) implementation reports. The Plan outlines six strategic areas: training & competence development, research and knowledge management; resource mobilization; partnerships and linkages; governance, organizational strengthening and Strengthening Science, Technology, Engineering, Mathematics and Innovation (STEMI) education, training and research in Africa.

The foresight leadership demonstrated by CEMASTEA Board of Governors, management, staff and stakeholders in developing the Strategic Plan is commendable. We appreciate officers from the Ministry of Education and the National Treasury and Economic Planning for providing insights and invaluable technical contributions during the Strategic Plan development process. Much regards to the President of the Strengthening Mathematics and Science Education in Africa (SMASE-Africa) for valuable inputs. Gratitude to Strategic Plan Implementation Committee (SPIC) for working tirelessly to realize this Plan. We thank the stakeholders and CEMASTEA staff for valuable inputs to the Plan.

Table of Contents

List of Tables

List of Figures

Definition of Concepts and Terminologies

Action plan:	A list of tasks and resources (money, people, and time) needed to achieve and implement a strategy.
Board of Governors:	Officers appointed by the Ministry of Education to oversee implementation of the Strategic Plan and other operations at CEMASTEA.
Core Values:	Fundamental beliefs, philosophies, principles and standards that define CEMASTEA's character and guide the Centre's leaders' and workforce's decisions and actions.
Curriculum Implementers:	Curriculum implementers in STEM education include: education officers, school administrators, teachers, trainers, instructors, laboratory technicians, and electricians.
Corporate Governance:	Nature of the activities conducted by the Board of Governors, including clarifying the overall strategy for CEMASTEA, establishing broad policies and operational plans and monitoring the strategy's implementation.
External analysis:	Examining opportunities and threats beyond CEMASTEA's control, such as changes in policies, technology, social, legal and the economy that potentially affect its operations.
Fiduciary Assurance:	Protecting CEMASTEA business entities from claims of mismanagement and legal liability.
Financial Plan:	Specifies the financial resources (Annual Budget or Operating Budget) needed to run the organization during the life span of the Strategic Plan.
Goals (strategic):	A goal (strategic) is a specific accomplishment to be achieved at some point in the future.
Implementation Plan:	Set of activities to increase the likelihood that a Strategic Plan will be implemented and can include all action plans
In-Kind Support:	Non-financial support provided to CEMASTEA through

	collaborative partnerships in form of goods, expert services, or commodities to enhance STEM education.
Indicator:	A sign of progress that measure change in a situation and confirm progress towards achieving a specific result.
Internal analysis:	Examining the strengths and weaknesses of the organization by using assessment tools to determine the quality of internal aspects of the organization.
Key Result Area:	Outlines the area of focus concerning outputs and outcomes for which CEMASTEA is responsible.
Mission:	Describes the overall purpose of CEMASTEA
Outcome:	Immediate results generated relative to the objective or intervention. It describes the actual change in condition or situation as a result of an intervention, e.g. change in teacher classroom practice as a result of In-service Education & Training (INSET).
Outcome indicator:	This is a specific, observable and measurable change that represents the achievement of an outcome either in quantitative or qualitative metrics.
Output:	Product, service or immediate results, tangible or intangible, resulting directly from the implementation of CEMASTEA programs, activities/interventions
Stakeholders:	People with interests in the operations or effects of operations of CEMASTEA
Strategic Issues:	These are statements of strategic policy choices, challenges, gaps and opportunities that CEMASTEA will address or tap into to achieve its Vision. Identification of Strategic Issues results from external and internal situational analyses.
Strategic Planning:	The process undertaken to clarify an organizational overall purpose, priorities to work toward that purpose and how each priority will be addressed.
Policy Labs:	This is a community of researchers, experts and policy makers that can strengthen the connection between robust scientific research and informed policymaking
Vision:	This is a description of CEMASTEA and its customers and clients in the future.

Acronyms and Abbreviations

ADEA	Association for the Development of Education in Africa
AIA	Appropriation in Aid
ASEI	Activity, Student, Experiment, Improvisation
AU	African Union
AUC	African Union Commission
BETA	Bottom-Up Economic Transformation Agenda
BOM	Board of Management
CBA	Competency Based Assessment
CBC	Competency-Based Curriculum
CBTE	Competency-Based Teacher Education
CEMASTEA	Centre for Mathematics Science & Technology Education in Africa
CESA	Continental Education Strategy for Africa
CRT	Centre for Research and Technology
CSO	Curriculum Support Officers
CSR	Corporate Social Responsibility
CTCDC	County Teacher Capacity Development Committee
CTPD	Continuous Teacher Professional Development
DPTE	Diploma in Primary Teacher Education
EAC	East African Community
EACC	Ethics and Anti-Corruption Commission
ECDE	Early Childhood Development Education
ESD	Education for Sustainable Development
FGM	Female Genital Mutilation
FY	Financial Year
GBV	Gender Based Violence
GOK	Government of Kenya
GRP	Gender Responsive Pedagogy
HIV	Human Immunodeficiency Virus
HR	Human Resource
ICQN-MSE	Inter-Country Quality Node on Mathematics and Science Education
ICT	information communication Technology
INSET	In-Service Education & Training
JICA	Japan International Cooperation Agency
JS	Junior School
KATTI	Kenya Association of Technical Training Institutes

KEBS	Kenya Bureau of Standards
KEMI	Kenya Education Management Institute
KEPSHA	Kenya Primary Schools' Head Teachers Association
KESSHA	Kenya Secondary School Heads Association
KESSP	Kenya Education Sector Support Program
KICD	Kenya Institute of Curriculum Development
KISE	Kenya Institute of Special Education
KNEC	Kenya National Examination Council
KNQA	Kenya National Qualification Authority
KNUT	Kenya National Union of Teachers
KPPRA	Kenya Institute for Public Policy Research and Analysis
KPSA	Kenya Private Schools' Association
KRA	Kenya Revenue Authority
KSEF	Kenya Science Engineering Fair
KSG	Kenya School of Government
KSTC	Kenya Science Teachers College
KUCCPS	Kenya Universities and Colleges Central Placement Service
KUPPET	Kenya Union of Post-Primary Education Teachers,
M&E	Monitoring and Evaluation
MOE	Ministry of Education
MTP	Medium Term Plan
NACOSTI	National Commission of Science, Technology and Innovation
NEMA	National Environmental Management Authority
OAG	Office of Auditor General
PCK	Pedagogical Content Knowledge
PESTEL	Political, Economic, Social, Technological, Legal, and Environment
PFM	Public Finance Management
PFMA	Public Financial Management Act (PFMA),
PPDA	Public Procurement and Disposal Act
PJMST	Practitioner Journal of Mathematics and Science Teachers
PPRA	Public Procurement Regulatory Authority
PTTC	Primary Teachers' College
PWD	People Living with Disability
PWP	Presidential Working Party
RBA	Risk based audit
RECSAM	Regional Centre for Science and Mathematics SMASE
SCAC	State Corporations Advisory Committee
SDG	Sustainable Development Goals
SMASE	Strengthening of Mathematics and Science Education

SMASSE	Strengthening of Mathematics and Science in Secondary Education
SRC	Salaries and Remuneration Commission
SSHAK	Special School Heads Association of Kenya
STEM	Science, Technology, Engineering and Mathematics
STEMI	Science, Technology, Engineering, Mathematics and Innovation
ST&I	Science Technology and Innovations
STISA	Science, Technology and Innovation Strategy for Africa
TQI	Training Quality Index
TSC	Teachers' Service Commission
TVETA	Technical and Vocational Education and Training Authority
VRIO	Valuable, Rare, Inimitable and Organizational-Wide supported

Executive Summary

The Centre for Mathematics, Science, and Technology Education in Africa (CEMASTEA) is a public institution that fosters Science, Technology, Engineering, Mathematics and Innovation (STEMI) capacities and culture in education. Established in 1998, CEMASTEA's Strategic Plan 2023-2027 aligns with its Mission to develop competencies for sustainable development through training, research, and innovation in STEM Education.

The Centre for Mathematics, Science, and Technology Education in Africa (CEMASTEA) has implemented three strategic planning cycles so far, and the 2023-2027 Strategic Plan will be its fourth generation. The development of this Plan, coincided with CEMASTEA's transition to a State Corporation with a mandate of training and research. The Strategic Plan is designed to steer the Centre towards the next phase of training and research. The formulation of this Plan was spearheaded by the Board of Governors and took into account a range of perspectives and insights of various stakeholders and experts. The Strategic Plan is organized into eight chapters, each briefly described below.

Chapter one is the introduction and describes the rationale for strategic planning, the context of the Plan, the historical background of CEMASTEA, and the methodology of developing the Strategic Plan. This context describes how the Centre aspires to implement programs that support attainment of the national and international commitments. This includes the United Nations 2030 Agenda for Sustainable Development Goals (SDGs), African Union Agenda 2063, East Africa Community Vision 2050, Constitution of Kenya, Kenya Vision 2030, Bottom-up Economic Transformation Agenda (BETA), the Fourth Medium Term Plan, and sector policies and laws.

Chapter two describes CEMASTEA's strategic direction. It is in this chapter that the Centre's Mandate, Vision, Mission, Core Values, Strategic Goals and Quality Policy Statements are contained. The Vision of CEMASTEA is, *"An empowered STEM literate society," and the Mission is, "To continuously develop competencies for sustainable development through training, research and innovation in STEM Education".*

Chapter three describes the situational and stakeholder analysis. The chapter details the external environment in terms of Political, Economic, Social, Technological, Environmental and Legal (PESTEL) and internal environment in regard to Strengths, Weaknesses, Opportunities and Threats (SWOT) as well as the Valuable, Rare, Inimitable and Organizational-Wide supported (VRIO) on the governance and administrative structures, internal business processes, resources and capabilities. The chapter also

reviews vital stakeholders and their interests in the implementation of the Strategic Plan. An analysis of past performance and key achievements and challenges are also highlighted.

Chapter four details the strategic issues identified from the situational analysis, goals aligned to the strategic issues and key result areas that form the thematic areas of the Strategic Plan. The Strategic Plan is structured around seven strategic goals and five key results areas to guide CEMASTEA's activities over the next five years. The strategic goals to be achieved during the 2023-2027 plan period are as follows: Enhanced quality of teaching and learning, increased evidence-based body of knowledge on STEM education, Stable resource base realized, increased partnerships, linkages and collaborations, enhanced governance and accountability, Organizational effectiveness and efficiency realized, and strengthened STEMI education, training and research in Africa.

Chapter five presents the strategic objectives and strategies aligned to the key result areas. Eighteen strategic objectives are distributed under the six Key Result Areas. Subsequently, in each of the strategic objectives, the strategies are outlined to support the attainment of the Centre's aspirations.

Chapter Six details the implementation and coordination framework to guide the strategic formulation, implementation, coordination, and execution of the Strategic Plan. The chapter also details the Annual Work Plan and Budget for the Plan period. It highlights the performance contracting, institutional framework, staff establishment, skills set, competence development, risk management framework and mitigation measures.

Chapter Seven discusses the resource requirements and mobilization strategies for the Strategic Plan. It is organized under financial requirements, resource mobilization strategies, and resource management. In order to implement the Plan, the Centre requires Ksh. 11, 789 Million, while the resource gap is Ksh 5,709 Million. The strategies to mobilize the resources include: public sector financing, marketing and sale of services and products, leveraging Corporate Social Responsibility (CSR), seeking external funding, mobilizing resources from international and national Development Partners / Donor Communities and ensuring efficiency use of the available resources.

Chapter eight details the Centre's Monitoring, Evaluation and Reporting Framework that will guide in measuring progress towards achieving the intended goals and objectives of the Plan. The framework will enable tracking of the implementation of projects and programs, assessment of impact, and reporting results to stakeholders.

CHAPTER ONE | INTRODUCTION

INTRODUCTION

Chapter one describes the rationale for strategic planning, the context of the Plan, the historical background of CEMASTEA, and the methodology of developing the Plan. The context of the Plan highlights how the Centre aspires to implement programs that support the attainment of national and international commitments such as the United Nations 2030 Agenda for Sustainable Development Goals (SDGs), African Union Agenda 2063, East Africa Community Vision 2050, Constitution of Kenya, Kenya Vision 2030, Bottom-up Economic Transformation Agenda (BETA), the Fourth Medium Term Plan 2023-2027, and sector policies and laws.

1.1 Strategy as an Imperative for Organizational Success

Best practice requires that a forward-looking organization lay down strategies for attaining its core mandate. This Strategic Plan demonstrates the commitment of CEMASTEA's Board of Governors to achieve the Centre's strategic objectives. The Strategic Plan lays down a five-year road map towards attaining high-performance levels in realizing the Centre's Vision and Mission. CEMASTEA has implemented three strategic planning cycles so far, and this will be its fourth generation. This Strategic Plan, developed in the backdrop of CEMASTEA's elevation to a State Corporation with a mandate of training and research, will guide the Centre to its next level of growth. The Plan establishes a comprehensive framework in training and research, corporate governance, and effective mobilization of human and fiscal resources to support the Centre in fulfilling its mandate. It also has a comprehensive monitoring, evaluation, learning and review framework for sustained growth and development of the Centre. Its development incorporated diverse perspectives and insights from stakeholders and experts.

1.2 The Context of Strategic Planning

This Strategic Plan was developed considering national development priorities, regional and international development frameworks.

1.2.1 Global Perspective

Worldwide, there is a growing recognition of Science, Technology, Engineering, Mathematics, and Innovation (STEMI) education as a means to achieve global leadership and address various socio-economic issues such as economic recessions, environmental concerns, and food security. It is acknowledged as indispensable for

sustaining competitiveness in an economy reliant on knowledge. The demand for proficient individuals in STEMI areas is crucial for fostering technological advancements and promoting sustainable growth. Additionally, the international emphasis on STEMI education is motivated by the understanding that resolving intricate issues like climate change, cybersecurity, and pandemics hinges on expertise within these domains.

1.2.1.1 United Nations 2030 Agenda for Sustainable Development Goals (SDGs)

Training and research programs at the Centre are developed and implemented in consideration of the United Nations 2030 Agenda for Sustainable Development (SDGs) Implementing Continuous Professional Development (CPD) initiatives for teachers is widely acknowledged globally as a pivotal factor in enhancing the overall quality of education. Sustainable Development Goal (SDG) number 4 ensures inclusive and equitable education and promotes lifelong learning opportunities for all. To achieve this, the Centre implements courses that promote inclusive practice, such as the participation of people living with disabilities, visually and hearing impaired.

On Sustainable Development Goal (SDG) number 5 on achieving gender equality and empowering all women and girls, the Centre will continue to mount gender-responsive STEM courses with particular reference to girls' participation. Additionally, Sustainable Development Goal (SDG) number 9 on industry, innovation and infrastructure, the Centre will contribute to target 9.5 on building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation through STEM education, ICT and research programs. Moreover, Sustainable Development Goal number 17 on strengthening the means of implementation and revitalizing the Global Partnership for Sustainable Development will be achieved as the Centre implements strategies for partnerships and linkages with national, regional and global partners.

1.2.2 Regional Perspectives

Despite encountering challenges in ensuring quality STEMI education, including insufficient resources and facilities, ineffective teaching methods, a shortage of STEMI educators, and a general lack of student interest in STEMI subjects, African nations remain committed to initiating change. Initiatives like the African Union's Agenda 2063 underscore the significance of STEMI in advancing the Continent's development objectives. A 2022 high-level webinar report on the status of STEM Education at Secondary School Level in Africa, indicates that Africa is currently experiencing a notable shift with abundant opportunities to deeply embed STEMI education within its societies. Cognizant of the importance of developmental agenda for Africa, African countries acknowledge the crucial link between STEMI education and economic empowerment. Efforts to establish STEMI research and training centers, often through collaborations

with international organizations and universities, are underway. Tailored programs addressing local needs, such as agricultural technologies and healthcare innovations, are gaining prominence. Additionally, there is observable regional cooperation aimed at standardizing STEMI education and fostering Pan-African networks to facilitate knowledge sharing and resource pooling.

1.2.2.1 African Union Agenda 2063

African Union (AU) Agenda 2063, "The Africa We Want", envisions seven shared aspirations. The achievement of Aspiration 1 of Agenda 2063 for 'A prosperous Africa based on inclusive growth and sustainable development' requires that Africa makes significant investments in education to develop human and social capital through an education and skills revolution emphasizing innovation, science and technology. The desires of Agenda 2063 for the education sector are articulated in the Continental Education Strategy for Africa (CESA 2016 – 2025), precisely the strategic objective on Revitalizing the teaching profession, accelerating processes leading to gender parity, equity and strengthening the science and math curricula, speaks directly to the need for the provision of quality, relevant and inclusive STEM education.

The AU Science, Technology and Innovation Strategy for Africa (STISA, 2024) places science, technology and innovation at the epicenter of Africa's socio-economic development and growth and emphasizes the impact of sciences across critical sectors such as agriculture, energy, environment, health, infrastructure development, mining, security and water. The strategy envisions an Africa whose transformation is led by innovation to create a knowledge-based economy. This Strategic Plan takes cognizance of these goals and has designed strategies and activities to achieve the continental targets. The Centre will draw from the converging continental voices in STEM education of diverse backgrounds to inform programs through collaborative partnerships and linkages. In addition, the Centre will continue to position its programs to serve as an African Centre of Excellence in STEM education.

1.2.2.2 East Africa Community Vision 2050

The East Africa Community (EAC) remains committed to achieving universal access to primary education designed to enhance human capital. Section 10.2.1 of the East Africa Community Vision 2050 highlights education quality and access as critical in responding to the emerging transformational needs in the region. The Vision calls for enhancing teacher training, developing a curriculum on sustainability, and developing training programs that prepare students for careers related to envisaged industrialization. This Strategic Plan will contribute to the aspirations of the EAC by providing relevant

and needs-based continuous professional development programs for teachers and innovative programs for learners.

1.2.3 National Perspectives

The education reforms in Kenya have led to strategic development of STEM education, training and research in Kenya through the National Curriculum Policy (2019) which seeks to increase enrolment in Science, Technology, Engineering and Mathematics (STEM) related programs or courses and enhance gender parity. The reforms are founded on the Constitution of Kenya (2010), as the supreme law, recognizes the importance of ST&I as articulated in several articles. The Kenya Vision 2030 recommends the repackaging of STEM education and training to promote experiential learning, innovation, creativity and attraction to STEM-based disciplines through well-coordinated programs in all aspects of ST&I from pre-primary to tertiary levels.

In addition, the Sessional Paper No. 1 of 2019 posit that Kenya's future prosperity and international competitiveness will depend on Science, Technology and Innovation sector through creation of a pool of highly skilled human resource base to trigger innovation in priority fields. Accordingly, the National Education Sector Strategic Plan (NEESP, 2023-2027) provides for the development of a STEM policy to promote the STEM pathway in both the old and new curricula. Therefore, the development of this Strategic Plan has made reference to the aspirations of equipping every learner with the requisite skills, knowledge and attitudes to thrive in the 21st Century, STEM education as one of the pathways seeking to develop learner's innovativeness and technology use to develop a labor force that drives the Kenyan economy {Basic Education Curriculum Framework (BECF), 2019}.

1.2.3.1 Constitution of Kenya

In Article 53 (1) (b), the Constitution of Kenya states that every child has a right to free and compulsory basic education. In Article 55 (a), the state shall take measures, including affirmative action programs, to ensure the youth access to relevant education and training. Moreover, the constitution states that, "The State shall recognise the role of science and indigenous technologies in the development of the nation". These Constitutional pronouncements are effected through Acts of Parliament. Programs and strategies proposed in this Strategic Plan align with the requirements for promoting rights to education, including for children in marginalized areas and people with disabilities.

1.2.3.2 Kenya Vision 2030, Bottom-Up Economic Transformation Agenda, and the Fourth Medium-Term Plan

The Kenya Vision 2030 aims to transform Kenya into a newly industrialized, upper middle-income Country, providing a high-quality life for its citizens. The Vision calls for repackaging STEM by promoting experiential learning, innovation, creativity and attraction to STEM-related disciplines. CEMASTEA runs programs that continue to promote Science, Technology and Innovations (ST&I) and STEM programs, and this Strategic Plan has strategies that directly speak to the need of Vision 2030 ST&I and STEM aspirations.

The Kenya Kwanza Government Bottom-Up Economic Transformation Agenda (BETA) 2022-2027 recognizes the centrality of education as the ultimate means of engendering an equitable society. 'Equitable education ensures that every child can fulfill their potential and rise to the highest level of accomplishment, irrespective of their social background' (BETA, pg.52). The Government commits to the continued improvement of education quality, access and financing and addressing inequities through strategies such as the provision of equitable universal basic education, cost-free continuous capacity development for teachers and increased teacher recruitment, improved capacity of day secondary schools to guarantee access to quality education and reduce the cost of education among others.

In the Fourth Medium Term Plan 2023-2027 the Government seeks to provide every learner with world-class skills and knowledge by instilling creativity and innovativeness necessary for emerging industrial needs and to thrive in the 21st Century and strengthening the linkage between education and industry. The Government commits to implement curriculum reforms through the Fourth Medium Term Plan (MTP IV). These include the Competency-Based Curriculum (CBC), Competency-Based Education Training, and Competency-Based Assessment. Commitments in this strategic Plan dovetail with the aspirations of the Kenya Kwanza Government including In-Service Education & Training (INSET) for teachers, training in Pedagogical Content Knowledge (PCK), CBC, STEM, Information, Communication Technology (ICT), Education for Sustainable development (ESD) and Climate change education programs.

The MTP IV also has strategies that target training for teachers from marginalized areas, inclusive training programs on Gender Responsive Pedagogies (GRP) and people living with disabilities (PWDs). The Centre will contribute skills and knowledge on science, technology and innovation to achieve the BETA and Fourth Medium Term Plan (MTP-IV) aspirations. The Centre will promote the development of skilled human resources and

innovations that will contribute to the aspirations of trade and Micro, Small and Medium Enterprises (MSMEs) and manufacturing and digital and creative economy pillars.

1.2.3.3 Sector Policies and Laws

This Strategic Plan draws from numerous Education sub-sector policies and laws. These include Acts of Parliament, namely the Basic Education Act (2013), the Children's Act (2022), the Persons with Disabilities Act 2003 and the Teachers Service Commission Act (2012). There are also Sessional papers, namely The Sessional Paper No. 1 of 2005 on Policy Framework on Education, Training and Research and policies, including the National Curriculum Policy (2018), Policy on Information and Communication Technology in Education and Training (2021), Competency-Based Education and Training Policy Framework (2018) and Education for Sustainable Development Policy for the Education Sector (2017). These laws and sector policies will inform the implementation of this Strategic Plan. The Centre will also refer to the Science, Technology and Innovation Act, Intellectual Property laws, National Commission for Science Technology and Innovation (NACOSTI) policies, Industrial Property Act, and Presidential Working Party (PWP, 2023) Report to safeguard innovations and intellectual property.

1.3 History of CEMASTEA

CEMASTEA was established in 2004 as a public institution under the Ministry of Education. The Centre traces its history to the Strengthening the Mathematics and Science in Secondary Education (SMASSE) Project. SMASSE started in 1998 as a pilot project jointly implemented by the Ministry of Education and Japan International Cooperation Agency (JICA). Its purpose was to improve classroom practices of mathematics and science teachers while the goal was to upgrade the capabilities of young Kenyans in Mathematics and Science.

SMASSE project was housed at the Kenya Science Teachers College (KSTC) from 1998 to 2003. In 2004, the expansion of the project to national and regional coverage necessitated the conversion of the Centre for Research and Technology (CRT) to CEMASTEA. The Centre was then renovated and equipped to house CEMASTEA operations. In 2005, Sessional Paper No. 1: A Policy Framework for Education, Training, and Research authorized the establishment of CEMASTEA as a fully-fledged institution for in-service education and training (INSET) for mathematics, science, and technology teachers. Consequently, CEMASTEA programmes were captured in the Kenya Education Sector Support Program (KESSP 2005-2010) as Investment Program No.17.

In 2012 and 2013, the Ministry of Education with the support of JICA expanded CEMASTEA facilities by putting up the modern science complex. The complex was

officially opened by His Excellency President Uhuru Kenyatta in February 2014. When technical cooperation with the JICA ended in December 2013, the Government of Kenya continued to fund CEMASTEA programs thus ensuring sustainability of the Centre's programmes.

Over time, CEMASTEA has developed inimitable capacity in planning, coordinating, and implementing Continuous Teacher Professional Development (CTPD) programs. The Centre continues to expand the scope of its programmes bringing on board Early Childhood Development Education (ECDE) teachers, Junior School (JS) teachers, teacher training colleges, principals, deputy principals, and other education stakeholders. In 2022, CEMASTEA was transformed into a State Corporation under the Ministry of Education (MoE) with the mandate on Training and Research. This Strategic Plan envisions leveraging this brief but rich history to take CEMASTEA to its next level of growth.

1.4 Methodology of Developing the Strategic Plan

The Board of Governors provided leadership during the development of the Strategic Plan. The process followed guidelines for preparing fifth-generation Strategic Plans, 2023 – 2027, issued by the National Treasury and Economic Planning. The process began with establishing a Technical Committee composed of representatives from all Departments at CEMASTEA, consultants from the Ministry of Education, and officers from the National Treasury and Economic Planning. The Strategic Plan was developed between March, 2023 and April, 2024 through a participatory and consultative approach, gathering views from internal and external stakeholders and reviewing relevant legal and policy documents. The Board and Management reviewed the draft Strategic Plan, and thereafter, the external stakeholders validated.

CHAPTER TWO

STRATEGIC DIRECTION

STRATEGIC DIRECTION

Chapter two describes CEMASTEA's Mandate, Vision, Mission, Strategic Goals and Quality Policy Statements. It provides an overview of the Institution's strategic goals and articulates its Core Values that underscore its priorities. The Chapter also sets out the quality requirements regarding continuous improvement of internal processes and procedures.

2.1 Mandate

Develop capacity in STEM education, training and research.

2.2 Vision Statement

An empowered, creative and innovative STEM society in Africa.

2.3 Mission Statement

To continuously develop capacity in STEM education for sustainable development through training, research, innovation and partnerships with related ecosystems.

2.4 Strategic Goals

The following are the strategic goals for the Centre for the period 2023-2027:
Goal No. 1: Enhanced quality of teaching and learning
Goal No. 2: Increased evidence-based body of knowledge on STEM education
Goal No. 3: Realized stable resource base.
Goal No. 4: Increased partnerships, linkages and collaborations.
Goal No. 5: Enhanced governance and accountability.
Goal No. 6: Realized organizational effectiveness and efficiency.
Goal No. 7: Strengthened STEMI education, training and research in Africa.

2.5 Core Values

The aspirations of the Centre, as laid down in this Plan, will be anchored on the following core values: excellence, inclusivity, innovation, integrity, and sustainable impact.

Excellence: We strive for the highest standards of excellence, embracing a culture of continuous improvement and a commitment to

quality in all its training, research and policy implementation programs.

Inclusivity: We promote inclusivity by creating an environment where all internal and external stakeholders feel valued, respected, and have a sense of belonging. The Centre will foster diversity, promote equal opportunities, embrace public participation and encourage divergent perspectives and inputs in running its programs.

Innovation: We foster a culture that encourages imagination, creativity, exploration of unconventional solutions, and pursuing ideas that challenge the status quo. The Centre will also promote the utilization of maker's spaces and create platforms for showcasing ideas through STEM-based fairs and boot camps.

Integrity: We are dedicated to maintaining honesty, ethical conduct, and a steadfast commitment to doing what is right in all situations, whether in personal or professional pursuits. The Centre is committed to transparency and accountability, adhering to the highest standards and faithfully following the laws that govern its practices.

Sustainable Impact: We promote sustainable impact by making deliberate choices that contribute positively to the long-term well-being of our clients, society, the environment, and future generations. In the implementation of our programs, the Centre considers the economic, social, and environmental outcomes and aim to create sustainable benefits while minimizing the adverse effects.

2.6 Quality Policy Statement

The Centre for Mathematics, Science and Technology Education in Africa is committed to providing training to curriculum implementers and conducting educational research in a timely, efficient, and effective manner. The Centre is committed to satisfying customers, organizational, legal and ISO 9001:2015 requirements, and to the continual improvement of its quality management system.

CHAPTER THREE

SITUATIONAL & STAKEHOLDER ANALYSIS

SITUATIONAL & STAKEHOLDER ANALYSIS

Chapter three presents the situational analysis and a review of key stakeholders with a strategic interest during implementation of this Plan.

3.1 Situational Analysis

The section details the situational analyses in terms of external and internal environment of CEMASTEA. In addition, the section outlines the key achievements, challenges, and lessons learnt from the previous Strategic Plan period.

3.1.1 External Environment

The section below considers the macro and market analysis of the Centre's external environment.

3.1.1.1 Macro Environment

Political: A supportive political environment arising from global, continental, regional and national development agenda and commitments is essential in enhancing the development of STEM education, training and research. At the international scene, Kenya is a signatory to global policies governing quality of education including STEM such as the SDG 4 and CESA 2016-2025. The Minister for Education Kenya is the leader of the Association for the Development of Education in Africa's (ADEA) Inter-Country Quality Node on Mathematics and Science Education (ICQN-MSE) in Africa. Thus, CEMASTEA needs to leverage on the political goodwill to deliver relevant programs. As reflected in various policy documents, government recognition of the critical role of STEM education, training and research in national development provides a conducive environment for CEMASTEA to execute its mandate. Further, goodwill among key stakeholders at the global, regional, national, county and school levels supports the development of STEM education through resource mobilization, strategic partnerships and advocacy. Political stability is essential for the uninterrupted implementation of national and international STEM education programs.

A number of African nations have embarked on initiatives aimed at improving the standard of education, particularly in STEM disciplines. Zambia, Kenya, Rwanda, South Africa, Zimbabwe, Mozambique and Tanzania, for example, are implementing the Competency Based Curriculum framework. The curriculum framework positions STEM as an interdisciplinary educational approach that seamlessly integrates the four

STEM disciplines into a unified learning framework. The framework aims at equipping students with the skills necessary to tackle real-world problems by nurturing critical thinking, problem-solving abilities, and comprehension of the core subjects. Specific efforts encompass enhancements to the curriculum, teacher development programs, and the bolstering of infrastructure to facilitate STEM education across different educational tiers. Further, the Association for the Development of Education in Africa (ADEA) is currently engaged in conducting case studies within African nations to explore inventive approaches to learning assessment. The objective is to identify practices that are transferable and adaptable to diverse educational settings within Africa, ultimately aiming to elevate STEM educational achievements. Efforts to align education systems and qualifications with international standards are driven by the objective of enhancing the mobility of African students and professionals, as well as bolstering the continent's global competitiveness in STEM fields.

The Science, Technology, and Innovation Strategy for Africa (STISA) 2024, established by the African Union (AU), underscores the critical importance of STEM and innovation in propelling sustainable development on the continent. This strategy recognizes the necessity of nurturing human capital by advancing top-tier STEM education and training, while creating supportive environments that foster research and innovation.

Capacity building and training initiatives aimed at massifying STEM education are currently underway, with a focus on broadening access to STEM education and ensuring that African nations are adequately prepared to engage in global scientific and technological advancements. These efforts entail strengthening training systems and promoting the harmonization of education standards across various jurisdictions.

Economic: There is growing investment in STEM Research and Development (R&D) by advanced economies like the United States, Germany, and Japan who dedicate significant resources. For example, the National Science Foundation (NSF) in the United States invests billions of dollars annually in diverse STEM research projects. Likewise, Germany's Federal Ministry of Education and Research (BMBF) introduced numerous initiatives to foster STEM education and research, underscoring the nation's dedication to technological progress. The investments play a crucial role in advancing state-of-the-art technologies and nurturing qualified STEM professionals, to bolster the global competitiveness of the countries.

Investment in STEM education is widely acknowledged as essential for driving socio-economic development, prompting calls from various stakeholders, including governments and NGOs, for increased resources in these disciplines. A report by ADEA

on the status of STEM education at the secondary school level in Africa underscores the importance of supportive policies and investments to establish a robust foundation for future scientific and technological progress. Furthermore, STISA 2024 serves as the regional policy framework for STEM initiatives. Institutions like CEMASTEA play a crucial role in supporting the implementation of these policies across countries. Notably, approximately 10 countries are currently implementing a Competency-Based Curriculum that prioritizes inquiry-based learning, STEM, and Technical and Vocational Education and Training (TVET), although the level of success varies. In addition, the Centre's programs need to support in bridging Africa's inequality gaps in STEMI education in terms of exclusion and inefficiencies evident in specifically; human incapacity to deliver quality education, gender disparities, people living with disabilities, and issues related to poor households and geographical factors with marginalized teachers and learners.

The Centre needs to leverage the demand for STEM-related skills and competencies in the job market by developing strategic intervention programs. There is an emphasis on Public-Private Partnerships (PPPs) to enhance educational platforms, curriculum development, teacher training, and student engagement and placements. Online educational resources, open courseware, and virtual laboratories are increasingly being utilized to democratize access to STEMI education. There is an increasing number of Development Partners willing to fund STEMI education. However, there are many competing interests for funds in STEMI education on the Continent. An emerging trend in Africa is the burgeoning support for startup ecosystems and innovation hubs, driven primarily by the recognition that STEMI expertise is essential for fostering the creation of new businesses and jobs within the technology sector.

As the Country's economy grows, there is an increasing demand for STEMI skills. The five Pillars of the Government's Economic Plan: Agriculture; Micro, Small and Medium Enterprise (MSME); Housing and Settlement; Healthcare; and Digital Superhighway & Creative Economy require STEM-based skills to realize effective implementation. Economic instability may occasion changes in the fiscal and monetary policies that could reduce CEMASTEA's resources to implement STEM education, training, research and innovation.

Social: Global initiatives are promoting women's and minorities' participation in STEMI fields to foster an inclusive and diverse workforce capable of driving innovation from different perspectives. There is a growing demand for STEMI professionals globally arising from the swift advancement of technology escalating the need for STEMI experts on a global scale. Across various sectors including healthcare, finance, manufacturing, and agriculture, there is a growing reliance on individuals proficient in STEM-based fields. A

report by the World Economic Forum (WEF) (2020), indicated that the demand for roles associated with STEM is projected to persistently increase, with employers specifically seeking candidate's proficiency in advanced technical abilities. This trajectory highlights the significance of providing individuals with STEM skills to address the continually evolving requirements of the worldwide job market. The demand for proficient individuals in STEMI areas is crucial for fostering technological advancements and promoting sustainable growth.

Persistent gender disparities and socio-economic obstacles continue to hinder access to STEMI education for specific demographics, particularly young girls and women. Nevertheless, there are emerging prospects to utilize technology and policy interventions to mitigate these inequalities. Conversations surrounding the risks and opportunities associated with STEMI education in Africa are focused on devising strategies to bolster support for underrepresented groups in STEM fields, addressing both educational and cultural impediments.

UNESCO underscores the significance of adopting a gender-responsive approach to STEMI education in Africa, with regional training initiatives geared towards ensuring equal participation and benefits for both genders in quality STEM education. Given Africa's youthful and expanding population, there exists a considerable talent pool for future STEM professionals. The momentum toward increased female involvement in STEM fields is also on the rise.

The Kenyan population is dominated by young people, with those below 15 years old making up 39%. The Government's requirement that 60% of senior secondary schools offer the STEM pathway will potentially lead to increased enrollment in STEM subjects. It is therefore, important to strengthen programs that promote positive behavior change and improved perceptions towards STEM education. Health pandemics such as COVID-19, AIDS or other disease outbreaks negatively impact programs. Other health issues, such as drug and substance use, mental health and general illnesses, affect the capacity of educators engaged in capacity development programs. Insecurity in some parts of the country affects training programs. Harmful cultural practices such as early marriages, Female Genital Mutilation (FGM), Gender Based Violence (GBV) negatively affect learner achievement in STEM subjects. Additionally, exclusion of Persons With Disabilities (PWDs), gender disparity, low-income settlements and far-to-reach areas hinder access to STEM education.

Technological: Technology enables reaching a large population anywhere, anytime, leading to increased technology adoption in teaching and learning. Internet connectivity

and ICT infrastructure allow teachers and students to access different types of information and resources globally. Digital literacy and awareness are essential, especially in delivering STEM education because it enhances communication and collaboration. STEM education has become fundamental to the advancement of technology on a global scale. Countries have come to understand the pivotal role that STEM fields play in fostering innovation and propelling economic expansion. As evidenced by a report from the Organization for Economic Co-operation and Development (OECD), nations that prioritize STEM education have seen notable enhancements in technological capacities and innovation metrics (OECD, 2020). Further, the report underscored that focus on STEM education results in the development of a proficient workforce capable of tackling intricate technological hurdles and propelling scientific breakthroughs. Hence

Advancing STEM in Africa is crucial for the Continent's development and competitiveness in the global economy. In the same vein, a review of Africa's STEM landscape reveals a number of technological advancements that are contributing to improvement in STEM education, training and research. Prominently, increased internet access and mobile phone penetration offer valuable tools for STEM education and research collaboration. In addition, advancement such as online learning platforms, virtual laboratories and simulations, Maker Spaces and Innovation Hubs, Gamification, Open Educational Resources (OER), and remote teaching and collaboration tools have been recognized as greatly contributing to enhancing STEM education in Africa.

In light of the above, the Centre will leverage technological advancement aligned to the ICT integration in education policy, including social media, to upscale programs to reach more teachers and learners. In addition, and noting the potential challenges that could negatively affect the business continuity of the organization such as cyber-attacks, the Centre will enhance data safety, and employ security and business continuity strategies.

Legal: The SMASE-Africa constitution has been registered in Kenya under the societies Act Cap 108 of the laws of Kenya. CEMASTEA needs to leverage the legal status of SMASE-Africa to advance STEM education in Africa. The Constitution of Kenya provides for progressive public affairs management and inter-dependence and cooperation within the Education Sector. It provides a platform for pursuing open, transparent and accountable service delivery for all institutions. The mandate of CEMASTEA is to develop capacity in STEM education and pedagogical content knowledge through training and research which is a key provision in the legal instruments. The Legal Notice No. 96 of 2006 establishing CEMASTEA as a State Corporation does not clearly articulate its mandate. In order to strategically align the Centre's mandate to the STEM space, there is need to develop an Act of Parliament.

Ecological: The threat of climate change necessitates raising knowledge of its causes, effects, and control. Additionally, the international emphasis on STEMI education is motivated by the understanding that resolving intricate issues like climate change, cyber security, and pandemics hinges on expertise within these domains. The National Climate Change Action Plan (NCCAP) 2018 notes that with an economy that is dependent on climate-sensitive sectors, such as agriculture water, energy, tourism, wildlife, and health, changes in the country's climate are severe threats to the well-being of Kenyans. Further, NESSP 2023-2027 acknowledges that instilling a sense of environmental responsibility and promoting sustainable practices, educational institutions play a vital role in fostering environmental consciousness and driving positive societal change. The Centre will therefore integrate aspects of Education for Sustainable Development (ESD) and climate change in its training and research programs. Renewable energy integration in STEMI education programs will improve the cost-effectiveness of the Centre. The Centre will develop strategies for integrating carbon credits in programs to build the capacity of curriculum implementers as well as a resource mobilization strategy. The Centre will continue strengthening the waste management system in compliance to the National Environmental Management (NEMA) laws and regulations. This includes maintaining the wastewater recycling system, bio-waste and e-waste management. It is noted that extreme climatic conditions such as high temperatures and heavy rains could potentially affect the implementation of the Centre's programs. The Centre will therefore, design training programs to fit the different climatic conditions in the Country to enhance access and inclusivity.

Challenges

In view of the foregoing macro analysis, the challenges in STEM education include:

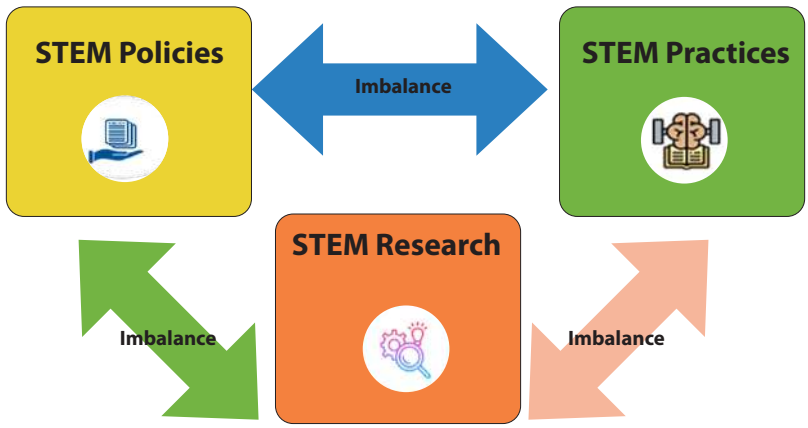
1) **Equity and Accessibility:** Disparities in access to high-quality STEMI education persist, especially among girls, minority groups, and marginalized communities.
2) **Shortage of Educators:** There is a global scarcity of qualified STEMI teachers, adversely affecting the quality of education and student involvement.
3) **Relevance and Engagement:** Conventional STEMI teaching approaches often lack relevance to real-world issues, resulting in student disinterest and limited participation.
4) **Funding Disparities:** Many nations, particularly those in the developing world, encounter substantial funding disparities in STEMI education and research infrastructure.
5) **Ethical Considerations:** The rapid pace of technological progress raises ethical dilemmas concerning data privacy, artificial intelligence, and responsible innovation.
6) **Underinvestment in STEM ecosystem priorities:** Many African countries continue to face insufficient funding for STEMI education, training, research infrastructure,

and skilled personnel. This leads to restricted availability of high-quality education, obsolete equipment, and a loss of talented professionals to other regions.

7) **Inequitable Access to STEM education:** Gender and socioeconomic gaps contribute to unequal opportunities in accessing STEM education in Africa, particularly affecting girls and women from underprivileged backgrounds.
8) **Inadequate Teacher Training:** Many teachers of STEMI subjects lack proper training and resources, hampering effective pedagogy and student engagement.
9) **Relevance and Application:** Traditional curricula often fail to equip graduates with skills relevant to current and future job markets, and research may not adequately address local needs.

The macro analysis reveals an Africa STEM education environment that has an inconsistent and incoherent linkage between STEM policies, research and practices as illustrated in Figure 3.1 below.

Figure 3.1: Imbalances in STEM research, policy and practices



3.1.1.2 Market Analysis

In line with the mandate of STEM education, training and research, the target customers of the Centre are practicing teachers in public and private schools in Kenya and other African countries. In the last strategic planning period, the Centre implemented programs for curriculum implementers with a reach of 21,189 in FY 2020/21, 30,304 in FY 2021/22 and 13,023 in FY 2022/23. They were drawn from secondary, primary and pre-primary schools. There is an opportunity to expand reach to more public primary and pre-primary schools in Kenya in the context of holistically implementing the

Competency-Based Curriculum. In addition, private school teacher training programs are inadequately tapped, and an opportunity exists for structured programs.

Moreover, CEMASTEA, by its establishment, has a potential reach of the fifty-four (54) African countries interested in STEM education, and especially, the teacher capacity development. This opportunity needs substantial amounts of funding to deliver blended courses to curriculum implementers on the Continent, among other strategic intervention programs.

3.1.2 Summary of Opportunities and Threats

Table 3.1 details a summary of opportunities and threats anticipated in the external environment of the Centre in terms of PESTEL.

Table 3.1: Summary of Opportunities and Threats

Environmental Factors	Opportunities	Threats
Political	• Political goodwill on STEMI education at global, continental, regional, national and county levels among key stakeholders. • Enabling legal and policy framework for resource mobilization, strategic partnerships, advocacy and research. • Establishing policy labs that unify leading STEM researchers, experts and policy makers, and young minds can strengthen the connection between robust scientific research and informed policymaking in STEMI	• Instability associated with politics would affect the efficient and effective implementation of the Centre's programs. • Other players in the STEM education ecosystem
Economic	• Increasing demand for STEMI skills. • National development aspirations espoused by BETA and MTP IV require STEMI education to serve as an enabler for the achievement. • Collaboration between governments, institutions, private sector, and international partners can leverage resources and expertise for improved STEMI education, training and research,	• Economic instability may lead to changes in the fiscal and monetary policies that could reduce CEMASTEA's resources for implementing its programs.
	• maximizing discoverability and impact. • Increased investment in Research and Development specifically geared to innovations in STEM education that leads to the development of new pedagogical practices and technologies that effectively address the requirements of learners in Africa to drive future knowledge innovations for economic transformation.	• Competing interests for STEM education resources.

Environmental Factors	Opportunities	Threats
Social	• Many young people below 15 will increase learner enrolment in STEM subjects. • The Government requires that 60 % of senior secondary schools offer the STEM pathway. • The global and national focus on alleviating poverty, reducing gender parity, and improving access and inclusion in the education sector. Targeted initiatives to encourage girls' participation in STEM can unlock potential and contribute significantly to the workforce. • Frontiers for young Minds: Creating Boundaries for Youthful Minds is a deliberate effort aimed at encouraging active involvement of young individuals in the scientific methods. Link to prominent figures in the scientific field prompts further inquiry about concepts currently enhancing the boundaries of science.	• Negative perceptions towards STEM subjects. • Health pandemics and natural disasters. • Insecurity • Negative cultural practices • Drug and substance use, mental health and general illnesses. • Low-income settlements and far-to-reach areas hinder access to STEM education.
Technological	• Technological advancement leveraging technology such as; online learning platforms, virtual laboratories and simulations, maker spaces and innovation Hubs, gamification, Open Educational Resources (OER), and remote teaching and collaboration tools can expand access to quality STEM education and resources. • Increasing digital literacy and awareness among teachers and learners. • Focus on innovations that promote problem-solving skills, critical thinking, and entrepreneurship can empower Africans to develop solutions to address own challenges.	• Cyber-attacks • High costs associated with ICT infrastructure and connectivity
Legal	• Enabling legal and policy frameworks at global, regional and national levels. • SMASE-Africa constitution that clearly specify the role of CEMASTEA. • To strategically align the Centre's mandate to the STEM space, there is a need to develop a CEMASTEA Act of Parliament.	• The Legal Notice No. 96 of 2006 establishing CEMASTEA as a State Corporation does not clearly articulate its mandate.
Ecological	• Renewable energy integration in STEM education programs to improve cost-effectiveness. • Strategies for integration of carbon credits trading. • Efficient waste management systems.	• Dependence on non-renewable energy sources. • The threat of global warming necessitates raising knowledge of its causes, effects, and control. • Extreme climatic conditions in some parts of the Country. • The rapid change in technological advancement leading to increased e-waste

Environmental Factors	Opportunities	Threats
Market environment	• Increased number of teachers due to expansion in education (CBC). • Demand for structured STEM INSET programs in private schools. • There is high interest in STEMI education in Africa.	• Competition for resources targeting teacher capacity programs

3.1.3 Internal Environment

The internal environment of the Centre considered governance and administration, internal business process, resources and capabilities as discussed in the sections below.

3.1.3.1 Governance and Administrative Structures

CEMASTEA has a Board of Governors that provides strategic direction to the organization. Currently, the Centre has 12 institutional policies. However, there is need to review and update guidelines on succession management, accreditation of programs and continuous staff capacity development. Further, it is important for the Centre to leverage policy frameworks such as the Sessional Paper No. 1 of 2019 on Education and Training and NESSP 2023-2024 to position herself to provide STEM education programs that meet the aspirations of CBC. The organization's structure comprises training, research and innovation, advisory and consultancy services, corporate services, supply chain and internal audit to support the institution in implementing its core mandates. The Centre has an established countrywide system of INSET centers and management through the cascade model. However, there is need to develop an internal legal function, business development, strategy and planning. Additionally, the technical capacity for research, innovation and consultancy services needs to be strengthened.

3.1.3.2 Internal Business Processes

The Centre is ISO 9001:2015 certified and committed to satisfying customers, organizational, and legal requirements and continually improving its Quality Management System (QMS). Besides, the CEMASTEA leverages on ICT and automation to enhance efficiency in implementing activities and has installations of modern ICT infrastructure for teleconferencing that enables real-time delivery of training services and communication. In addition, the Centre has adopted the Enterprise Resource Planning (ERP) system; developed strategic leadership to strengthen human capital; corporate governance and its brand; and has further established spaces that promote innovation in STEM, including maker spaces, innovation rooms, and Education for Sustainable Development (ESD). Finally, the Centre plans to have a comprehensive knowledge management system to support the creation of a knowledge hub.

3.1.3.3 Resources and Capabilities

The strategic characteristics of CEMASTEA's resources and capabilities were examined against the Valuable, Rare, Inimitable, and Organizational-wide supported (VRIO) criteria.

CEMASTEA relies on funds from the National Exchequer to implement its programs. Over time, the Centre has prudently utilized financial resources allocated because of its robust financial management system as reflected in the annual unqualified audit reports by the Office of the Auditor General (OAG). However, these funds are insufficient to meet the financial requirements for all Center's operations. In this regard, the Centre will fill the financial gaps by enhancing conference facilities, offering consultancy services, collaborative partnerships and commercializing its digital STEM content.

Human resources are valuable in the attainment of institutional aspirations. The initial establishment of 60 teaching staff has not been sustained at the same rate as attrition. The expanded mandate requires commensurate staffing levels with the requisite knowledge and skills to support the programs of the Centre. The Centre has relied on the Teacher's Service Commission (TSC) to deploy teaching staff. However, the teaching staff who have exited the Centre have not been replaced. This has resulted in the ratio of teaching staff to non-teaching standing at 30:70, which fails to meet the Directorate of Public Service Management (DPSM) requirement of 70:30 of the teaching to non-teaching staff ratio. In addition, the lack of an internal framework for career progression has resulted in staff stagnation and high turnover risk. It is worth noting that the Centre's teaching staff possess superior knowledge and skills. They are conversant in STEMI concepts through training in local and international programs. However, the demand for highly qualified STEM teaching staff by other African institutions will likely result in CEMASTEA losing valuable human resources in the absence of effective policies that attract and retain staff. The Centre should use the opportunity to review its policies that address human resource issues.

As a valuable resource, physical infrastructure provides a conducive work environment to support research, innovations, knowledge management and training implementation. The Centre has adequate land for further infrastructural development, competitive training and conference facilities. Further, the Centre is accessible and provides an inclusive, friendly and an inviting climate that, for example, accommodates People with Disabilities (PWDs) and nursing mothers. The Centre also utilizes existing infrastructure in learning institutions in the 47 Counties that serve INSET Centre's for the cascaded training programs. In response to high electricity costs, the Centre will continue to harness green infrastructure technologies, specifically solar energy, for sustainable delivery of services.

The Centre has inadequate accommodation, transport services and e-learning infrastructure to deliver its mandate effectively. As an integral resource critical to the Centre's operations, water has continued to become scarce. The Centre, therefore, needs to expand its water harvesting and wastewater recycling capacity as a priority project. The Centre has an established asset management system to manage the physical infrastructure effectively.

The Centre is designated to serve as a regional Secretariat on STEM education for the African Union cluster on STEM, the Association for Development of Education in Africa (ADEA)'s Inter-Country Quality Node (ICQN) on Mathematics and Science, and SMASE-Africa. This provides a competitive advantage for networking and access to STEM education resources. However, non-accrediting the Centre's training and research programs waters down this competitive advantage.

Leveraging technological advancement is a valuable resource for CEMASTEA to adequately meet the training and research mandate and enhance service delivery efficiency. The Centre has established structures for training using blended modes such as the portal, online platforms and in-person. In addition, the Centre has existing infrastructure to support Centre e-learning programs and has automated supply chain, finance and human resource functions. Automation of other processes is ongoing to boost further efficiency in implementing activities. Moreover, a business continuity plan will be established to address Cyber security threats as they can undermine the organization's business continuity.

3.1.4 Summary of Strengths and Weaknesses

Table 3.2 details a summary of strengths and weaknesses anticipated in the external environment of the Centre in terms of SWOT.

Table 3.2 Summary of strengths and weaknesses

Factor	Strengths	Weaknesses
Governance and administrative Structures	a) Existence of a Board of Governors for the provision of strategic direction. b) Experience of over 25 years in planning and implementing continuous professional development programs for mathematics and science education teachers. c) Established under a legal order d) An established countrywide system of INSET centers and management through the cascade model.	a) Gaps in succession planning policy. b) Non-accredited training programs c) The Centre has not been anchored under an Act of Parliament. d) The legal function, business development, strategy and planning are not well established. e) The research, innovation, and advisory and consultancy services are not well established.

Factor	Strengths	Weaknesses
Internal Business Processes	a) The Centre is 9001:2015 ISO-certified b) Existence of an ERP system to automate processes. c) The Centre provides inclusive and continuous professional development d) Corporate communication function that enhances public participation in the Centre's programs and activities e) Availability of capacity-building opportunities for staff	a) ERP system is not fully optimized. b) Lack of a comprehensive knowledge management system. c) Lack of a system to track the impact of the training program.
Resource and Capabilities	a) Internationally recognized institution in STEM education with strong linkages in Africa b) Capacity to network with partners in STEM education. c) Established structures for the delivery of training using various modes d) Existing infrastructure to support Centre e-learning programs e) A conducive work environment that is accessible, inclusive, friendly and inviting. f) Competitive conference facilities and resources g) Capitation funds e) Income generating facilities at the Centre.	a) Limited sources of funding to adequately support training and research programs b) Gaps in staff in terms of technical capacity c) Low staffing levels in some functional areas d) Insufficient infrastructure to support e-learning programs e) Inadequate transport services. f) Inadequate accommodation g) Reliance on electricity from the national grid.

3.1.5 Analysis of Past Performance

In the Strategic Plan (2020 – 2023) period, CEMASTEA achieved 80% of the planned activities under the twelve strategic objectives, as shown in Table 3.3 below.

Table 3.3: Percentage Attainment of Planned Activities FY 2019/20 – FY 2022/23

	KRA 1: Competency development in STEM.		KRA 2: Research, development & knowledge management.			KRA 3 Positioning & strengthening the Centre			KRA 4: Financial resource resilience & sustainability		KRA 5: Advocacy, networking and partnerships		Overall
Strategic objective	1	2	3	4	5	6	7	8	9	10	11	12	1 – 12
Percentage achievement planned activities	92	44	88	84	42	100	77	75	85	72	100	100	80

Under the Key Result Area on competency development in Science, Technology, Engineering and Mathematics (STEM), the Centre strengthened training programs and STEM model 'school program by implementing 92% and 44% of planned activities, respectively.

In the Key Result Area on research, development and knowledge management, the Centre enhanced its capacity to conduct quality research, conducted education research and enhanced knowledge management function by implementing 88%, 84% and 42% of planned activities, respectively.

In positioning and strengthening the Centre, the planned activities were implemented to achieve 100% in terms of enhanced legal status, strengthened human capital, corporate governance and brand through developing strategic leadership at 77%, and enhanced infrastructure and facilities to international standards at 75%.

In the Key Result Area on financial resource resilience and sustainability, the planned activities were implemented to realize diversified revenue streams at 85% and enhanced efficient utilization of institutional resources at 72%.

In Key Result Area on advocacy, networking and partnerships, the planned activities achieved an improved collaborative partnership through structured advocacy and networking at 100% and strengthened continental Secretariat functions at 100%. However, several challenges were experienced in the period owing to the emergency of the COVID-19 pandemic, which resulted in delays in realizing annual targets.

3.1.5.1 Key Achievements

Under the Key Result Area of Competency Development in STEM, the Centre sought to strengthen training programs at all levels and the STEM model schools program. The Centre reviewed its programs with stakeholders, developed training modules on Competency-Based Curriculum (CBC) and Competency-Based Assessment (CBA) and mounted training across the strategic plan period. As a strategic response to the COVID-19 pandemic, the Centre transited all its training programs to online platforms and introduced teachers to remote learning strategies. Over the strategic period, thirty-four training modules were developed, and eighty-six thousand one hundred and seventy-three (86,173) teachers were trained, as summarized in Table 3.4 below.

Table 3.4: Number of modules and teachers trained FY 2019/20 – FY 2022/23

Year	2019/20	2020/21	2021/22	2022/23	TOTAL
No. Trained	11,996	21,639	20,532	32,006	86,173
Modules developed	10	11	9	4	34

The Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA) achieved its strategic objective of improving the Training Quality Index (TQI) by 0.01 on a Likert Scale of 1 to 5. In 2021, the online National INSET TQI improved by + 0.0194, while the 2022 online secondary National INSET by +0.1155, translates to a 17% improvement. The training for the Diploma in Primary Teacher Education (DPTE) tutors that aimed at enhancing competencies for effective delivery of Competency-Based Teacher Education (CBTE) in mathematics at the Diploma level raised the confidence levels index from 3.76 to 3.92, which translated to a 4% increase.

Under the Key Result Area on Research Development and Knowledge Management, considerable progress was made in enhancing the capacity to conduct quality and educational research. The Centre conducted four educational research projects in the following areas: the impact of COVID-19 on teaching and learning, tracing the impact of CEMASTEA's INSETs, STEM Schools Program, and baseline research on entry behavior of learners into Junior Secondary School. This generated information and knowledge to inform policy and practice in the areas of study. A knowledge-sharing platform for staff and practicing teachers was created in the form of the Practitioner Journal of Mathematics and Science Teachers.

Under the Key Result Area of Positioning and Strengthening, the Centre achieved the following: The State Corporation Advisory Committee categorized CEMASTEA as a State Corporation and a Board of Directors was constituted to provide governance and leadership. The Centre implements a quality management system, ISO 9001:2015 Certified. During the strategic period, the Kenya Bureau of Standards recertified the Centre, which improved its performance in implementing contractual commitments, moving from an aggregate score of 3.3324 in 2019/2020 through 2.943 in 2020/2021 to 2.78 in 2021/2022. The Centre also developed twelve (12) policies and reviewed nine institutional policies. The Centre's corporate brand and visibility were enhanced through national awards in innovation and disability mainstreaming; STEM outreaches received media publicity and the Quarterly CEMASTEA Newsletter. Training needs assessment (TNA), staff appraisal and development, and implementation of Human Resource (HR) development plans were also implemented. The existing accommodation facilities, the (AIA) to the Centre, are being modernized. Moreover, the Centre has increased efficiency

in the processes by automating the Finance, HR and Procurement processes through ERP, reducing the turnaround time for service provision.

Under the Key Result Area on financial resource resilience and sustainability, the annual recurrent budget increased from eight hundred and seventy-nine million shillings in the FY 2018/2019 to nine hundred and eighty-two million shillings in the FY 2022/2023 which resulted in effective implementation of the Centre's programs. The capitation funds increased from Kenya shillings five hundred fifty million in FY 2018/2019 to Kenya shillings seven hundred and fifty million in FY 2022/2023. This resulted in county-level training programs being implemented effectively. The Centre conducted four county-level internal audits to provide fiduciary assurance on utilizing SMASE funds. This strengthened internal control systems at the county level. Arising from the audit recommendations, capacity building for the County Teacher Capacity Development Committees (CTCDCs) were carried out twice. This has improved county financial reporting and documentation.

Under the Key Result Area on Advocacy, Networking and Partnerships, the Centre enhanced structured advocacy and networking to increase partner reach. Collaborative partnerships were successfully created with ten local and international organizations, raising over fifty Million Kenya Shillings in the Plan period (2020-2024) towards teacher capacity development and opening up opportunities for sixty staff members under the technical assistance program. In addition, international webinars were held as part of advocacy and networking with educators from African countries and partner organizations working in the STEM education space. Further, ten advocacy forums were conducted with an outreach of over thirty organizations. The continental Secretariat function of the Centre was strengthened through auditing of the processes and review of governing policies and regulations. The Centre leveraged Secretariat linkages to conduct advocacy and networking programs and tap STEM-based knowledge on the continent. Under the following partnership projects: ADEA and MasterCard; ADEA and LEGO Foundation. There was increased interest in foundational learning, inclusion and gender-responsive STEM education globally. Because of the above programs, the Centre scaled up its training activities to include the schedule for Early Childhood Education and gender-responsive STEM education in partnership with the Education Development Trust (EDT).

3.1.5.2 Challenges

Under the KRA 1 on competency development in STEM education, the following factors hindered the achievement of set targets during the implementation of the previous Plan.

i. Disruptions due to the COVID-19 pandemic caused a delay in the implementation of training programs due to the transition process to remote mode. Emerging issues during remote training, such as the introduction of grading and late submission of 'participants' assignments, caused delays in certification.
ii. Delays in approval for the training of teachers caused postponement and congestion of activities in subsequent quarters.
iii. Inadequate funding inhibited the expansion of the STEM model program from 102 to 588 schools in Kenya and the promotion of early identification of talents in STEM at pre-primary and primary levels.

Under the KRA 2 on research, consultancy and knowledge management, the challenges included:
i. Lack of a framework for organizing conferences, symposia and awarding best research practices.
ii. Inadequate staff for research and knowledge management programs.

Under the KRA 3 on Positioning and Strengthening the Centre, the limiting factors included:
i. Inadequate funding for the development of additional training infrastructure and facilities.
ii. Delayed on-boarding of teaching staff into the state corporation

Under the KRA 4 on financial resource resilience and sustainability, the following factors hindered the achievement of the set targets:
i. Reduced resource mobilization due to COVID-19.
ii. Limited business development capacity.

The challenges under KRA 5 on financial resource resilience & sustainability included:
i. Lack of institutional asset management policy.
ii. The Centre has also adopted the Enterprise Resource Planning (ERP) system, but not all the functions are operational.

The challenges under the KRA 6 on Advocacy, Networking and Partnerships the following factors hindered the achievement of the set targets:
i. COVID-19 limited international travel, through which networks and partnerships are created.
ii. Reduced partnership resources.

3.1.5.3 Lessons Learnt

The following lessons were recorded under the Key Results Area on Competency Development in STEM: CEMASTEA uses a blended approach of face-to-face and online

platforms to conduct training. Online training enabled the Centre to reach a more significant number of teachers with a given amount of funding than face-to-face. However, the online approach limits the ability to effectively conduct science and mathematics activities. The Centre for Mathematics, Science and Technology Education in Africa needs to strengthen future training programs using virtual laboratories and digitalized laboratory lessons to address this limitation.

The Centre for Mathematics, Science and Technology Education in Africa conducts training on Pedagogical Content Knowledge (PCK) to enhance the implementation of Competency-Based Curriculum (CBC) and Competency-Based Assessment (CBA). Effective implementation of CBC and CBA requires teachers with adequate pedagogical content knowledge. This could be achieved through school-based teacher support systems and communities of practice. Sustaining communities of training is necessary to create structured and sustainable ways for continuous engagement with teachers.

Lessons learnt under the Key Result Area on research development and knowledge management were: research is an intensive process requiring fiscal, time and human resources. Therefore, providing additional resources for research will enhance the implementation of research programs. The 'Practitioner's Journal of Mathematics & Science Teachers (PJMST) started during the strategic period, is a valuable platform for teachers to document and share their experiences.

Under the Key Result Area on Positioning and strengthening the Centre, lessons learnt were: promoting a culture of innovation that encourages creativity and problem-solving. Increasing resources targeted at STEM innovations such as maker spaces, place-based learning, innovation laboratories, and Education for Sustainable Development (ESD) enriches teachers' and learners' experiences. The continuous capacity development of corporate governance human capital enhances its ability to deliver quality services.

Under the Key Result Area on Resource mobilization and partnerships, lessons learnt include diversifying revenue sources and strengthening collaborative partnerships will ensure financial resilience and sustainability.

Under the Key Result Area on advocacy, networking and partnership, lessons learnt include that physical attendance and participation in partner forums enhance the Centre's visibility and identification of strategic partnership programs. Strategic advocacy on areas of interest globally attracts partnership resources, for instance, foundational learning, inclusion and gender-responsive pedagogy.

3.2 Stakeholder Analysis

Table 3.5 details the stakeholder analysis in terms of roles, expectations from CEMASTEA and CEMASTEA's expectation from the stakeholders.

Table 3.5 Stakeholder analysis.

STAKEHOLDER	ROLE	STAKEHOLDER EXPECTATIONS FROM CEMASTEA	CEMASTEA'S EXPECTATIONS FROM THE STAKEHOLDER
School level			
Learners	Active participation in lessons, STEM related activities and in studies	Learner-friendly classroom practices that enable learners acquire STEM skills and competencies.	• Improved learning outcomes • Active participants in learning • Creative and innovative citizens
Heads of Institutions (HOIs) (Teachers, Heads of departments (HODs, PTTC Tutors, TCTP, International participants, CSOs, QASOs	Participate in professional development programs; Implement learner-centered practices.	• Need-based quality training that is certified • Support teachers after training	• Improved learner performance • Feedback on classroom practices • Promoting school based teacher learning practices
Schools Board of Management (BoM)	Provide resources for learner-centered practices	Training of teachers	Support in the implementation of acquired skills during training
INSET centers, STEM and ESD Schools, etc.)	• Host training • Model good classroom practices • Resource centers	Well-resourced to host training	Provide a conducive training environment.
STEM Model Schools	• Modeling good classroom practices in STEM education • Resource Centers on STEM education	Resource the school to a level of STEM status	Modelling of STEM education
Parents and local communities	Supporting learners and schools with resources.	Improved performance and competencies in Math and Sciences	Support schools and teachers
County Level stakeholders			
County Government	Implementation and management of Early Childhood Development Education (ECDE).	Collaboration in implementing STEM education at the ECDE level.	Support training programs at the County level

STAKEHOLDER	ROLE	STAKEHOLDER EXPECTATIONS FROM CEMASTEA	CEMASTEA'S EXPECTATIONS FROM THE STAKEHOLDER
County Education Boards	Support implementation of education policies and guidelines	Efficient and effective communication and involvement in CEMASTEA programs	Support training program at the county
County Teacher Capacity Development Committee (CTCDC)	Manage teacher capacity development activities for teachers	Efficient and effective communication and involvement in CEMASTEA programs Certification of participants	Support training program at the County
National Level Stakeholders			
MoE	• Develop policies to support teacher capacity development education • Provide funds for INSET	Enhanced competencies of teachers, improved performance and competencies in learners, High uptake of STEM courses in higher learning levels	Adequate, reliable and prompt funding and facilitative policies
TSC	-Teacher management -Release teachers for training	Enhanced competencies of teachers, improved performance and competencies in learners, High uptake of STEM courses in tertiary learning levels	Facilitative policies
SAGAs in Education (KICD, KEMI, KISE, KNEC, KSG, TVETA, KUCCPS, KSEF)	Multi-agency teacher capacity development activities	Collaboration in implementing teacher capacity development and in activities related to their mandates	Collaboration in implementing teacher capacity development activities.
State Law Office:	Legal and governance advice related to INSET Facilitating drafting and submission legal documents	Compliance with the legal frameworks	Timely Legal and governance advice
Judiciary	Dispensation of justice	Compliance with the legal frameworks	Impartial and timely dispensation of justice.
The National Treasury and Economic Planning.	• Disbursement of funds. • Issuance of policy guidelines on Public Finance Management (PFM) and economic planning. • Provision of fiduciary assurance on the usage of public resources	Prudent financial management and timely submission of financial reports.	• Timely disbursement of funds • Approval of budgets • Timely issuance of policy guidelines

STAKEHOLDER	ROLE	STAKEHOLDER EXPECTATIONS FROM CEMASTEA	CEMASTEA'S EXPECTATIONS FROM THE STAKEHOLDER
Media	• Publication of news and information	• Provision of information on STEM-related information.	• Project a positive image of the Centre • Factual, objective and fair reporting.
Kenya National Bureau of Statistics Kenya Institute for Public Policy, Research and Analysis (KIPPRA)	• Generation of national and county-level data and information.	• Requests for data and information	• Provide timely and accurate data and information.
Regulatory agencies (KRA, NEMA, NACOSTI, KEBS, Inspectorate of State Corporations, Office of the Auditor General (OAG) and PPRA.	Provide guidelines and regulations in areas related to their mandate	Compliance and adherence to regulatory requirements	Efficient feedback and approvals
Parliament			
National Assembly and the Senate	• Enactment of legislation • Oversight on usage of public resources • Budget appropriations	• Prudent utilization of public resources. • Adherence and compliance with legal frameworks • Timely response to parliamentary questions.	• Timely legislation in matters related to the Centre's mandate. • Timely approval of a budget
Advisory Agencies			
• State Corporations Advisory Committee (SCAC) • Salaries and Remuneration Commission (SRC).	Issuance of corporate governance guidelines. Advisory and approval of human resource instruments.	• Compliance with corporate standards and principles. • Objective Board of Governors evaluation	• Timely issuance of corporate governance guidelines. • Timely approval of human resource instruments and remuneration guidelines.
• Kenya National Qualification Agency (KNQA)	Coordinates and quality assures qualifications awarded in Kenya.	• Application for accreditation of training programs	• Timely processing of applications and feedback
• Kenya Innovation Agency (KENIA)	Support STEM-based innovations	• Participate in KENIA programs	• Provide a platform for sharing STEM-based innovations and knowledge management
• National Research Fund (NRF)	Funding research and dissemination	• Proposals for research and dissemination forums	• Provide funding

STAKEHOLDER	ROLE	STAKEHOLDER EXPECTATIONS FROM CEMASTEA	CEMASTEA'S EXPECTATIONS FROM THE STAKEHOLDER
Private Sector			
• KEPSA	Funding Programs	• Proposals for funding programs	• Provide funding
• Private Sector	Funding programs	• Proposals for funding programs	• Provide funding
Trade Unions and Associations			
Trade Unions (KNUT, KUPPET)	Defend and articulate the rights of teachers	The welfare of training personnel and trainees,	Support for programs
Heads Associations. (KESSHA, KEPSHA, KPSA, SSHAK, KATTI)	Leadership in school management	Quality training and Improved learning outcomes	Provide a conducive environment in implementing learner-centered pedagogic practices.
Suppliers			
Suppliers	Supply goods and services	Prompt payment for goods and services	Provision of quality goods and services Competitive and market based research for goods and services
Partners			
International Partners			
• Japanese International Cooperation Agency (JICA) • MASHAV, Israel • UNESCO-IICBA • UNSECO-Paris • FAWE regional office • University of Waterloo, Canada • Allan and Gill Gray Philanthropy Rwanda, • MOE, Kenya and South Africa partnership. • System Analysis Program (SAP) Development • African Mathematical Union • African Institute for Mathematical Sciences • Africa Academy of Science • Minesota University	Collaborate in the implementation of partnership programs	Implementation of signed contracts and agreements	Provision of agreed resources.

STAKEHOLDER	ROLE	STAKEHOLDER EXPECTATIONS FROM CEMASTEA	CEMASTEA'S EXPECTATIONS FROM THE STAKEHOLDER
• PHET Colorado, USA • Global Peace Foundation • Oracle • Experimento • Kilimanjaro blind Trust • South-East Asia Ministers of Education – Regional Centre for Science and Mathematics (SEAMEO_RECSAM)			
Local Partners			
• Education Development Trust, Kenya office • ZERAKI, Kenya office • ISTART, • Masinde Muliro University of Science and Technology and Diversity for education institute • Sangyung Enterprises Limited • Global Minimum Inc, • Mwalimu-Plus, Kenya • Junior Achievement – Kenya. • Meru University of Science and Technology • STEM Impact, Kenya, Kenya Medical Training College-Karen, • Tree of life – RISE project • World Bank Secondary Education Quality Improvement Project. • UNICEF – Kenya Office, • British Council – Kenya office • National Museums of Kenya • Kenya Conference for Catholic Bishops • Grace Academy • School Equipment Production Unit (SEPU)			

STAKEHOLDER	ROLE	STAKEHOLDER EXPECTATIONS FROM CEMASTEA	CEMASTEA'S EXPECTATIONS FROM THE STAKEHOLDER
• STEMTRIX East Africa Limited • KODRIS – Africa • Dedan Kimathi University.			
Linkages			
Ministries of education in SMASE-Africa member countries.	Supportive policy environment.	Excellent needs-based programs	Provide leadership, resources and personnel.
SMASE-Africa Country chapters	Implementation of country level programs	Excellent needs-based programs. Share programs	Coordination of programs or projects
Association for the Development of Education in Africa	Continental secretariat for ADEA's Inter-Country Quality Node on Mathematics and Science Education (ICQN-MSE)	Coordination of ICQN-MSE activities and all related projects	Leadership, financial and technical support
AUC's Education, Science, Technology and Innovation	The Co-Chair & Secretariat of the Continental Education Strategy in Africa's Cluster on Science, Technology, Engineering and Mathematics (STEM) education	Coordination of CESA cluster on STEM education and required activities	Leadership, financial and technical support
Partner' Affiliations			
Africa Federation of Teaching Regulatory Authority (AFTRA)	Associate Member	Participation in AFTRA conferences, contribute to policy-making decisions	Timely invitations to events
Teacher Task Force for Education For All (EFA)	Associate member	Participation in the annual Task Force forums	Timely invitations to events
CEMASTEA			
CEMASTEA Board of Management	Provide leadership and resources	Timely delivery of programs Increasing productivity	Strategic leadership in the implementation of center's programs
CEMASTEA staff	Implement training and research activities	Conducive working environment Competitive remuneration	Quality performance of duties and responsibilities

CHAPTER FOUR

STRATEGIC ISSUES, GOALS & KEY RESULT AREAS

STRATEGIC ISSUES, GOALS AND KEY RESULT AREAS

The chapter encapsulates strategic issues identified from the situational analysis, goals aligned to the strategic issues and Key Result Areas which form the thematic areas of the Strategic Plan. Thirteen strategic issues were identified as stipulated in detail in the paragraphs below. The chapter highlights six goals of the Strategic Plan and five Key Result Areas.

4.1 Strategic Issues

Strategic issues identified to enhance STEM education in Kenya entail:

i. Leveraging the high demand for STEM skills.
ii. Accrediting the Centre's training and research programs.
iii. Integrating Teacher Professional Development (TPD) points in the Centre's programs.
iv. Enhancing access, equity, inclusion and gender parity in STEM education
v. Leveraging e-learning technology.
vi. Strengthening capacity to conduct research and knowledge management.
vii. Increasing funding to support implementation of Centre's mandate.
viii. Leveraging the wide pool of development partners and sector stakeholders with interest in STEM education for collaboration and linkages.
ix. Strengthening corporate governance.
x. Leveraging relevant legal and policy frameworks.
xi. Enhancing Centre's brand image and visibility.
xii. Addressing inadequate human resource capacity to deliver the Centre's mandate.
xiii. Strengthening infrastructure to support the senior secondary school pathway & ICT capacity.
xiv. Leveraging automation and digitization.

Strategic issues identified to enhance STEMI education in Africa entail:

i. Developing inclusive policies, strategies and programs for transformation of Science, Technology, Engineering, Mathematics and Innovation (STEMI) education, training and research in Africa
ii. Improving the quality of STEMI training and research in Africa
iii. Reforming curricula to align with industry requirements and cultivating practical skills, fostering problem-solving abilities, and encouraging innovation.
iv. Embracing digitalization and integrating technology into educational practices to enhance learning outcomes and foster innovation in STEMI education in Africa.

v. Strengthening partnerships between academia, industry, and government (STEM Triple Helix) to promote knowledge transfer, technology commercialization, and entrepreneurship
vi. Addressing limited research and knowledge sharing in STEMI fields as this hinders the advancement of cutting-edge discoveries and innovation on the continent.
vii. Leveraging strategic interventions in STEMI education in African countries.

4.2 Strategic Goals

The strategic goals to be achieved during the 2023-2027 plan period are as follows:

1. Enhanced quality of teaching and learning
2. Increased evidence-based body of knowledge on STEM education.
3. Realized stable resource base.
4. Increased partnerships, linkages and collaborations.
5. Enhanced good governance and accountability.
6. Organizational effectiveness and efficiency is realized.
7. Strengthened STEMI education, training and research in Africa.

4.3 Key Result Areas

Table 4.1 details the strategic issues aligned to the goals and Key Result Areas that will be implemented in the Plan period.

Table 4.1: Strategic Issues, Goals and Key Result Areas

Strategic Issue	Goal	KRAs
1. Leverage the high demand for STEM skills. 2. Accredit the Centre's training and research programs. 3. Integrate teacher professional development points in the Centre's programs. 4. Enhance access, equity, inclusion and gender parity in STEM education 5. Leverage e-learning technology	Enhanced quality of teaching and learning	KRA 1: Training and Competence Development
1. Strengthen capacity to conduct research and knowledge management 2. Leverage the high demand for STEM skills. 3. Accredit Centre's training and research programs 4. Enhance access, equity, inclusion and gender parity in STEM education	Increased evidence-based body of knowledge on STEM education.	KRA 2: Research and Knowledge Management.

Strategic Issue	Goal	KRAs
1. Increase funding to support implementation of the Centre's mandate	Realized stable resource base.	KRA 3: Resource Mobilization, Partnerships and Linkages
2. Leverage the wide pool of development partners and sector stakeholders with interest in STEM education for collaboration and linkages.	Increased partnerships, linkages and collaborations.	
1. Strengthen corporate governance. 2. Leverage relevant legal and policy frameworks.	Enhanced governance and accountability.	KRA 4: Governance
1. Enhance Centre's brand image and visibility 2. Inadequate human resource capacity to deliver the Centre's mandate 3. Strengthen infrastructure to support the STEM pathway and ICT capacity. 4. Leverage automation and digitization.	Organizational effectiveness and efficiency is realized.	KRA 5: Organizational strengthening
1. Develop inclusive policies, strategies and programs for transformation of Science, Technology, Engineering, Mathematics and Innovation (STEMI) education, training and research in Africa 2. Improve the quality of STEMI training and research in Africa 3. Reforming curricula to align with industry requirements and emphasize on cultivating practical skills, fostering problem-solving abilities, and encouraging innovation. 4. Embracing digitalization and integrating technology into educational practices to enhance learning outcomes and foster innovation in STEMI education in Africa. 5. Strengthen partnerships between academia, industry, and government (STEM Triple Helix) to promote knowledge transfer, technology commercialization, and entrepreneurship 6. Limited research and knowledge sharing in STEMI fields hindering the advancement of cutting-edge discoveries and innovation. 7. Leverage strategic interventions in STEMI education in African countries.	Strengthened STEMI education, training and research in Africa for innovative transformation .	KRA 6: Enhancing Science, Technology, Engineering, Mathematics and Innovations (STEMI) education.

CHAPTER FIVE

STRATEGIC OBJECTIVES AND STRATEGIES

STRATEGIC OBJECTIVES AND STRATEGIES

Chapter five presents the strategic objectives and strategies aligned to the Key Result Areas. Fourteen strategic objectives are distributed under the five Key Result Areas. Subsequently in each of the strategic objectives, the strategies are outlined to support attainment of the aspirations of the Centre.

5.1 Strategic Objectives

Table 5.1 shows the six Key Result Areas, respective strategic objectives and strategies.

Table 5.1: Strategic objectives and strategies

KRA	Strategic objective(s)	Strategies
KRA 1: Training and Competence Development	1.1 To improve quality and relevance in all training programs	1.1.1 Implementing needs-based training that addresses contemporary issues. 1.1.2 Providing technical support for the implementation of the national STEM strategy and policy. 1.1.3 Promoting creativity and innovation in STEM education. 1.1.4 Promoting Education for Sustainable Development (ESD), particularly climate change actions. 1.1.5 Strengthening school-based teacher support programs.
	1.2: To enhance access, equity, gender parity and inclusivity in all training programs	1.2.1 Increasing training opportunities for all curriculum implementers 1.2.2 Promoting gender responsive pedagogy. 1.2.3 Promoting equity, gender parity and inclusivity in STEM training for teachers 1.2.4 Transform selected SNE schools to model STEM education
	1.3: To increase e-learning utilization and ICT integration in STEM education.	1.3.1 Promoting e-learning and ICT integration among the curriculum implementers of STEM education. 1.3.2 Strengthening the e-learning platforms.
KRA 2: Research, Development and Knowledge Management	2.1: To enhance evidence based STEM education.	2.1.1 Strengthening research capacity in STEM education. 2.1.2 Strengthening the quality of STEM education.
	2.2: To enhance knowledge management base.	2.2.1 Strengthening research knowledge process management hub/repository
KRA 3: Resource mobilization, partnerships and linkages	3.1: To increase center's resource base.	3.1.1 Building resource mobilization capacity 3.1.2 Enhancing business development function 3.1.3 Enhancing resources from government's allocations for strategic interventions.

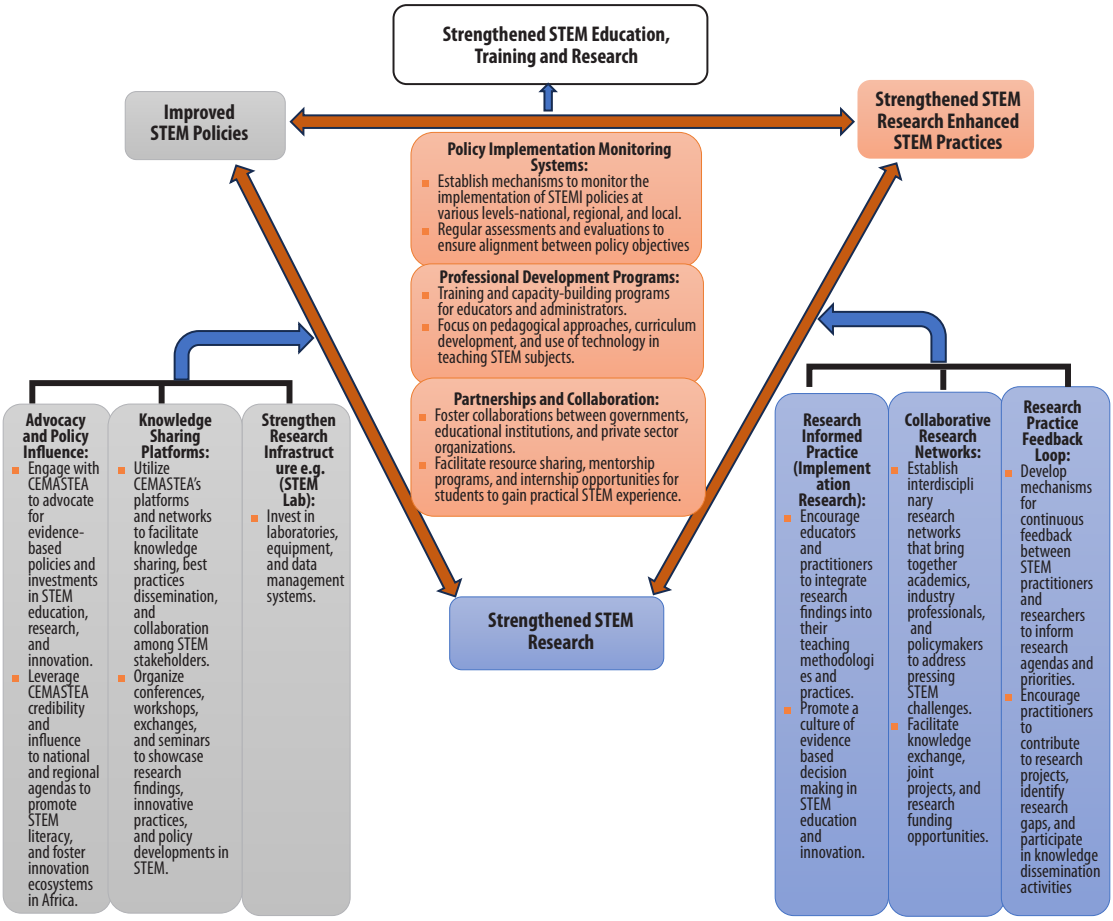
KRA	Strategic objective(s)	Strategies
	3.2 To enhance partnerships and linkages for improved competencies in STEM education.	3.2.1 Expanding partnerships' base for strategic interventions. 3.2.2 Establishing strong linkages 3.2.3 Strengthening consultancy services portfolio
KRA 4: Governance	4.1: To improve corporate governance	4.1.1 Strengthening the capacity of the board of governors 4.1.2 Building capacity at the county committee levels. 4.1.3 Strengthening organizational performance & productivity 4.1.4 Implementing the Mwongozo code of governance for State Corporations and circulars issued by government.
	4.2: To enhance fiduciary assurance	4.2.1 Enhancing the asset management 4.2.2 Improving financial planning, budgeting and utilization. 4.2.3 Strengthening the procurement process. 4.2.4 Enhancing Risk-Based Audit (RBA).
	4.3: To enhance environmental conservation.	4.3.1 Increasing forest cover under the national tree growing and restoration campaign. 4.3.2 Enhancing e-waste management.
KRA 5: Organizational strengthening	5.1: To improve organizational visibility and strengthening effectiveness.	5.1.1: Ensuring compliance to quality management system (QMS) 5.1.2: Strengthening the Centre's corporate brand and visibility. 5.1.3: Strengthening human capital 5.1.4: Improving infrastructural development and maintenance
	5.2: To increase the number of people accessing open resources.	5.2.1: Enhancing digitization of documents and records 5.2.2: Enhancing access and adaptation of teaching and learning resources
	5.3: To enhance automation in key processes.	5.3.1: Automating key processes 5.3.2: Ensuring business continuity 5.3.3: Enhancing safety and security of data & information
KRA 6: Enhancing Science, Technology, Engineering, Mathematics and Innovations (STEMI) education.	6.1 Strengthen CEMASTEA's coordination role in promoting strategic interventions in STEMI education.	6.1.1 Strengthening country chapters in member countries. 6.1.2 Strengthening the continental secretariat functions. 6.1.3 Enhancing CEMASTEA's capacity to serve as an African Centre of excellence in STEMI education.
	6.2 To improve the policy environment that promotes STEMI education.	6.2.1 Reviewing the policy framework for STEMI education and training environment 6.2.2 Integrating diversity and inclusion into STEMI education and training in teacher professional development. 6.2.3 Monitoring of policy environment and training programs continuously.
	6.3 To improve STEMI education and training practices.	6.3.1: Initiating African STEM curriculum reforms for greater relevance and flexibility. 6.3.2: Initiating joint Africa teacher training and development programs.

KRA	Strategic objective(s)	Strategies
		6.3.3 Integrating technology to Africa STEM training practices and pedagogy. 6.3.4 Leveraging technology to scale STEM learning
	6.4 To enhance STEMI research and development and knowledge management.	6.4.1 Improving R&D in Africa STEMI domain to inform STEM policy, practice and research. 6.4.2 Promoting knowledge sharing on innovative STEM practices
	6.5 To strengthen collaboration and partnerships in STEMI education providers, industry leaders and policy makers.	6.5.1 Promoting STEMI awareness and advocacy in Africa 6.5.2 Enhancing global collaborations and partnerships in STEMI policy, research and practice

5.2 The Strategic Intervention Model

Figure 5.1 below shows the strategic intervention model that CEMASTEA seeks to achieve.

Figure 5.1: The Strategic intervention model



CHAPTER SIX

IMPLEMENTATION & COORDINATION FRAMEWORK

IMPLEMENTATION AND COORDINATION FRAMEWORK

The implementation and coordination framework to guide the strategic formulation, implementation, coordination, and execution of the Plan are discussed in chapter six. The chapter details the annual work plan and budget for the Plan period. Moreover, the chapter highlights the performance contracting, institutional framework, staff establishment, skills set, competence development, risk management framework and mitigation measures.

6.1 Implementation Plan

The implementation plan entails actions to be actualized in order to realize the aspirations of the Centre as detailed in the Strategic Plan.

6.1.1 Action Plan

The implementation matrix of the Strategic Plan with annual targets and budget projections are presented in Table 6.1 as Annex 1. The action plan details the strategic issues, strategic goals, key result areas, outcomes, strategic objectives, strategies, key activities, expected outputs, output indicators, five-year and annual targets, annual budget and responsibility for execution of the activities in the Plan.

6.1.2 Annual Work plan and Budget

The annual work plan for the Centre is directly obtainable from the annual targets of the Strategic Plan contained in the implementation framework in Table 6.1. The work plan adopted an activity-based costing in the development of the annual budgets.

Table 6.1: Implementation Matrix and Budget for the Strategic Plan Period

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Strategic issues: (1.) Leverage the high demand for STEM skills; (2.) The need to accredit the Centre's training and research programs; (3.) The need to integrate TPD points in the Centre's programs; (4.) Leverage e-learning technology																
Strategic Goal: Improve quality of teaching and learning																
KRA 1: Training and Competence Development.																
Outcomes: (1.) Improved quality of teaching and learning (2.) Improved relevance of training programs.																
Strategic objective 1.1: To improve quality and relevance in all training programs																
S 1.1.1: Implementing needs-based training that addresses contemporary issues.	1. Review/ Design courses that are needs based from pre-primary to tertiary levels (TTCs)	Modules reviewed/ designed	Number of Training modules reviewed/ designed	25	5	5	5	5	5	20	20	20	20	20	Training Directorate	Finance Procurement Research and administration
	2. Obtain accreditation for CEMASTEA courses	Courses accredited	Number of reports on accredited courses	5	5	-	-	-	-	15	0	0	0	0	Training Directorate	Finance Procurement Research and administration
	3. Conduct training	Teachers trained	Number of teachers trained	300,000	60,000	60,000	60,000	60,000	60,000	1,200	1,200	1,200	1,200	1,200	Training Directorate	Finance Procurement Research and administration
	4. Conduct follow up activities to support teachers and tutors on effective classroom practices	Follow ups conducted	Number of reports on follow ups conducted	5	1	1	1	1	1	18	18	18	18	18	Training Directorate	Finance Procurement Research and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 1.1.2: Providing technical support for the implementation of the National STEM Strategy and Policy	1. Develop implementation framework	Implementation Framework developed	Number of approved frameworks	1	1	-	-	-	-	4	0	0	0	0	Training Directorate	Finance Procurement Research and administration
	2. Operationalize the mplementation framework	Activities in the framework implemented	% of activities implemented	100%	10	10	10	10	10	Funded under the National STEM strategy for secondary & National STEM Policy.					Training Directorate	Finance Procurement Research and administration
	3. Develop/ prepare technical reports on status of implementation of STEM strategy	Technical reports provided	Number of technical reports	5	1	1	1	1	1	2	2	2	2	2	Training Directorate	Finance Procurement Research and administration
S 1.1.3: Promoting creativity and innovation in STEM education	1. Provide technical support to establish STEM clubs, innovations, patenting and commercialization.	STEM model Schools supported to establish STEM Clubs and innovation hubs	Number of STEM model Schools supported to establish STEM Clubs and innovation hubs	103	21	21	21	20	20	42	42	40	40	40	Training Directorate	Finance Procurement Research and administration
	2. Implement STEM mentorship, outreach and career guidance programs for in-school and out-of-school youth.	STEM mentorship, outreach and career guidance Program implemented	Number of STEM mentorship, outreach and career guidance sessions undertaken	50	10	10	10	10	10	16	16	16	16	16	Training Directorate	Finance Procurement Research and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	3. Develop indigenous STEM knowledge manual	Indigenous STEM knowledge manual developed	Number of indigenous STEM knowledge manuals developed	1	-	1	-	-	-	0	8	0	0	0	Training Directorate	Finance Procurement Research and administration
S 1.1.4: Promoting Education for Sustainable Development (ESD), particularly climate change actions.	1. Provide technical support for implementation of ESD projects in schools	Schools supported to implement ESD projects	Number of schools supported	103	21	21	21	20	20	4	4	4	4	4	Training Directorate	Finance Procurement Research and administration
	2. Mitigate climate change by distributing seeds and seedlings	Trees and seedlings distributed	Number of trees and seedlings distributed	1,250,000	250,000	250,000	250,000	250,000	250,000	2.6	2.5	2.5	2.5	2.5	Training Directorate	Finance Procurement Research and administration
S 1.1.5: Strengthening school -based teacher support	1. Develop implementation framework for establishing lesson study model schools	Implementation framework for lesson study model schools established	Number of frameworks	1	1	-	-	-	-	4	0	0	0	0	Training Directorate	Finance Procurement Research and administration
	2. Implement the framework	Schools supported to model lesson study	Number of Schools supported	168	-	47	47	47	47	0	8	8	8	8	Training Directorate	Finance Procurement Research and administration
	3. Train QASOs and school leaders on pedagogical leadership including remedial interventions in learning	School leadership trained	Number of school leaders trained	10,000	-	3000	4000	3000	0	0	30	40	30	0	Training Directorate	Finance Procurement Research and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
		QASOs sensitized	Number of QASOs sensitized	1,050	350	-	350	-	350	33	0	33	0	33	Training Directorate	Finance Procurement Research and administration
Outcomes: (1.) Increased access to training programs; (2.) Increased inclusivity in training programs																
Strategic objective 1.2: To enhance access and inclusivity in all training programs																
S 1.2:1 Increasing training opportunities for all curriculum implementers	1. Conduct training for all curriculum implementers (CTCDC members, SCDE, Laboratory Technicians)	Training modules developed	Number of approved training modules developed	15	3	3	3	3	3	12	12	12	12	12	Training Department	Finance Procurement Research and administration
		Curriculum implementers trained	Number of curriculum implementers trained	20,000	-	5,000	5,000	5,000	5,000	0	100	100	100	100	Training Department	Finance Procurement Research and administration
S 1.2.2: Promoting gender responsive pedagogy	1. Train gender responsive pedagogies champions in ASAL and urban slums	Gender responsive pedagogies Champions trained	Number of gender responsive pedagogy champions trained	400	-	100	100	100	100	0	2	2	2	2	Training Directorate	Finance Procurement Research and administration
S 1.2.3: Promoting equity, gender parity and inclusivity in STEM training for teachers	1. Conduct training needs assessment to establish equitable needs in STEM education.	TNA Report	Number of TNA reports.	1	-	1	-	-	-	0	8	0	0	0	Training Directorate	Finance Procurement Research and administration
	2. Develop training module	Training modules developed	Number of approved modules developed	4	-	1	1	1	1	0	4	4	4	4	Training Directorate	Finance, procurement and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	3. Train teachers	Teachers trained	Number of teachers trained	160	-	40	40	40	40	0	0.8	0.8	0.8	0.8	Training Directorate	Finance Procurement Research and administration
S 1.2.4: Transform selected SNE schools to model STEM education.	1. Conduct baseline survey on selected SNE schools	Baseline survey report	Number of baseline survey reports	1	-	1	-	-	-	0	25.68	0	0	0	Training Directorate	Finance Procurement Research and administration
	2. Establish SNE STEM Model schools	SNE STEM model schools established	Number of SNE transformed into STEM model schools	10	-	0	10	10	10	0	0	30	30	30	Training Directorate	Finance Procurement Research and administration
Outcomes: (1.) Increased enrollment of teachers in STEM e-learning; (2.) Increased satisfaction with STEM e-learning among curriculum implementers.																
Strategic objective 1.3: To increase e-learning utilization and ICT integration in STEM education.																
S 1.3.1: Promoting e-learning and ICT integration among the curriculum implementers of STEM education.	1. Develop and upload digital teaching and learning resources	Digital teaching and learning resources developed and uploaded	Number of digital teaching and learning resources developed and uploaded	80	16	16	16	16	16	8	8	8	8	8	Training Directorate	Finance Procurement Research and administration
	2. Develop and upload courses in the CEMASTEA portal	Courses developed and uploaded	Number of approved courses developed and uploaded	5	1	1	1	1	1	4	4	4	4	4	Training Directorate	Finance Procurement Research and administration
			Number of teachers trained	40,000	0	10,000	10,000	10,000	10,000	0	70	73.5	77	80.5	Training Directorate	Finance Procurement Research and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 1.3.2: Strengthening the e-learning platform	1. Establish smart classrooms at CEMASTEA and selected schools	Smart classroom established	Number of Smart classrooms established	28	4	8	8	8	-	8	16	16	16	0	Training Directorate	Finance Procurement Research and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Strategic issues: (1.) Inadequate capacity to conduct research and knowledge management; (2.) Leverage the high demand for STEM skills; (3.) The need to accredit Centre's training and research programs.																
Strategic Goal: Increase evidence-based body of knowledge in STEM education																
KRA 2: Research and Knowledge Management																
Outcomes: (1.) Increased awareness and utilization of research products by curriculum implementers; (2.) Increased number of STEM related innovations / courses developed based on research findings; (3.) Increased number of research products published.																
Strategic Objective 2.1: To enhance evidence based STEM education																
S 2.1.1: Strengthening research capacity in STEM education	1. Register CEMASTEA as a research Institution	CEMASTEA Registered as a research Institution	Number of registration certificates.	1	1	-	-	-	-	1.5	1.55	0	0	0	CEO,RD&KM	Finance
	2. Build staff capacity in research skills	Staff trained as researchers	Number of staff trained	100	40	40	20	-	-	2.37	2.49	1.18	0	0	CEO, RD&KM	Human Resource, Procurement
	3. Develop the research and development framework	Research and development framework developed.	Number of approved research and development frameworks.	2	1	-	1	-	-	5.813	0	2.5	0	0	CEO,RD&KM	Finance
	4. Operationalize the research and development framework	The research and development framework operationalized.	Number of implementation report.	5	1	1	1	1	1	0.5	0,5	0.5	0.5	0.5	CEO, RD&KM	Finance
S 2.1.2: Strengthening the quality of STEM education	1. Conduct educational research.	Research conducted in education	Number of research reports	20	4	4	4	4	4	24.46	25.68	26.97	28.32	29.73	CEO, RD&KM	Finance
	2. Conduct collaborative educational research	Collaborative researches conducted.	Number of collaborative research reports	20	-	4	5	5	6	0	6.111	6.417	6.737	7.074	CEO, RD&KM	Finance and P&L
	3. Provide consultancy in research and knowledge management	Research consultancy services provided	Number of research consultancy services reports	10	2	2	2	2	2	15	2.5	2.575	2.65	2.73	CEO, RD&KM	Finance and P&L
	4. Prepare research practice and policy briefs	Research practice and policy briefs prepared	Number of research practice and policy briefs	5	1	1	1	1	1	5.32	5.59	5.87	6.16	6.47	CEO, RD&KM	Finance

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	5. Disseminate research practice and policy briefs	Research practice and policy briefs disseminated	Number of research products disseminated: articles, books, symposia and confers	20	4	4	4	4	4	50.92	53.46	56.14	58.94	61.89	CEO, RD&KM	Finance
Outcomes: Increased access to research products.																
Strategic Objective 2.2: To enhance knowledge management base.																
S 2.2.1. Strengthening research knowledge process management hub / repository	1. Develop and operationalize knowledge management framework	Knowledge management framework developed and operationalized	Number of approved knowledge management frameworks	3	1	-	1	-	1	5.35	0	5.51	0	5.68	CEO, RD&KM	Finance
	2. Capacity build staff on knowledge management	Staff capacity on knowledge management built.	Number of staff trained.	100	40	40	20	-	-	2.37	2.49	1.18	0	0	CEO, RD&KM	Finance, HR
	3. Develop the Knowledge hub / repository	Knowledge hub / repository developed	Number of operational knowledge / hub repositories.	5	1	1	1	1	1	5.97	1.5	1.6	2.32	1.7	CEO, RD&KM	Finance Research and administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Strategic Issue 1: The need to increase funding to support the implementation of the Centre's mandate																
Strategic Goal: Realize a stable resource base																
KRA 3: Resource mobilization, partnerships and linkages																
Outcome: Increased revenue and in-kind resources.																
Strategic Objective 3.1: To increase Centre's resource base.																
S 3.1.1: Building resource mobilization capacity	1. Determine Centre's annual resource needs.	Repository of institutional resource requirements.	Number of reports on institutional resource needs.	5	1	1	1	1	1	0.28	0.29	0.3	0.31	0.32	Business Development Committee	C.E.O, Finance, Procurement, Estates, Hospitality
	2. Develop the resource mobilization strategy	Resource mobilization strategy developed.	Number of approved resource mobilization strategies	3	1	-	1	-	1	1.43	0	1.43	0	1.43	Business Development Committee	C.E.O, Finance, Procurement
	3. Build capacity and create awareness on resource mobilization	Staff capacity built and awareness created.	Number of staff sensitized / trained.	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	Business Development Committee	C.E.O, Finance, Procurement, HR
S 3.1.2: Enhancing business development function	1. Establish and operationalize the business enterprise function	Business enterprise function established.	Number of approved reports on operationalization of the business enterprise function.	5	1	1	1	1	1	4.01	10.02	6.01	6.19	6.38	Business Development Committee	C.E.O, Finance, Procurement, Estates, Hospitality
	2. Develop proposals and concept notes for increased funding.	Proposals and concept notes developed	Number of approved proposals	10	2	2	2	2	2	0.28	0.85	0.85	0.85	0.28	Business development committee	C.E.O, Finance,
	3. Improve Meetings, Incentives, Conferencing and Exhibition (MICE) facilities.	Additional rooms for accommodation, conferencing and catering facilities available for MICE.	Percentage change in the number of rooms for accommodation, conferencing and catering facilities available for MICE	100	43	20	13	13	11	5	14	4	4	3	Business Development Committee	C.E.O, Finance, Procurement, Estates, Hospitality

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	4. Determine the Centre's digital resources with potential for subscription.	Repository of digital resources for subscription determined.	Number of reports on digital resources for subscription.	5	1	1	1	1	1	0.8	0.4	0.4	0.2	0.2	Business Development Committee	CEO Training, R&D ICT support services
	5. Operationalize subscription to the Centre's digital resources	Subscription to the Centre's digital resources operationalized.	Number of reports on additional revenue generated from digital resource subscriptions	5	1	1	1	1	1	0.8	0.4	0.4	0.2	0.2	Business Development Committee	CEO Training ICT support services
S 3.1.3: Enhancing resources from government's allocations for strategic intervention.	1. Identify strategic interventions	Centre's strategic interventions identified	Number of reports on strategic interventions identified and implemented.	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Finance officer	CEO All relevant departments
	2. Secure funding for identified strategic interventions through MTEF.	Amount of Ksh secured for implementation of strategic interventions.	Number of reports on amount in Ksh for implementation of strategic interventions.	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Finance officer	CEO All relevant departments
Strategic Issue 2: Leveraging the wide pool of development partners and sector stakeholders with interest in STEM education for collaboration and linkages.																
Strategic Goal: Increase partnerships, linkages and collaborations.																
KRA 3: Resource mobilization, partnerships and linkages																
Outcome: (1.) Increased number of partnership and linkages; (2.) Increased number of consultancies. (3) Enhanced continental presence and implementation of strategic interventions.																
Strategic Objective 3.2: To enhance partnership and linkages for improved competencies in STEM education																
S 3.2.1: Expanding partnerships base for strategic interventions.	1. Develop a data base of potential partners.	A database of potential partners developed.	Number of reports on databases of potential partners	5	1	1	1	1	1	1.43	1.47	1.57	1.62	1.73	Partnership and Linkages	C.E.O Finance,
		Reviews of the databases of potential partners	Number of review reports of the databases of potential partners	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Partnership and Linkages	C.E.O Finance,

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	2. Develop a partnership engagement framework	Partnership and linkages engagement framework developed.	Number of approved partnerships and linkages engagement frameworks.	3	1	-	1	-	1	1.43	0	1.571	0	1.732	Partnership and Linkages	C.E.O Finance,
	3. Establish collaborative partnerships programs	Collaborative partnerships programs established.	Number of reports on collaborative partnership programs.	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Partnership and Linkages	C.E.O. Finance,
S 3.2.2: Establishing strong linkages.	1. Organize advocacy and networking forums.	Advocacy and networking forums organized	Number of reports on forums organized	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Partnership and Linkages	C.E.O, Finance.
	2. Carry out benchmarking activities on best practice.	Benchmarking activities carried out.	Number of reports on benchmarking activities undertaken.	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Partnership and Linkages	C.E.O Finance, Training
	3. Establish relevant linkage.	Linkage established.	Number of reports on linkages established.	2	-	-	1	-	1	0	0	1.57	0	1.73	Partnership and Linkages	C.E.O Finance, Training
S 3.2.3: Strengthening consultancy service' portfolio.	1. Review consultancy service frameworks and guidelines.	Consultancy service framework and guidelines reviewed.	Number of approved consultancy framework and guidelines	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	Business development committee	C.E.O, Finance, Training
	2. Develop consultancy proposals.	Consultancy proposals developed.	Number of proposals developed and submitted.	10	2	2	2	2	2	2.5	2.58	2.65	2.73	2.81	Business development committee	C.E.O, Finance, Training

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Strategic issues: (1.) Need to strengthen corporate governance; (2.) Leverage relevant legal and policy frameworks.																
Strategic Goals: Enhance good governance and accountability.																
KRA 4: Governance																
Outcome: Improved organizational performance																
Strategic objectives 4.1: To improve corporate governance																
S 4.1.1: Strengthening the capacity of the Board of Governors	1. Induction on various functions of the board	Members of the Board inducted	Number of trainings sessions	10	2	2	2	2	2	3.6	3.71	3.82	3.93	4.05	CEO	Finance
	2. Undertake stakeholder engagements	Stakeholder engagements undertaken	Number of reports on stakeholder engagements	10	2	2	2	2	2	1.8	1.89	1.99	2.08	2.189	CEO Procurement	Finance
	3. Develop a monitoring and evaluation system	An M&E system for monitoring implementation of the strategic plan developed	Number of M&E frameworks approved.	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	CEO and Strategic Implementation Committee of the Board	Strategic Implementation Committee of the Centre.
	4. Conduct impact assessment on the implementation of the strategic plan.	Impact assessment on implementation of SP conducted	Number of impact assessment reports conducted	5	1	1	1	1	1	1.43	1.5	2.57	2.65	2.73	CEO and Strategic Implementation Committee of the Board	Strategic Implementation Committee of the Centre.
S 4.1.2: Building capacity at the county committee levels	1. Train County Teacher Capacity Development Committee on their roles and prudent financial management	Members of the CTCDC inducted	Number of reports on CTCDC members inducted	5	1	1	1	1	1	5.3	5.35	5.5	5.7	5.9	Field Services	CEO, Training, Research, Finance, Procurement, Internal Audit, Administration
	2. Align the Teacher professional development (TPD) handbook to emerging strategic issues	Reviewed TPD handbook	Number of approved TPD handbook.	2	1	-	1	-	-	1.43	0	3.85	0	0	Field Services	CEO, Finance, Procurement, Internal Audit, Administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 4.1.3: Strengthening organizational performance & productivity	1. Implement performance contract	Annual PC targets implemented	Number of evaluation reports on targets achieved	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	PC coordinator	All process owners
	2. Determine productivity indices	Annual productivity indices determined	Number of evaluation reports on productivity index	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	PC coordinator	All process owners
S 4.1.4: Implementing the Mwongozo code of governance for State Corporations and circulars issued by government.	1. Implement the functions of the Board of Directors as stipulated in Mwongozo	Functions of the board of directors fully implemented	Percentage of compliance	100%	100%	100%	100%	100%	100%	1.8	1.89	1.99	2.08	2.19	CEO	Management
	2. Conduct the recommended number of Board meetings	Board meetings conducted	Number of board meetings conducted	20	4	4	4	4	4	1.8	1.89	1.99	2.08	2.19	CEO	Management
Outcomes: (1.) Effective and efficient financial management processes; (2.) Effective and efficient supply chain processes; (3.) Enhanced business continuity.																
Strategic objectives 4.2: To enhance fiduciary assurance																
S 4.2.1: Enhancing the asset management	1. Develop and review asset management policy	Asset management policy developed and reviewed	Number of asset management policies approved	2	1	-	-	-	1	0.95	0	0	0	1.21	Asset committee chair	Management
	2. Maintain an updated asset register	Updated asset register maintained	Number of updated assets registers	5	1	1	1	1	1	0.95	1	1.05	1.1	1.16	Asset committee chair	Management
S 4.2.2: Improving financial planning, budgeting and utilization.	1. Develop, review and operationalize the financial management manual	Financial management manual developed, reviewed and implemented	Number of approved financial management manuals reviewed and implemented	3	-	1	-	1	1	-	0.98	0	1.04	1.07	Finance Officer	Management
	2. Upgrade and operationalize the enterprise resource planning system modules	ERP system reviewed and implemented	Number of reports on modules implemented	5	1	1	1	1	1	0.2	0.21	0.22	0.23	0.24	Finance Officer	Management

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 4.2.3: Strengthening the procurement process.	1. Develop and operationalize the procurement manual	Procurement manual implemented	Number of approved procurement manual	1	1	-	-	-	-	0.95	0	0	0	0	Supply chain officer	Management
		Trained staff on the supply chain management	Number of staff trained	500	100	100	100	100	100	8.3	8.45	8.65	8.7	8.9	Supply chain officer	Management
	2. Review and operationalize the procurement enterprise resource planning module.	Procurement enterprise resource planning module implemented	Number of reports on the implementation of the enterprise resource planning module	5	1	1	1	1	1	3.1	3.15	3.2	3.35	3.65	Internal auditor	Management
S 4.2.4: Enhancing Risk Based Audit (RBA)	1. Establish and operationalize an audit Enterprise Risk Management (ERM) policy framework.	Enterprise Risk Management Policy framework established and operationalized.	Number of risk-management policy established.	5	1	1	1	1	1	11.65	11.67	11.7	11.73	11.77	Internal auditor	Management
		Risk based audit conducted	Number of reports on risk based audit conducted	3	1	0	1	-	1	0.11	0	0.12	0	0.12	Internal auditor	Management
		Train staff on audit process	Number of staff trained	500	100	100	100	100	100	8.3	8.45	8.65	8.7	8.9	Internal auditor	Management
	2. Train the CTCDC members on audit procedures.	CTCDC members trained	Number of reports on CTCDC members trained.	3	1	0	1	0	1	0.11	0	0.12	0	0.12	Internal auditor	Management
Outcome: Enhanced environmental conservation.																
Strategic objectives 4.3: To enhance environmental conservation.																
S 4.3.1: Increasing forest cover under the national tree growing and restoration campaign.	1. Develop an action plan framework	Approved framework	Number of progress reports	5	1	1	1	1	1	0.95	1	1.05	1.1	1.16	SHE committee	Management
	2. Distribution of seedlings to schools and communities	Tree seedlings distributed to schools and communities	Number of reports on tree seedlings survival rate	1,250,000	250,000	250,000	250,000	250,000	250,000	1.43	1.5	1.57	1.65	1.73	SHE committee	Management

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 4.3.2: Enhancing e-waste management.	1. Conduct a feasibility study on e-waste management.	E-Waste feasibility study conducted	Number of approved feasibility study reports	2	1	-	1	-	-	5.82	0	6.42	0	0	Head ICT	Finance, research and training.
	2. Develop and implement an e- waste management plan	E-waste management plan implemented	Number of approved reports on e-waste management	5	1	1	1	1	1	5	0.1	0.11	0.11	0.12	Head ICT	CEO, finance, procurement, internal audit, administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Strategic issues: (1.) The need to enhance Centre's brand image and visibility; (2.) Inadequate human resource capacity to deliver the Centre's mandate; (3.) The need to strengthen infrastructure to support the Senior Secondary School (SSS) pathway and ICT capacity; (4.) Leverage automation and digitization.																
Strategic goal: Realize organizational effectiveness and efficiency.																
KRA 5: Organizational strengthening																
Outcomes: (1.) Improved organizational effectiveness; (2.) Improved customer satisfaction; (3.) Improved corporate brand; (4.) Strengthened corporate brand; (5.) Optimal staff establishment; (6.) Improved staff performance; (7.) Conducive training environment.																
Strategic Objective 5.1: To improve organizational visibility and strengthening effectiveness.																
S 5.1.1: Ensuring compliance to Quality Management System (QMS)	1. Implement the ISO standard on information security management system	Process owners trained on ISO/ IEC 27001:2013 on information security management system.	Number of process owners trained	70	25	25	20	-	-	3	3.2	3.25	0	0	ISO/MR	Finance, HR
	2. Implement the ISO 22301 standard on business continuity management	Process owners trained on ISO 22301 business continuity management	Number of process owners trained	70	25	25	20	-	-	3	3.2	3.25	0	0	ISO/MR	Finance, HR
	3. Implement the ISO standard on information security management system	Procedures on ISO/IEC 27001:2013 approved and implemented	Number of approved procedures on information security management system developed	95	19	19	19	19	19	2.7	2.78	2.86	2.95	3.04	ISO/MR	CEO, Finance, Process owners
	4. Implement the ISO 22301 standard on Business Continuity Management	Business continuity plans approved and implemented.	Number of approved business continuity plans.	95	19	19	19	19	19	2.7	2.78	2.86	2.95	3.04	ISO/MR	CEO, Finance, Process owners
	5. Implement the ISO standard on information security management system	Internal quality audits on ISO / IEC 27001:2013 implemented.	Number of report on internal quality audits on information security management system.	10	2	2	2	2	2	5	5.25	5.5	5.9	6.2	ISO/MR	CEO, Finance, Process owners
	6. Implement an integrated quality management system	External audits on integrated quality management system By the Kenya Bureau of Standard implemented.	Number of reports on external quality audits on integrated quality management system by KEBS conducted	10	2	2	2	2	2	1.7	1.8	1.85	1.9	1.95	ISO/MR	CEO, Finance, Process owners

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	7. Implement an integrated quality management system in all functions	Internal quality audits on integrated quality management system conducted.	Number of ISO standards implemented	12	1	2	3	3	3	5	5.25	5.5	5.9	6.2	ISO/MR	CEO, Finance, Process owners
S 5.1.2.: Strengthening the centers corporate brand and visibility	1. Develop and Implement a brand guideline manual to promote the Centre's identity	Brand guideline manual developed and implemented	Number of approved brand guideline manual	2	1	0	1	0	0	0.5	0	0.53	0	0	Communication Dept. Management	CEO
		Implementation reports documented	Number of reports on the implementation of the brand guideline manual	5	1	1	1	1	1	0.5	0.52	0.53	0.55	0.56	Communication Dept. Management	CEO
		Staff trained and sensitized	Number of staff trained	560	100	100	120	120	120	0.5	0.52	0.53	0.55	0.56	Communication Dept. Management	CEO
	2. Develop and update promotional materials to strengthen the brand image.	Branded promotional materials developed and updated	Number of catalogue of promotional materials developed and updated	5	1	1	1	1	1	1.1	1.16	1.21	1.27	1.34	Communication Dept. Management Consultant	CEO
	3. Production of print publications to enhance the visibility of the Centre's activities	Enhanced visibility through print publications	Number of report on produced print publications	5	1	1	1	1	1	1.2	1.32	1.45	1.6	1.7	Communication Dept.	CEO
	4. Production of electronic publications to enhance the visibility of the Centre's activities	Enhanced visibility through electronic publications	Number of reports on produced electronic publications	5	1	1	1	1	1	3.36	3.72	4	4.4	4.8	Communication Dept. Heads of Departments.	CEO
	5. Engage external media in publicity of the Centre's activities	Enhanced visibility of the Centre's activities	Number of reports on external media appearances	5	1	1	1	1	1	0.2	0.22	0.24	0.28	0.3	Communication Dept. Management	CEO
		Articles published in the external media	Number of reports on articles published in the external media	5	1	1	1	1	1	0.2	0.22	0.24	0.28	0.3	Communication Dept. Management	CEO
	6. Publicize Center's activities through digital media platforms	Increased social media presence	Number of reports on digital media analytics	5	1	1	1	1	1	0.42	0.46	0.5	0.55	0.65	Communication Dept.	CEO & Head of Departments

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	7. Develop and Implement a Corporate, Social Responsibility (CSR) policy	CSR policy implemented	Number of approved CSR policies	1	1	-	-	-	-	1.5	0	0	0	0	Communication Dept.	CEO & Management
S 5.1.3. Strengthening human capital	1. Operationalize a human resource manual for departments and sections	Human resource guide implemented	Number of approved human resource guide	1	1	-	-	-	-	2.056	0	0	0	0	HR	CEO, Finance, Heads of departments
		Train staff on the Human resource manual	Number of staff trained	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Heads of departments
	2. Recruitment of key staff	Staff recruited	Number of recruited staff	120	20	30	20	40	10	20.7	31.2	20.7	41.5	10.4	HR	CEO, Finance, Heads of departments
	3. Operationalize the scheme of service.	Scheme of service operationalized.	Number of reports on operationalized scheme of service	5	1	1	1	1	1	124.7	131	137.5	144.38	151.6	HR	CEO, Finance, Top management
	4. Develop and operationalize the staff performance management policy in line with the existing regulatory framework	Develop the staff performance management policy	Number of approved performance management policies	1	1	-	-	-	-	3.07	0	0	0	0	HR	CEO, Finance, Top management, Heads of departments
		Implement the staff performance management policy	Number of staff performance policies implemented	5	1	1	1	1	1	3.07	0.5	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments
	5. Conduct staff skills gap, training needs assessment and staff training.	Staff skills gap matrix developed	Number of skills gap matrix reports	5	1	1	1	1	1	13.04	11.88	12.8	15.9	15	HR	CEO, Finance, Top management, Heads of departments, All staff
		Training needs assessment (TNA) conducted	Number of TNA reports	5	1	1	1	1	1	13.04	11.88	12.8	15.9	15	HR	CEO, Finance, Top management, Heads of departments
		Staff trained	Number of staff trained	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Top management, Heads of departments

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	6. Develop and operationalize corporate culture framework leveraging on the national values of governance and labor laws.	Corporate culture framework developed	Number of approved corporate culture frameworks	1	-	-	1	0	0	0	3.07	0	0	0	HR	CEO, Finance, Top management, Heads of departments
		Corporate culture framework developed	Number of reports on implemented corporate culture frameworks	4	-	1	1	1	1	0	0.5	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments
		Staff trained on the corporate culture framework	Number of staff trained on the corporate culture framework	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Top management, Heads of departments
	7. Develop a change management policy to operationalize organizational change	Change management policy developed.	Number of approved change management policies	1	1	-	-	-	-	4.07	0	0	0	0	HR	CEO, Finance, Top management, Heads of departments
		The change management policy implemented	Number of reports on implemented change management policies	5	1	1	1	1	1	3.07	0.5	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments
		Staff trained on the change management policy	Number of staff trained on the change management policy	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Top management, Heads of departments
	8. Develop and operationalize succession and knowledge management guidelines.	Succession and knowledge management guidelines developed.	Number of approved succession and knowledge management guidelines	1	-	1	-	-	-	0	3.06	0	0	0	HR	CEO, Finance, Top management, Heads of departments
		Succession and knowledge management guidelines implemented.	Number of reports on implemented succession and knowledge management guidelines	5	1	1	1	1	1	3.07	0.5	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
		Staff trained on succession and knowledge management guidelines.	Number of staff trained on succession and knowledge management guidelines.	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Top management, Heads of departments
	9. Develop & operationalize an employee safety, benefits, wellness and welfare policy leveraging on Occupational safety and health act	An employee safety, benefits, wellness and welfare policy developed	Number of approved employee, safety, benefits, wellness and welfare policies.	5	1	1	1	1	1	3.07	7.54	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments
		Implement an employee safety, benefits, wellness and welfare policy	Number of reports on implemented employee, safety, benefits, wellness and welfare policy.	5	1	1	1	1	1	3.07	0.5	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments
		Staff trained on employee safety, benefits, wellness and welfare policy	Number of staff trained on employee, safety, benefits, wellness and welfare policy.	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Top management, Heads of departments
	10. Develop and operationalize the human resource enterprise resource planning	The human resource enterprise resource planning developed and operationalized.	Number of approved modules on the HR ERP	5	1	1	1	1	1	1.5	1.04	1.07	1.1	1.13	HR Finance ICT Supply chain	CEO,
		HR Enterprise Resource Planning module implemented	Number of reports on HR modules implemented in the ERP	5	1	1	1	1	1	3.07	0.5	0.54	0.57	0.6	HR	CEO, Finance, Top management, Heads of departments
		Staff trained on the HR Enterprise Resource Planning.	Number of staff trained on the HR modules in the ERP	500	100	100	100	100	100	2.7	3.1	3.2	3.3	3.4	HR	CEO, Finance, Top management, Heads of departments
S 5.1.4: Improving infrastructural development and maintenance	1. Audit the status of infrastructure, equipment and materials of the Centre	Status of infrastructure, equipment and materials audited.	Number of audit reports on infrastructure and equipment.	3	1	-	1	-	1	0.05	0.05	0.06	0.06	0.06	Estates Officer	CEO Finance and Procurement

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	2. Refurbish/ upgrade the Centre's infrastructure, equipment's and materials	Refurbished/ upgraded infrastructure equipment and materials	Number of reports on refurbished/ upgraded infrastructure equipment's and materials.	5	1	1	1	1	1	27.63	38.93	34.93	15.6	5.6	Estates Officer	CEO Finance and Procurement
Outcome: Increased number of people accessing open resources.																
Strategic objectives 5.2: To increase the number of people accessing open resources.																
S 5.2.1: Enhancing digitization of documents and records	1. Establish and operationalize a digitization system of records and documents	Digitalization system of records and documents operationalized	Number of reports on digitized records and documents	5	1	1	1	1	1	5	5.25	5.51	5.79	6.08	Head ICT	Management
S 5.2.2: Enhancing access and adaptation of teaching and learning resource	1. Reengineer the repository system to enable monetization of resources and user friendliness	Reengineered repository system	Number of reports on revenue generated and usage	5	1	1	1	1	1	5	0.2	0.21	0.22	0.23	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
Outcomes: (1.) Enhanced automation of key processes; (2.) Average turnaround time for key processes.																
Strategic objectives 5.3: To enhance automation in key processes.																
S 5.3.1: Automating key processes	1. Establish user requirements for key processes	User requirements of key processes established	Number of lists for documented requirements of key processes	5	1	1	1	1	1	10	10.5	11.03	11.58	12.16	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	2. Procure and install appropriate automation software and hardware for key processes	Appropriate automation hardware for key processes installed	Number of reports on hardware for automated key processes installed	5	1	1	1	1	1	10	10.5	11.03	11.58	12.16	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
S 5.3.2: Ensuring business continuity	1. Install appropriate automation hardware for key processes.	Appropriate automation software for key processes installed	Number of reports on software for automated key processes installed	5	1	1	1	1	1	10	10.5	11.03	11.58	12.16	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	2. Develop and implement the ICT policy	ICT policy developed	Number of reports on implementation of ICT policy	5	1	1	1	1	1	10	10.5	11.03	11.58	12.16	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
	3. Develop and implement the ICT strategy	ICT Strategy implemented	Number of reports on implementation of the ICT strategy	5	1	1	1	1	1	10	10.5	11.03	11.58	12.16	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	4. Subscribe to cloud services	Subscription to cloud services.	Number of reports on accessed documents	5	1	1	1	1	1	1.05	1.103	1.158	1.216	1.276	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
S 5.3.3: Enhancing safety and security of data & information	1. Develop an interactive and user friendly website	Interactive and user friendly website developed	Number of reports on visits, viewers and subscriptions	5	1	1	1	1	1	3	3.09	3.18	3.28	3.38	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	2. Develop and implement the information security policy	Information security policy implemented	Number of reports on the implementation of the security policy	5	1	1	1	1	1	5	0.1	0.11	0.11	0.12	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	3. Compliance with data protection laws	Data protection laws implemented	Number of Non-Disclosure Agreements (NDAs) signed	5	1	1	1	1	1	5	0.1	0.105	0.11	0.116	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	4. Procure and install relevant hardware for data protection	Hardware for data protection installed	Number of reports on hardware installed	5	1	1	1	1	1	2	2.1	2.205	2.315	2.431	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration
	5. Procure and install relevant software for data protection	Software for data protection installed	Number of reports on software installed	5	1	1	1	1	1	2	2.1	2.205	2.315	2.431	Head ICT	CEO, Finance, Procurement, Internal Audit, Administration

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Strategic issues: Leverage strategic interventions in STEMI education in African countries.																
Strategic goal: Strengthened STEMI education, training and research in Africa for innovative transformation.																
KRA 6: Enhancing Science, Technology, Engineering, Mathematics and Innovations (STEMI) education through fostering relevant policies, research, networking, collaboration, advocacy and capacity building in Africa.																
Outcomes: (1.) Strengthened CEMASTEA's coordination role in promoting strategic interventions in STEMI education, (2.) Increased number of functional country chapters.																
Strategic Objective 6.1: Strengthen CEMASTEA's coordination role in promoting strategic interventions in STEMI education.																
S 6.1.1: Strengthening country chapters in member countries.	1. Prepare a framework for member countries to conduct a SWOT analysis on functionality of chapters	A framework for member countries to conduct a SWOT analysis on functionality of chapters prepared	Approved framework	1	-	1		-	-	0	1.18	0	0	0	CEMASTEA	CEO
	2. Develop interventions based on SWOT analysis reports from member countries	Interventions based on SWOT analysis reports from member countries developed	Number of reports on interventions based on SWOT analysis from member countries developed	3			1	1	1		0	1.18	1.22	1.25	CEMASTEA	CEO
	3. Monitor and support operationalization of country chapters	Operationalization country chapters supported	Number of reports on countries that have operational country chapters	4	-	-	1	1	1		1.18	1.22	1.25	1.29	CEMASTEA	CEO
S 6.1.2: Strengthening the continental secretariat functions	1. Review guidelines for provision of secretariat functions	Guidelines for provision of secretariat functions reviewed.	Number of approved guidelines	2	1	1		-	-	1.43	0	1.57	0	0	CEMASTEA	CEO and management
	2. Conduct regular consultative meetings with SMASE-Africa and ADEA leadership.	Regular consultative meetings with SMASE-Africa and ADEA leadership conducted.	Number of meetings held	5	1	1	1	1	1	1.43	1.5	1.57	1.65	1.73	CEMASTEA	CEO, ADEA & SMASEE-Africa leadership
	3. Request for deployment of optimal number of staff to implement secretariat functions.	Optimal number of staff requested to be deployed to the secretariat functions.	Number of reports on staff approved to implement secretariat functions	5	1	1	1	1	1	0.28	0.85	0.88	0.90	0.28	CEMASTEA	CEO and HR
	4. Implement the secretariat function.	Secretariat function implemented.	Number of annual reports on implementation of secretariat function.	5	1	1	1	1	1	0.28	0.29	0.3	0.31	0.32	CEMASTEA	CEO and relevant departments

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 6.1.3: Enhancing CEMASTEA's capacity to serve as an African Centre of excellence in STEMI education.	1. Review CEMASTEA's current capacity	CEMASTEA's current capacity reviewed	Number of reports on CEMASTEA's current capacity	1	-	1	-	-	-	0	3.01	0	0	0	CEMASTEA	CEO and Management
	2. Develop and implement action plans that will enhance CEMASTEA's capacity	Implemented action plans to enhance CEMASTEA's capacity as an African Centre of excellence	Number of implemented action plans	5	1	1	1	1	1	0.22	0.23	0.23	0.24	0.25	CEMASTEA	CEO and Management
	3. Present proposals to relevant authorities for CEMASTEA to serve as an African Centre in STEMI education.	Adopted and implemented proposals that showcase CEMASTEA's potential to serve as an African Centre in STEMI education	Number of adopted and implemented proposals.	3	-	-	1	1	1	0	0	1.5	1.55	1.59	CEMASTEA	CEO and Management
	4. Review effectiveness of actions taken	Effectiveness of actions taken	Number of reports on effectiveness of actions taken	5	1	1	1	1	1	3.01	3.1	3.19	3.29	3.39	CEMASTEA	CEO and Management
Outcomes: Improved policy environment for STEMI education, training and research in Africa																
Strategic Objective 6.2: To improve the policy environment that promotes STEMI education.																
S 6.2.1: Reviewing the policy framework for STEMI education and training environment	1. Review the African STEMI Policy Framework	Adopted policy framework	No. of African STEMI policy frameworks approved	1	-	1	-	-	-	0	2.35	0	0	0	CEMASTEA	CEO and Management
	2. Establish CEMASTEA Africa Policy Labs	Functional Policy Labs	No. of functional Policy Labs	3	-	-	1	1	1	0.25	0.258	0.25	0.26	0.27	CEMASTEA	CEO and Management
	3. Undertake a baseline survey on effectiveness of Africa STEM Policy	Baseline survey data on effectiveness of Africa STEMI Policy undertaken	No. of Baseline surveys on effectiveness of Africa STEMI Policy	1	-	-	1	-	-	0	0.23	0	0	0	CEMASTEA	CEO and Research & innovations
S 6.2.2: Integrating diversity and inclusion into STEMI education and training in teacher professional development	1. Train STEM educators and policy administrators in Africa in inclusion and diversity mainstreaming	Trained educators and policy administrators	No. of trained STEM educators in Africa	650	-	150	150	200	150	2.69	0.9	1.28	1.67	2.07	CEMASTEA	ADEA/SMASE Africa. TSC
			No of trained STEM policy pedagogical leaders in Africa	500	-	150	100	150	100	2.69	0.9	1.28	1.67	2.07	CEMASTEA	ADEA/SMASE Africa. TSC

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 6.2.3: Monitoring of policy environment and training programs continuously	1. Undertake Quality Assurance of STEMI policy implementation	Quality Assurance (QA) activities on STEMI policy implementation Conducted	No of QA Reports on STEM policy implementation in Africa	3	-	-	1	1	1	0	0	0.23	0.23	0.23	CEMASTEA	ADEA/SMASE Africa
	2. Develop Africa STEM Teacher Exchange Program Guidelines	Approved Africa STEMI Teacher Exchange Program Guidelines	No. of Africa STEM Teacher Exchange Program Guidelines adopted	1	-	1	-	-	-		0	0.45	0	0	CEMASTEA	ADEA/SMASE Africa
	3. Implement 3-month long STEMI Teacher exchange program	Implemented 3-month long African STEMI Teacher exchange program	No. of Teachers participating on 3 month-long educators Exchange Program	72	-	-	16	24	32	0	0	5.16	5.3	5.5	CEMASTEA	ADEA/SMASE Africa, TSC
	4. Monitor and evaluate outcomes of the Africa STEMI Teacher Exchange Program	Monitored and evaluated outcomes of the African Teacher Exchange Program	No. of M&E reports on outcomes of Africa STEMI Teacher Exchange Program	3	-	-	1	1	1	0	0	0.86	0.89	0.91	CEMASTEA	MoE, ADEA/ SMASE Africa, TSC
Outcomes: Improved STEMI education and training practices																
Strategic Objective 6.3: To improve STEMI education and training practices																
S 6.3.1: Initiating African STEM curriculum reforms for greater relevance and flexibility	1. Undertake Needs Assessment for STEMI Curriculum in Africa	Identified needs on STEMI curriculum	No. of reports on identified needs of the STEMI curriculum in Africa	1	-	1	-	-	-	0	0.29	0	0	0	CEMASTEA	ADEA/SMASE Africa
	2. Develop and disseminate an Integrated reference framework for STEMI curriculum in Africa	Adopted Integrated reference framework for STEMI curriculum in Africa	No. of Integrated reference framework for STEMI curriculum in Africa approved	1	-	-	1	-	-	0	0.13	0	0	0	CEMASTEA	ADEA/SMASE Africa
	3. Track and report on the implementation of identified STEMI Curriculum reforms in Africa	Tracked Implemented STEMI Curriculum reforms in Africa	No of Reports on implementation of STEMI curriculum reforms	2	-	-	1	-	1	0	-	0.29	0	0.29	CEMASTEA	ADEA/SMASE Africa

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 6.3.2: Initiating joint Africa teacher training and development programs	1. Develop guidelines for teachers and career advisors for promoting future STEMI Jobs	Guidelines for teachers and career advisors for promoting future STEMI Jobs approved	No. of guidelines for teachers and career advisors for promoting future STEMI Jobs approved	1	-	-	-	1	-	0	0	0	0.25	0	CEMASTEA	ADEA/SMASE Africa
	2. Undertake an Africa-wide Baseline Survey on effectiveness of STEMI education and training practices	Africa-wide baseline survey data on effectiveness of STEMI education and training practices	No. of Africa-wide baseline survey reports on effectiveness of STEMI education and training practices	1	-	-	-	-	1	0	0	0	0	0.29	CEMASTEA	ADEA/SMASE Africa
S 6.3.3: Integrating Technology into STEMI Education and Training	1. Create Open Educational Resources and a digital platform targeting Africa	Open Educational Resources and a digital platform created	No. of reports on functional Digital Resources and Open Educational Materials platform	1	-	1	1	1	1	0	2.15	2.21	2.28	2.35	CEMASTEA	ADEA/SMASE Africa
	2. Promote collaborative online STEMI projects and trainings targeting 15 STEM education institutions in Africa	STEMI Education Institutions enjoined in the collaborative online projects and trainings in Africa	No. of institutions enjoined in online collaborative projects and trainings	15	-	3	3	4	5	2.15	0.17	0.175	0.18	0.19	CEMASTEA	ADEA/SMASE Africa
S 6.3.4: Leveraging technology to scale STEM learning	1. Develop Africa Play and learn (A-Play Learn) Module targeting young learners in Africa through mobile based Apps, radio, and TV series	Africa Play (A-Play) Module targeting 3 million 3- 12-year-old learners in Africa	No. of modules of A-Play & Learn rolled out	1	-	-	1	-	-	0	0	2.15	0	0	CEMASTEA	ADEA/SMASE Africa
	2. Initiate and roll out African Learn Through Play with Technology (A-LTPT) program in STEM	Rolled out African Learn Through Play with Technology (A-LTPT) program in STEMI	No. of reports on African countries that have adopted the A-LTPT program	3	-	-	1	1	1	0	0	0.45	0.46	0.48	CEMASTEA	ADEA/SMASE Africa
	3. Undertake Monitoring and Evaluation (M&E) of implementation of A-LTPT	M&E Report on implementation of A-LTPT	No. of M&E Reports on A-LTPT	3	-	-	1	1	1	0	0	0.25	0.26	0.27	CEMASTEA	ADEA/SMASE Africa

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
Outcome: Enhanced STEMI research and development and knowledge management in Africa																
Strategic Objective 6.4: To Enhance STEMI Research and Development and knowledge management																
S 6.4.1: Improving R&D in Africa STEMI Domain to inform STEM policy, practice and research	1. Develop STEMI research framework for Africa	STEMI research framework for Africa developed	No. of Africa STEMI research framework for Africa approved	1	-	1	-	-	-	0	2.15	0	0	0	CEMASTEA	ADEA/ SMASE Africa
	2. Undertake joint topical research on STEMI initiatives	Published Joint Research on STEMI in Africa	No of Joint Research outputs in STEMI published	6	-	1	1	2	2	0.63	0.11	0.113	0.12	0.1202	CEMASTEA	ADEA/ SMASE Africa
	3. Conduct a baseline survey on impact of STEMI joint researches in Africa	Baseline Survey on STEMI Impact Joint Research in Africa	No. of baseline survey reports on impact of joint STEMI research in Africa	1	-	-	-	-	1	0	0	0	0	0.29	CEMASTEA	ADEA/ SMASE Africa
S 6.4.2: Promoting knowledge sharing on innovative STEMI practices.	1. Establish African online STEMI knowledge repository.	African Online STEMI Knowledge Repository established.	No. of reports on African Online STEMI Knowledge Repository established	1	-	-	1	-	-	0	0	0.29	0	0	CEMASTEA	ADEA/ SMASE Africa
	2. Establish Africa online STEMI Loop integrated into the publishing platform	Africa online STEMI research loop established.	No of reports on Africa online STEMI research loop	1	-	-	-	1	-	0	0	0	0.30	0	CEMASTEA	ADEA/ SMASE Africa
	3. Establish online STEMI frontier for young minds targeting 10 million young Africans	Africa online STEMI Frontier for young minds with 10 million active young minds established.	No. of reports on African young minds participating in online STEMI frontier (Millions)	10	-	-	3	3	4	0	0	2.5	2.58	2.65	CEMASTEA	ADEA/ SMASE Africa
Outcome: Strengthened collaboration and partnerships between STEMI education providers, industry leaders and policy makers in Africa																
Strategic Objective 6.5: To strengthen collaboration and partnerships in STEMI education providers, industry leaders, and policymakers																
S 6.5.1: Promoting STEMI Awareness and Advocacy for Africa	1. Establish annual rotational STEMI weeks targeting regional economic blocks in Africa	Annual Africa STEMI Week in African regions established	No. of reports on countries hosting Africa STEMI week	3	-	-	1	1	1	0	0	0.25	0.26	0.27	CEMASTEA	ADEA/SMASE Africa
	2. Establish and Implement STEM reward program for Africa	Implemented annual STEM reward program for Africa	No. reports on implemented STEM reward program for Africa	3	-	-	1	1	1	0	0	0.25	0.26	0.27	CEMASTEA	ADEA/SMASE Africa

Strategy	Key activities	Expected outputs	Output Indicator	Target for 5 years	Target					Budget (KSh. Mn.)					Responsibility*	
					Y1 23/24	Y2	Y3	Y4	Y5 27/28	Y1 23/24	Y2	Y3	Y4	Y5 27/28	Lead	Support
S 6.5.2: Enhancing Global collaborations and Partnerships in STEMI policy, Research and Practice	1. Establish Africa regional and international networks for STEMI policy and practice	Active collaborators in STEMI policy and practice	No. of reports on additional active Africa regional collaborators in STEMI policy and practice	15	-	-	5	5	5	0	0	0.25	0.26	0.27	CEMASTEA	ADEA/SMASE Africa
			Number of reports on additional active international collaborators in STEM policy and practice	3	-	-	1	1	1	0	0	0	0	0	CEMASTEA	ADEA/SMASE Africa
	2. Promote capacity building for incubations and commercialization of STEMI outputs in Africa	STEMI innovations promoted for incubation and commercialization	No. of reports on STEMI innovations promoted for incubation and commercialization	3	-	-	1	1	1	0	0	0.25	0.26	0.27	CEMASTEA	ADEA/SMASE Africa

6.1.3 Performance contracting

The signed annual performance contracts for the Centre will be informed by the annual targets of the Strategic Plan as prescribed in the annual work plans. The Strategic Plan targets for year one form the performance contracting targets for the FY 2023 / 2024 as detailed in Annex 1.

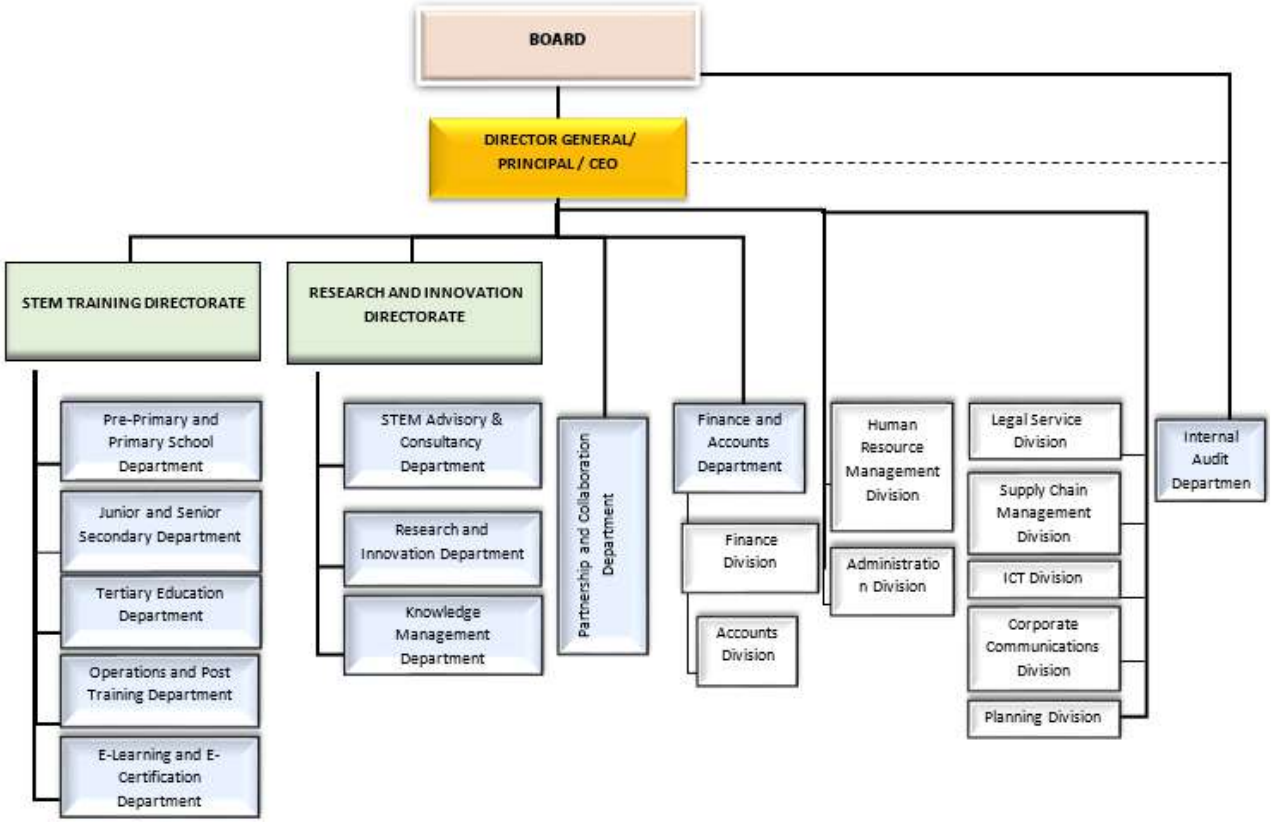
6.2 Coordination framework

Implementation of the Strategic Plan will be coordinated under the Centre's functional areas and the Key Result Areas (KRAs) aligned to the organizational framework. The organogram details the top level leadership; the staffing levels under each of the functional areas details the establishment, in-post and gaps, the skill set and competencies required of each cadre of staff and leadership aligned to each of the KRAs.

6.2.1 Institutional framework

The institutional framework in terms of an organogram details the organization of staffing levels and reporting lines to enhance effective and efficient implementation of the Plan as shown in Figure 6.1 below.

Figure 6.1: Institutional or Organizational Framework



6.2.2 Staff establishment, skills set and competence development

The staff establishment, in-post and staff gaps that need to be filled in order to enhance effective implementation of the Plan are shown in Tables 6.2 and 6.3 respectively. The Centre will establish appropriate methodologies for developing staff skills and competencies. These include (i) on the job learning approaches such as on the job activities, aids, simulations, and mentorship; (ii), mandatory training on specific competencies such as; integrity, accountability, team work and communication; (iii) Listening or watching approaches such as emulating the style of others who have built desired competencies and joining professional bodies that promote relevant competencies; and (iv) reading or research aimed at consolidating core competencies of staff job profiles.

CEMASTEA will establish effective strategies to enhance its workforce capabilities. These strategies encompass (i) mandatory training sessions focused on key competencies like integrity, accountability, teamwork, and communication; (ii) observational methods, such as emulating the practices of individuals who have successfully developed desired competencies (iii) joining professional organizations that endorse relevant skills, and (iv) engaging in reading and research to strengthen the essential competencies outlined in staff job profile and, (v) practical learning methods, such as engaging in on-the-job activities, utilizing job aids and simulations, and participating in mentorship programs.

Table 6.2: Staff Establishment

Cadre	Approved Establishment (A)	Optimal staffing levels (B)
Chief Executive Officer	1	1
Director, STEM Training	1	1
Director, Research and Innovation	1	1
Deputy Directors: Pre-Primary & Primary, Junior & Senior Secondary, Tertiary education & Training, Operations & Post-Training , and E-Learning & E-Certification; Research and Innovation: STEM Advisory and Consultancy Services; Research & Innovation; and Knowledge Management	8	8
Deputy Director, Linkages and Partnerships	1	1
Deputy Director, Finance and Accounts	1	1
Deputy Director, Internal Audit	1	1
Assistant Directors: Research & Innovation; Knowledge management; Linkages and Partnerships; Human Resource; Administration; Legal Services; Supply Chain; ICT; Corporate communication; Planning; and Internal Audit	11	11

Chief Principal Lecturer	6	6
Senior Principal Lecturer	9	9
Principal Lecturer II; Principal Lecturer I; Senior Lecturer	39	39
Principal Human Resource Management Officer; Principal Assistant Human Resource Management Officer	3	3
Principal / Senior Administration Officer	2	2
Principal Assistant Office Administrators; Senior Assistant Office administrator; Assistant Office administrator	4	4
Principal / Senior /Assistant Office Administrator	2	2
Senior office assistant; Office assistant	3	3
Senior office administrator; Office administrator: P&L, R&I, STEM training, post training	5	5
Principal laboratory technologist; Laboratory technologist Junior and senior school	5	5
Principal laboratory technologist; Laboratory technologist pre-primary and primary school	2	2
Senior Driver / Driver	9	9
Senior Research Officer; research officer	1	1
Senior Librarian; Librarian	2	2
Principal Estate Management Assistant;	1	1
Principal Security Officer	1	1
Principal Records Management Officer; Senior Records Management Officer	2	2
Principal Hospitality Officer; Senior House Keeper; Senior cook	2	2
Principal; Senior; and Accountant	3	3
Senior Legal Officer	1	1
Senior Supply Chain Management Officer; and Supply Chain Management	2	2
Principal ICT Officer; Senior ICT Officer; and ICT Assistant	3	3
Principal Corporate Communications Officer; Corporate Communications Assistant	2	2
Principal Planning Officer	1	1
Principal Internal Auditor	1	1
TOTAL	**136**	**136**

Table 6.3: Skills Set and Competency Development

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
1.	Chief Executive Officer	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Proficiency in computer applications; iv) Knowledge and experience in matters of STEM Education; v) Strategic and innovative thinking vi) Analytical skills vii) Ability to mobilize resources viii) Communication skills ix) Interpersonal skills x) Negotiation skills xi) Problem solving and conflict resolution xii) Financial management skills	i) Conflict management skills ii) Negotiation Skills iii) Financial management skills iv) Strategic management skills v) Appreciative leadership skills	i) Transformative leadership ii) Leadership iii) Mentorship & Coaching iv) Managing performance v) Decision Making vi) Financial management vii) Strategic management viii) Conflict management & resolution ix) Building strong teams x) Employee strengthening xi) Change management
2.	Director STEM Training	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Team building and working skills iv) Resource mobilization skills v) Strong analytical techniques vi) Strong communication and reporting skills vii) Strong leadership skills ix) Project management skills x) Strategic and innovative thinking skills xi) Good interpersonal skills xii) Proficiency in IT applications xiii) Communication skills viii) Organizational skills	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Team building and working skills iv) Resource mobilization skills v) Strong analytical techniques vi) Strong communication and reporting skills vii) Strong leadership skills viii) Project management skills ix) Strategic and innovative thinking skills x) Good interpersonal skills xi) Proficiency in IT applications xii) Communication skills vii) Organizational skills	i) Project management skills ii) Strategic Management skills iii) Leadership skills iv) Finance for Non-Finance

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
3.	Deputy Directors, STEM Training: Pre-Primary & Primary, Junior & Senior Secondary, Tertiary education & Training, Operations & Post-Training , and E-Learning & E-Certification	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Team building skills iv) Resource mobilization skills v) Strong training and facilitation skills vi) Strong communication skills vii) Strong leadership skills viii) Strategic and innovative thinking skills ix) Good interpersonal skills x) Proficiency in IT applications xi) Communication skills xii) Organizational skills	i) Leadership skills ii) Project management skills iii) Strategic Management Skills iv) Resource mobilization skills v) Strong training and facilitation skills	i) Leadership skills ii) Project management skills iii) Strategic Management Skills iv) Resource mobilization skills v) Finance for Non-Finance
4.	Director Research and Innovation	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Team building and working skills iv) Resource mobilization skills v) Strong analytical techniques vi) Strong communication and reporting skills vii) Strong leadership skills viii) Project management skills ix) Strategic and innovative thinking x) Good interpersonal skills xi) Proficiency in IT applications xii) Research and Innovation skills xiii) Organizational skills	i) Leadership skills ii) Project management skills iii) Strategic Management Skills iv) Strategic and innovative thinking v) Good interpersonal skills vi) Research and Innovation skills	i) Leadership skills ii) Project management skills iii) Strategic management skills iv) Research and innovation skills v) Finance for Non-Finance

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
5.	Deputy Directors, Research and Innovation: STEM Advisory and Consultancy Services; Research & Innovation; and Knowledge Management	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Research and Innovation skills iv) Team building and working skills v) Resource mobilization skills vi) Strong analytical techniques vii) Strong communication and reporting skills viii) Strong leadership skills ix) Project management skills x) Strategic and innovative thinking xi) Good interpersonal skills xii) Proficiency in IT applications vi) Organizational skills	i) Project management skills ii) Strategic Management Skills iii) Strategic and innovative thinking iv) Good interpersonal skills v) Research and Innovation skills	i) Project management skills ii) Strategic management skills iii) Research and innovation skills iv) Finance for Non-Finance
6.	Deputy Director, Linkages and Partnerships	i) Bachelor of Education Science Degree or equivalent qualification ii) Relevant Master's Degree iii) Team building and working skills iv) Strategic partnership creation skills v) Strong international relations and diplomacy vi) Resource mobilization skills vii) Strong analytical Skills viii) Good interpersonal skills ix) Proficiency in IT applications x) Communication skills xi) Organizational skills	i) Strategic partnership creation skills ii) Strong international relations and diplomacy iii) Strong analytical Skills	i) Leadership and supervisory skills ii) Strategic partnerships and linkages iii) International relations and diplomacy iv) Advocacy and networking v) Finance for Non-Finance

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
7.	Deputy Director, Finance and Accounts	i) Relevant Master's degree ii) Relevant Bachelor's degree iii) Finance and accounting skills iv) Good communication and interpersonal skills v) Analytical skills vi) Attention to detail vii) Corporate governance and leadership viii) Knowledge of Kenyan tax, procurement and asset disposal and employment laws ix) Organizational skills x) Self-driven, Innovative and creative skills	i) Good communication and interpersonal skills ii) Analytical skills iii) Attention to detail iv) Corporate governance and leadership v) Knowledge of Kenyan tax, procurement and asset disposal and employment laws vi) Organizational skills	i) Strategic leadership and supervisory skills ii) Financial Reporting iii) Taxation
8.	Deputy Director, Internal Audit	i) Relevant Master's degree ii) Relevant Bachelor's degree iii) Risk management iv) Knowledge of Kenyan financial management policies v) Communication and interpersonal skills vi) Analytical skills vii) Attention to detail skills viii) Corporate governance and leadership skills ix) Organizational skills x) Self-driven, Innovative and creative skills	i) Corporate governance and leadership skills ii) Risk management iii) Communication and interpersonal skills iv) Analytical skills v) Attention to detail skills	i) Leadership and supervisory skills ii) Risk management iii) Auditing iv) Financial Reporting v) Taxation

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
9.	Assistant Directors, Library Services; Planning; Internal Audit; corporate communication; ICT; Supply Chain; Legal Services; Administration; Human Resource Management; Research and innovation	i) Relevant Master's degree ii) Relevant Bachelor's degree iii) Communication and reporting skills iv) Mentoring, coaching and leadership skills v) Managerial skills and ability to lead teams vi) Problem solving and analytical skills vii) Interpersonal and negotiation skills viii) People skills xi) Emotional intelligence	i) Communication and reporting skills ii) Managerial skills and ability to lead teams iii) Problem solving and analytical skills iv) Interpersonal and negotiation skills v) Emotional intelligence	i) Leadership and supervisory skills ii) Project management skills iii) Strategic Management Skills iv) Financial Management skills
10.	Lecturers	i) Bachelor of Education Science degree ii) Relevant Master's degree iii) Team building skills iv) Resource mobilization skills v) Strong analytical techniques skills vi) Strong communication skills vii) Strong leadership skills viii) Facilitation skills ix) Strategic and innovative thinking skills x) Good interpersonal skills xi) Proficiency in IT applications xii) Communication skills xiii) Organizational skills	i) Management skills ii) Data analysis iii) Leadership skills iv) Trainer of trainer's skills v) Negotiation skills vi) Program management and evaluation vii) Digital story telling viii) Gamification in learning ix) Massive online development	i) Data analysis ii) Strategic leadership development iii) Senior management course iv) Project Management v) Digital story telling vi) Gamification in learning vii) Massive online development

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
11.	Laboratory Technologists/ Technicians	i) Relevant Diploma ii) Supervisory Skills iii) Computer Skills iv) Communication skills v) Analytical skills vi) Proficiency in computer applications	i) Analytical skills	Build capacity in the following managerial competencies: i) Laboratory practices and procedures
12.	Assistant Director Legal Services	i) Bachelor's Degree in Law (LLB) or equivalent ii) Master's Degree in Law (LLM) or equivalent iii) Post Graduate Diploma in Law from the Council of Legal Education. iv) A Certified Public Secretary of Kenya (CPS - K). v) Supervisory skills course lasting not less than vi) Proficiency in Computer applications. vii) Organizational skills viii) Communication skills ix) Interpersonal skills x) Listening skills xi) Presentation skills xii) Professionalism	i) Bachelor's Degree in Law (LLB) or equivalent ii) Master's Degree in Law (LLM) or equivalent iii) Post Graduate Diploma in Law from the Council of Legal Education. iv) A Certified Public Secretary of Kenya (CPS - K). v) Supervisory skills course lasting not less than vi) Proficiency in Computer applications. vii) Organizational skills viii) Communication skills ix) Interpersonal skills x) Listening skills xi) Presentation skills xii) Professionalism	i) Organizational skills ii) Communication skills iii) Managerial skills iv) Board paper writing v) Minute writing

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
13.	Planning Officers	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Analytical skills iv) Communication skills v) Strategic and innovative thinking vi) Interpersonal skills vii) Ability to mobilize resources skills viii) Negotiation skills ix) Integrated planning Monitoring and evaluation x) Financial and budgeting skills xi) Proficiency in IT applications skills xii) Project management skills	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Analytical skills iv) Communication skills v) Strategic and innovative thinking vi) Interpersonal skills vii) Ability to mobilize resources skills viii) Negotiation skills viii) Integrated planning Monitoring and evaluation skills ix) Financial and budgeting skills x) Proficiency in IT applications xi) Project management skills	i) Negotiation skills ii) Planning skills iii) Project management iv) Financial& budgeting skills
14.	Finance and Accountant Officers	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Certified Public Accountants of Kenya (CPAK) iv) Good communication and interpersonal skills v) Analytical skills vi) Attention to detail vii) Corporate governance and leadership viii) Knowledge of Kenyan tax, procurement and asset disposal and employment laws ix) Organizational skills x) Self-driven, Innovative and creative skills	i) Leadership skills ii) Technological Proficiency iii) Communication Skills iv) Financial management v) Risk Management	i) Financial Reporting ii) Taxation iii) Strategic leadership development program

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
15.	HRM Officers	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Institute of Human Resource Management (IHRM) iv) Certified Human Resource Professional (CHRP) v) Communication and reporting skills vi) Mentoring, coaching and leadership skills vii) Managerial skills and ability to lead teams viii) Problem solving and analytical skills ix) Interpersonal and negotiation skills x) People skills xi) Emotional intelligence	i) Data Management and Analytics ii) Succession Planning iii) Technology Proficiency iv) Guidance & Counselling skills v) Management skills vi) Human Resource planning skills	i) Data and information management ii) Problem solving and conflict resolution iii) Counselling skills for HR practitioners iv) Human Resource Management planning v) Taxation vi) Senior management course vii) Ethical practices
16.	Administration Officers	i) Relevant Bachelor's Degree ii) Management course lasting not less than (4) weeks iii) Proficiency in computer applications iv) Communication and reporting skills v) Managerial skills vi) Problem solving and analytical skills vii) Interpersonal skills viii) People skills ix) Supervisory skills x) Customer Service xi) Record-Keeping xii) Ethical practice	i) Public relations ii) Customer care skills iii) Supervisory skills iv) E-records management v) Database management vi) Budgetary skills vii) Project planning	i) Public relations ii) Customer care Management iii) Supervisory skills iv) E-records management v) Database management vi) Finance for non-finance vii) Project planning

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
17.	Records Management Officers	i) Relevant Bachelor's Degree ii) Management course lasting not less than 4 weeks iii) Proficiency in computer applications iv) Technological proficiency v) Supervisory skills vi) Communication skills vii) Customer service viii) Interpersonal skills ix) Record keeping x) Ethical practice	i) E-records management ii) Database management iii) Budget preparation and procurement planning	i) E-records management ii) Database management iii) Finance for non-finance
18.	Estates Management officers	i) Relevant Diploma ii) Supervisory course lasting not less than 2 weeks iii) Membership to a relevant professional body iv) Proficiency in computer applications. v) Technological proficiency vi) Supervisory skills vii) Communication skills viii) Customer service ix) Interpersonal skills x) Record keeping xi) Ethical practice	i) Technological proficiency ii) Supervisory skills iii) Communication skills iv) Customer service v) Interpersonal skills vi) Record keeping vii) Ethical practice	i) Record management ii) Supervisory skills iii) Customer service skills

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
19.	ICT Officers	xii) Relevant Master's Degree xiii) Relevant Bachelor's Degree xiv) Analytical and numerical skills xv) Strategic & Innovative skills xvi) Communication skills xvii) Mentoring and Coaching skills xviii) Good Interpersonal skills	i) Web application solutions ii) Information security CISM iii) Video editing (Adobe premiere)	i) Web application solutions ii) Information security CISM iii) Video editing (Adobe Premiere)
20.	Auditors	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Financial management and proficiency iv) Technological Proficiency v) Client Service and focus vi) Team work vii) Time Management viii) Attention to Detail ix) Communication Skills x) Risk Management xi) Interpersonal Skills	i) Technological Proficiency ii) Communication Skills iii) Financial management iv) Risk Management	i) Auditing ii) Financial Reporting iii) Taxation

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
21.	Supply Chain Management Officers	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Two relevant professional qualification iv) Financial management and proficiency v) Ethical practice vi) Negotiation Skills vii) Decision-making and problem-solving skills viii) Technological Proficiency ix) Project Management x) Risk Management xi) Client Service and focus xii) Collaboration and Teamwork xiii) Time Management xiv) Attention to Detail xv) Communication Skills xvi) Interpersonal Skills	i) Technological Proficiency ii) Financial management and proficiency iii) Project Management iv) Risk Management v) Negotiation Skills vi) Management skills	i) Financial management and proficiency ii) Ethical practice iii) Interpersonal relations iv) Project Management v) Communication Skills vi) Contract Negotiation S vii) Senior Management development course
22.	Knowledge management officers / Librarian	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Communication skills; iv) Report writing skills; v) Negotiation skills; vi) Problem solving skills; vii) Analytical skills; viii) Planning skills; ix) Presentation skills; x) Analytical skills.	i) Data analysis software ii) Data and Knowledge management iii) Writing policy briefs	i) Data analysis software ii) Data and Knowledge management iii) Writing policy briefs

S/No.	Cadre	Skills Set	Skills Gap	Competency Development Build capacity in:
23.	Corporate Communication Officers	i) Relevant Master's Degree ii) Relevant Bachelor's Degree iii) Negotiation and interpersonal skills iv) Strong Leadership and strategic thinking skills v) Strong analytical skills vi) Strong communication and reporting skills vii) Strong presentational skills viii) Team leadership skills	i) Supervisory skills ii) Public relations iii) Desktop publishing iv) Animation v) Crisis communication vi) Digital media vii) Graphic designing	i) Supervisory skills ii) Public relations iii) Desktop publishing iv) Animation v) Crisis communication vi) Digital media vii) Graphic design
24.	Office Administrators and Support Staff	i) Technological Proficiency ii) Supervisory skills iii) Communication Skills iv) Customer Service v) Interpersonal Skills vi) Record-Keeping vii) Ethical practice	i) Record-Keeping ii) Supervisory skills	i) Communication Skills ii) Record Keeping iii) Ethical practice
25.	Drivers	i) Defensive driving ii) Road safety iii) Customer service iv) Communication Skills v) Time Management vi) Interpersonal skills vii) Traffic knowledge viii) Travel management ix) Record Keeping	i) Defensive driving ii) Road safety iii) Customer service iv) Communication Skills v) Time Management vi) Interpersonal skills	i) Customer service ii) Time management iii) Interpersonal skills

Note: The skills set are as per the respective career progression guidelines of the Centre

6.2.3 Leadership

The Board of Governors will offer oversight leadership during the implementation and provide adequate resources for the attainment of the Strategic Plan. The Board will monitor performance and ensure sustainability during the implementation period of the Plan. Management will be responsible for the day-to-day implementation of the Strategic Plan. Management will constitute a team on specific Key Result Areas to monitor and report on Plan implementation on a quarterly basis. The Board Committees will be aligned to the key Result Areas in the Plan in order to enhance effective implementation as shown in Table 6.4.

Table 6.4: Leadership

S/No.	Strategic Theme	Strategic Issues	Team composition	Team Lead
KRA 1:	Training and competence development.	• Leverage the high demand for STEM skills. • The need to accredit the Centre's training and research programs. • The need to integrate teacher professional development points in the Centre's programs. • Leverage e-learning technology	Departments namely: Pre-primary & primary school; Junior and senior school, tertiary education, operations & post training, e-learning and e-certification.	Director, STEM Training
KRA 2:	Research and Knowledge management	• Inadequate capacity to conduct research and knowledge management. • Leverage the high demand for STEM skills. • The need to accredit Centre's training and research programs.	Departments namely: STEM Advisory & consultancy; research and innovation; Knowledge management	Director, Research and Innovation
KRA 3:	Resource mobilization, partnerships and linkages	• The need to increase funding to support the implementation of the Centre's mandate.	CEO and Finance & Accounts Divisions.	Deputy director finance and accounts
			CEO, Partnerships and linkages department; and heads of academic departments	Deputy Director Consultancy and Advisory services
		• Leveraging the wide pool of development partners and sector stakeholders with interest in STEM education for collaboration and linkages.	Academic departments under STEM training, research and innovation.	Deputy Director, Partnerships and linkages

S/No.	Strategic Theme	Strategic Issues	Team composition	Team Lead
KRA 4:	Governance	• Need to strengthen corporate governance. • Leverage relevant legal and policy frameworks.	Legal service division, planning division, ICT division, supply chain, finance & accounts divisions, Internal audit department	CEO
KRA 5:	Organizational strengthening	• The need to enhance Centre's brand image and visibility. • Inadequate human resource capacity to deliver the Centre's mandate. • The need to strengthen infrastructure to support the STEM pathway and ICT capacity. • Leverage automation and digitization.	Management representative, ISO, Communication, human resource, estates, and ICT division	CEO
KRA 6	Enhancing STEMI education through fostering relevant policies, research, networking, collaboration, advocacy and capacity building in Africa.	• The need to develop inclusive policies, strategies and programs for transformation of Science, Technology, Engineering, Mathematics and Innovation (STEMI) education, training and research in Africa • The need to improve the quality of STEMI training and research in Africa • Reforming curricula to align with industry requirements and emphasize on cultivating practical skills, fostering problem-solving abilities, and encouraging innovation. • Embracing digitalization and integrating technology into educational practices to enhance learning outcomes and foster innovation in STEMI education in Africa. • The need to strengthen partnerships between academia, industry, and government (STEM Triple Helix) to promote knowledge transfer, technology commercialization, and entrepreneurship • Limited research and knowledge sharing in STEMI fields hindering the advancement of cutting-edge discoveries and innovation. • Leverage strategic interventions in STEMI education in African countries.	Partnerships and linkages department; and heads of academic departments under STEM training; research and innovation.	CEO

6.2.4 Systems and procedures

The Board of Governors and management shall establish, implement, maintain and continually improve an integrated quality management system, including the processes needed, the interactions and procedures in accordance with the requirements of the Strategic Plan. The internal quality management system will continuously be evaluated to improve operating procedures and ascertain appropriateness towards the implementation of the Strategic Plan.

6.3 Risk Management Framework

Table 6.5 details the Risk Management Framework. The framework describes and categorizes the risks that may hinder the realization of each of the Key Result Areas in the Strategic Plan prioritized based on the likelihood of occurrence and expected impact. Suggested actions for mitigation, monitoring and reporting of the risks are included.

Table 6.5: Risk Management Framework

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
1.	Training and Competence Development	• To improve quality and relevance in all training programs • To enhance access and inclusivity in all training programs.	• Training Staff Risk. • Training Curriculum risk	Risk associated with national staff inadequacy, inadequate capacity, limited career progression and poor succession management	4	4	High	• Transit existing into the State Corporation • Recruit Trainers • Implement Career Progression Guidelines for CEMASTEA • Trainers be employed by the BoG on competitive terms of service • Implement approved staff establishment

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
				Risk associated with lack of accreditation of training programs, inappropriate choice of program, scope, design, relevance, and content development and review process of the programs	3	3	Medium	• Accreditation of Centre's programs. • Extending scope of programs to include all subjects
		To increase e-learning utilization and ICT integration in STEM education.	E-learning platform risks	Risk associated with media platforms malfunctioning during e-learning programs	5	5	High	Adhere to laid down regulations and statutory guidelines as well as strong maintenance systems.
2.	Research and Knowledge Management	• To enhance evidence based STEM education. • To enhance knowledge management base.	Analysis & dissemination of M & E data	Risks associated with insufficient M & E data analyses and failure to disseminate the findings to the intended stakeholders	4	4	High	• Procure more and modern data analysis software • Ensure a training directorate member(s) participates in M & E data analysis • Allocate adequate time to KM to share the analysis findings with the staff and training department. • Develop a monitoring and reporting template and share with stakeholders/parties participating in a M&E activity
			Research Conceptualization	Risk associated with poor research conceptualization	4	4	High	• Fast-track registration of CEMASTEA as a research Institution with NACOSTI • Involve KISE for SNE • expertise during tools preparation for tools adaptation

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
			Data loss risk	Risk associated with loss of data	5	5	High	• Offsite server back up • Ensure back up policies and procedures are in place • Audit logs are activated and back up • Have procedures to regularly review user activity logs to track unauthorized activity • Sensitize staff on data loss and data back-up
3.	Resource mobilization, partnerships and linkages	To increase Centre's resource base.	• Liquidity risk • Funding • Budgetary Cuts and Supplementary risks	• Risks that the Centre will not meet its obligations as they fall due, because of cash flow challenges occasioned by delayed funding, law stream of AIA; and diminishing cash inflows. • Failure to meet the requirements of a portfolio of capital investments; research project and obligations based on specified commitments or in accordance with terms of an agreement. • A reduction of the exchequer funding following the budget approval	4	4	High	• Continuous monitoring funds vis some vis the liabilities; and Regular reconciliations • Timely debt collection • Implementation of the resource mobilization strategy in place and seek Institutional funding. • Implementation of credit management policy. • Implementation of the resource mobilization strategy in place and seek Institutional funding.

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
		To enhance partnerships and linkages for improved competencies in STEMI education.	Partner identification and selection risks.	Risks associated with the process of identifying partners without reference to a standard criteria and inability to verify strategic partners.	3	3	Medium	• Establish a data base framework for potential partners. • Conduct due diligence of potential partners.
			Negotiation and engagement risks	Risks associated with efficiency, effectiveness and thoroughness in conducting negotiations with potential partners that threaten the credibility of agreements.	3	4	High	• Framework for partner negotiation engagements
			Implementation risks.	Risks associated with implementation of partnership & linkage projects arising from interpretation of design, deliverables, change in government policy, natural disasters, non-provision of resources based on signed agreement.	3	4	High	• Maintain an updated P&L policy guideline, procedures and risk register with potential effect on implementation of partnership projects. • Continuously sensitize project teams of partnership activities.

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
		To increase the number of African countries participating in CEMASTEA's programs	Partner identification and selection risks.	Risks associated with the process of identifying partners without reference to a standard criteria and inability to verify strategic partners.	3	3	Medium	• Establish a data base framework for potential partners. • Conduct due diligence of potential partners.
			Implementation risks.	Risks associated with implementation of joint programs for African countries.	3	4	High	Continuously sensitize project teams on implementation of joint programs for African countries.
4	Governance	To improve corporate governance	Legal Compliance risk	Risks associated with non-compliance with legal requirements.	4	4	High	• Development of manuals for finance, procurement and human resource • Continuous sensitization • Enhance the independence of internal audit department • Automate financial reporting exercise in line with IPSAS Accrual.
		To enhance fiduciary assurance	• Financial Reporting and Disclosure Risks. • Strategy Implementation risks • Compliance risks	Risk of non-compliance with financial reporting regulations, timelines, the reporting templates issued by PSASB for both the Quarterly and Annual Reports; external and internal audits; and cash and bank management.	4	4	High	
		To enhance environmental conservation.	Conservation risks	Risks associated with ineffective internal and external environmental conservation processes.	4	4	High	Strengthen the capacity of staff and sensitize relevant stakeholders on the implementation modalities.

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
5	Organizational strengthening	To improve organizational visibility and strengthening effectiveness.	Operational risk	Risk associated with ineffective internal control processes	5	5	High	Strengthen internal audit department Adherence to standard operating procedures
		• To increase the number of people accessing open resources. • To enhance automation in key processes	Automation risk	Risk associated with automated systems malfunctioning when crucial service is being offered.	5	5	High	Adhere to laid down regulations and statutory guidelines
6	Enhancing Science, Technology, Engineering, Mathematics and Innovation (STEMI) education	Strengthen CEMASTEA's coordination role in promoting strategic interventions in STEMI education.	Risk of non-responsive countries due to change in national priorities.	Risk associated with failure to increase the number of African countries participating in CEMASTEA's programs	3	4	High	Continuously sensitize policy makers in African countries on the importance of strategic interventions in STEMI education and training.
		Improve policy environment that promotes STEMI education.	Implementation risk	Risk associated with the process of influencing countries to buy into the STEMI policy environment.	3	4	High	Continuously sensitize policy makers in African countries on the importance of STEMI education and training policies using best practice
		Improve STEMI education and training practices.	Implementation risks.	Risks associated with implementation of joint programs for African countries.	3	4	High	Continuously sensitize project teams on implementation of joint training and practice programs for African countries.

NO	KRA	Strategic Objective	Risk	Description of the risk	Likelihood a scale: 1-5	Severity a scale: 1-5	Overall risk level L/M/H	Mitigation measure (s)
		Enhance STEMI research and knowledge management.	Implementation risks.	Risks associated with implementation of joint programs for African countries.	3	4	High	Continuously sensitize project teams on implementation of joint research and development for African countries.
		Strengthen collaboration and partnerships in STEMI education.	Partner identification and selection risks.	Risks associated with the process of identifying partners without reference to a standard criteria and inability to verify strategic partners for the continental programs.	3	3	Medium	Establish a data base framework for potential partners and conduct due diligence on the partners.

CHAPTER SEVEN

RESOURCE REQUIREMENTS & MOBILISATION STRATEGIES

RESOURCE REQUIREMENTS & MOBILISATION STRATEGIES

Chapter seven outlines the financial resource requirements projected as per each Key Result Area and related activities for the five-year period. The chapter further details the financing gaps of implementing the strategies in view of the available resources. In addition, resource mobilization strategies to be employed to fill financial and in-kind resource gaps for implementing the Strategic Plan are discussed.

7.1 Financial Requirements

Financial requirements for the implementation of the CEMASTEA Strategic Plan in the FY 2023/2024 amounts to Ksh. 2,083 Million increasing to Ksh. 2,471 Million in the FY 2027/28 translating to a total of Ksh. 11,789 over the five year period as shown in Table 7.1. The resource gap over the five year period stands at Ksh. 5,709 Million as shown in Table 7.2.

Table 7.1: Financial Requirements for Implementation of the Strategic Plan

Cost Item (KRA)	Projected Resource Requirements (Ksh. Mn.)					
	2023/24	2024/25	2025/26	2026/27	2027/28	Total
KRA1: Training and Competence Development	1393	1601	1634	1594	1585	7807
KRA 2: Research, Development and Knowledge Management	120	101	105	106	116	548
KRA 3: Resource Mobilization, Partnerships and linkages	31	44	32	31	35	173
KRA 4: Governance	75	63	75	67	70	350
KRA 5: Organizational Strengthening	358	363	328	364	334	1747
KRA 6: Enhancing Science, Technology, Engineering, Mathematics and Innovations (STEMI) education.	15	21	31	28	29	124
Administrative Cost.	91	122	250	275	302	1040
Total	**2,083**	**2,315**	**2,455**	**2,465**	**2,471**	**11,789**

Table 7.2: Resource Gaps

FY	Requirement (Kshs. Mn.)	Rationalized Estimated Resource Allocations (Kshs. Mn.)	Variance (Kshs. Mn.)
Year 1	2,083	1,001	(1,082)
Year 2	2,315	1,101	(1,214)
Year 3	2,455	1,211	(1,244)
Year 4	2,465	1,333	(1,132)
Year 5	2,471	1,466	(1,005)
Total	**11,789**	**6,112**	**(5,709)**

7.2 Resource Mobilization Strategies

The effort towards resource mobilization is anchored on the drive to ensure the Centre's organizational sustainability without sorely relying on public funding. The goal in the next five years is to increase the Centre's resource base by enhancing resource mobilization capacity; diversifying revenue sources; and operationalizing a business enterprise culture. In addition, the Centre will capitalize on its reputation in STEMI education in Africa to improve its collaborative partnerships. The aim will be to increase global, regional and national collaborations, enhanced advocacy and networking in the area of STEMI education, training and research as well as strengthening the continental secretariat function and consultancy services to raise revenue.

Key mobilization approaches to be employed during the strategic period to increase revenue and in-kind resources include:

- Public Sector Financing: The Centre will advocate for enhancement in the allocation of government grants to support the STEM education delivery and innovations.
- Marketing, Sale of Services and Products: The Centre will market existing conferencing services to create awareness and increase clientele as well as providing consultancy services in the area of training, research, and any potential area in education for external clienteles to raise the A-I-A revenue.
- Leverage Corporate Social Responsibility (CSR): The Centre will seek external funding of critical activities from national corporate bodies through Corporate Social Responsibility and Public-Private Partnerships.
- Mobilizing International and National Development Partner's / Donor Community: The Centre will develop funding proposals to international and national organizations for partnerships and funding of critical activities to improve STEM education, pedagogy and research in the Education Sector.

7.3 Resource management

The projected resource requirements for implementing the Strategic Plan will be managed in line with the requirements of the Public Financial Management Act (PFMA),2012; Public Procurement and Disposal Act (PPDA), 2015; and relevant legal provisions to ensure fiduciary assurance and effective implementation of the aspirations of the Centre. The budget vote heads are aligned to the Key Result Areas in the Strategic Plan to ensure focused investments.

CHAPTER EIGHT

MONITORING, EVALUATION & REPORTING FRAMEWORK

MONITORING, EVALUATION & REPORTING FRAMEWORK

Chapter eight presents the Monitoring, Evaluation and Reporting (MER) framework for CEMASTEA Strategic Plan. The MER framework entails systematic and continuous process of collecting and analyzing information based on the performance indicators, targets and feedback. In addition, an Implementation Matrix with clear outputs, outcomes, and targets for five years is annexed to facilitate monitoring and evaluation of projects and programs, assessment of the impact to the Kenyan youth and reporting of results to stakeholders. The outcome performance matrix is presented in Table 8.1.

8.1 Monitoring framework

Monitoring implementation of the CEMASTEA Strategic Plan will track activities and expected outputs to ensure progress, detect potential challenges and make necessary adjustments. A Committee composed of members from Departments involved in the implementation of the Plan will be established to conduct routine data collection, analysis and reporting on respective KRAs, strategic objectives, strategies, activities and expected outputs in Table 6.1. A Strategic Plan Implementation Committee (SPIC) will coordinate Departments to compile the implementation reports. SPIC will consolidate the quarterly and annual monitoring reports from various Departments using designated templates in Table 8.2, 8.3 and 8.4. The Plan implementation monitoring reports will be discussed at management level and brief reports generated on key issues for submission to the Board of Governors on a bi-annual basis for policy guidance.

8.2 Performance Standards

The Monitoring and Evaluation framework based on internationally accepted norms and standards will focus on relevance, effectiveness, efficiency, impact and sustainability. The performance standards were set at the planning phase for conducting quality monitoring and evaluation of policy, program and projects. The standards include measurable results, monitoring plan, evaluation plan and budget for monitoring and evaluation.

8.3 Evaluation Framework

A comprehensive Monitoring and Evaluation report will be prepared annually to inform subsequent operational plans. Evaluation will entail a systematic and objective process of examining the relevance, effectiveness, efficiency, sustainability and impact of planned programs and projects both expected and unexpected. Formal surveys and

assessments will be applied to evaluate what will be achieved against set targets. Table 8.1 details the outcome performance indicators that will be monitored and evaluated to assess realization of the planned activities. Mid-term evaluations will be undertaken to provide information for work plan adjustment to ensure consistency of outcomes with respect to dynamic institutional priorities. End-term evaluation will be conducted six months prior to closure of implementation period aimed at measuring achievement of set targets, assess challenges experienced and mitigation strategies to inform future Plans, accountability and sustainability.

8.3.1 Mid-Term Evaluation

A midterm evaluation on the performance of this Strategic Plan will be conducted during the FY 2024/25 internally by Departments and sections to assess progress towards achieving set targets. Recommendations from mid-term evaluation will inform decision making on improvements to the Strategic Plan implementation process.

8.3.2 End-Term Evaluation

An end term evaluation to assess the performance of this Strategic Plan will be conducted during the FY 2027/28 to assess achievement, challenges and lessons learnt to inform the next cycle of strategic planning.

8.4 Reporting Framework and Feedback Mechanism

Heads of Departments and Sections will be involved in the monitoring and reporting on the progress of the achievements of results and strategic objectives agreed upon in the Strategic Plan. The Strategic Plan Implementation Committee will compile and submit implementation reports on quarterly, annual monitoring and evaluation reporting of the Plan outputs and outcomes using Tables 8.2, 8.3 and 8.4 templates respectively.

8.5 Monitoring and Evaluation Tools

The tools for data collection and reporting on monitoring and evaluation of the Plan will be developed for application during surveys, assessments and keeping administrative records. The data collection and reporting tools include; questionnaire, digital tools, quality assurance tools, collaborative tools, and customized templates.

Table 8.1: Outcome Performance Matrix

Key Result Area [KRA]	Strategic Objective	Outcome	Outcome Indicator	Baseline		Targets	
				Value	Year	Mid Term	End term
KRA 1: Training and Competence Development	Objective 1.1: To improve quality and relevance of training programs	Improved quality of training	Teacher Professional Development Quality Index (TPDQI)	4.24	2022/ 23	4.26	4.28
		Improved relevance of training programs	Percentage of teachers practicing learner-centered pedagogies	71	2018/19	73	75
	Objective 1.2: To enhance access and inclusivity in training programs	Increased access to training programs	Number of additional categories of curriculum implementers reached by training programs	4	2022/23	1	2
			Number of additional teachers in private schools accessing training programs	253	2023/24	300	500
		Increased inclusivity in training programs	Number of additional teachers from special needs and disadvantaged groups participating in training programs	1,315	2023/ 24	700	1,700
	Objective 1.3: To increase e-learning utilization and ICT integration in STEM education.	Increased enrollment of teachers in STEM e-learning	Number of additional teachers enrolled in e-learning.	1,917	2023/24	1,100	2,100
		Increased satisfaction with STEM e-learning among curriculum implementers	Satisfaction index in e-learning	3.64	2023/24	4.0	4.3
KRA 2: Research and Knowledge Management	Objective 2.1: To enhance evidence-based STEM education.	Enhance evidence-based STEM education/ Increased awareness and utilization of research products by curriculum implementers.	% change in awareness and utilization of research products	4	2023/ 24	8	20
		Increased number of STEM related innovations / courses developed based on research findings.	Number of additional STEM related innovations and courses.	10	2023/24	10	30

Key Result Area [KRA]	Strategic Objective	Outcome	Outcome Indicator	Baseline		Targets	
				Value	Year	Mid Term	End term
		Increased number of research products published.	Number of additional research products published	7	2023/24	8	18
	Objective 2.2: To enhance knowledge management base.	Increased access to research products	Number of additional persons accessing research products.	5000	2023/ 24	7,000	15,000
			Number of additional institutions accessing research products	1,250	2023/ 24	1,800	3,800
KRA 3: Resource Mobilization and Partnership	Objective 3.1: To increase Centre's resource base.	Increased revenue	Additional amount of AIA (Ksh million).	36	2022/23	40	44
			Additional amount of government funding for strategic interventions (Ksh million).	980	2022/23	1,078	1,186
	Objective 3.2: To enhance partnerships and linkages for improved competencies in STEM education and research	Increased number of partnerships and linkages	Additional agreements / MoUs signed.	6	2022/23	4	9
		Increased consultancy services.	Additional number of consultancies conducted.	2	2022/23	4	6
		Increased number of countries or organizations subscribing to the continental secretariat programs.	Additional number of countries/ organizations subscribing	17	2023/24	3	6
		Increased number of international programs implemented by the Centre.	Additional number of joint programs implemented	3	2023/24	3	4
KRA 4: Governance	Objective 4.1: To improve corporate governance	Improved organizational performance.	Performance contracting index	2.95	2022/23	2.5	2.4
		Improved organizational productivity	Productivity index	Conduct baseline in year 1	2023/24		
		Improved compliance to governance framework	% Compliance	100%	2023/24	100%	100%

Key Result Area [KRA]	Strategic Objective	Outcome	Outcome Indicator	Baseline		Targets	
				Value	Year	Mid Term	End term
	Objective 4.2: To enhance fiduciary assurance	Effective utilization (% of time an asset is actively utilized)	Percentage improvement in utilization.	2.1%	2022.2023	5%	10%
		Effective and efficient financial management processes.	Number of unqualified audit reports.	1	2023/24	3	5
		Effective and efficient supply chain processes.	Customer satisfaction level with procurement process.	50.6%	2019/2020	75%	90%
		Enhanced business continuity.	% of risks mitigated.	10%	2023/ 24	50%	100%
			% of incidences reported.	1	2023/24	1	1
	Objective 4.3: To enhance environmental conservation.	Enhanced environmental conservation.	Survival rate of supplied seedlings to institutions	95	2022/2023	97	97
			Survival rates of supplied seeds to institutions	70	2023/24	72	74
			% of generated e-waste collected and successfully disposed.	0	2022/2023	50%	100%
KRA 5: Organizational strengthening	Objective 5.1: To improve organizational visibility and effectiveness	Enhanced Customer Satisfaction Index	Customer Satisfaction index	67.7	2022/2023	70	72
		Strengthened corporate brand visibility.	CEMASTEA Brand Visibility Index.	3.25	2022/2023	3.5	4
		Increased number of staff	In-post staff as a proportion of approved staff establishment	40%	2022/23	70%	100%
		Improved work environment	Employee Satisfaction Index	63%	2023/2024	80%	95%
	Objective 5.2: To increase the number of people accessing open resources.	Increased number of people accessing open resources.	Percentage change in number of people accessing the open resources	1000 visits	2023 / 2024	Increase by 2000	Increase by 3000
	Objective 5.3: To enhance automation in key processes.	Enhanced automation of key processes.	Percentage of processes automated	10%	2023/2024	30%	50%
		Reduced turnaround time in the key processes	Average turnaround time for key processes.	3weeks	2023/24	2 weeks	1 week

Key Result Area [KRA]	Strategic Objective	Outcome	Outcome Indicator	Baseline		Targets	
				Value	Year	Mid Term	End term
KRA 6: Enhancing Science, Technology, Engineering, Mathematics and Innovations (STEMI) education.	6.1 Strengthen CEMASTEA's coordination role in promoting strategic interventions in STEMI education.	Strengthened CEMASTEA's coordination role in promoting strategic interventions in STEMI education.	% of members with functional country chapters	15%	2023/24	50%	75%
	6.2 To improve the policy environment that promotes STEMI education.	Improved policy environment for STEMI education, training and research in Africa	% of identified Africa STEMI Policies Reviewed	0	2023/24	50%	68%
	6.3 To improve STEMI education and training practices.	Improved STEMI education and training practices	Proportion of countries adopting the Africa Integrated Curriculum Reference Framework	0	2023/24	30%	50%
	6.4 To enhance STEMI research and development and knowledge management.	Enhanced STEMI Research and Development and knowledge management in Africa	Topical Joint researches published and disseminated as a % of total joint researches conducted	0	2023/24	30%	50%
	6.5 To strengthen collaboration and partnerships in STEMI education providers, industry leaders and policy makers.	Strengthened collaboration and partnerships between STEMI education providers, industry leaders, and policymakers	No. of additional collaborators and partnership in African STEMI education	2	2020/ 23	4	6

Table 8.2: Quarterly Progress Reporting Template

Quarterly progress report quarter ending: .....

Expected output	Output indicators	Annual target (A)	Quarter for year			Cumulative to date			Remarks	Corrective intervention
			Target (B)	Actual (C)	Variance (C-B)	Target (E)	Actual (F)	Variance (F-E)		

Table 8.3: Annual Progress Reporting Template

Annual progress report year ending: .....

Expected output	Output indicators	Achievement for year			Cumulative to date (years)			Remarks	Corrective intervention
		Target	Actual	Variance	Target	Actual	Variance		
		Target (A)	**Actual (B)**	**Variance (B-C)**	**Target (D)**	**Actual (E)**	**Variance (E-D)**		

Table 8.4: Evaluation Reporting Template

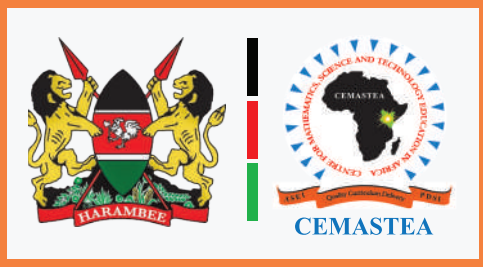
Key Result Area	Outcome	Key performance indicators	Baseline		Mid-Term Evaluation		End-Term Evaluation		Remarks	Corrective intervention
			Value	Year	Target	Achievement	Target	Achievement		
KRA 1										
KRA 2										
KRA 3										
KRA 4										
KRA 5										
KRA 6										

Annex 1: Performance Contract Indicators Matrix for Fy 2023/24

S/no.	Performance Criteria	Unit of Measure	Weight (%)	Status Previous Year 2022/2023	Target (FY 2023/2024
A	**Financial Stewardship**				
A1	Absorption of Allocated Funds (GoK)	%	5.00	100.00	100.00
A2	Appropriation -In-Aid	Kshs	2.00	33067376.00	15512878.00
A4	Pending Bills Ratio	%	3.00	100.00	1.00
	Weight Sub-total		**10.00**		
B	**Service Delivery**				
B1	Implementation of Citizens' Service Delivery Charter	%	5.00	100.00	100.00
B2	Digitalization of Government Services	%	6.00	N/A	100.00
B3	Resolution of Public Complaints	%	4.00	100.00	100.00
	Weight Sub-total		**15.00**		
C	**Core Mandate**				
C34_1	Primary mathematics and science teachers trained in science and technology (coding)	No	3.00	282.00	780.00
C34_2	Junior Secondary School (JSS) teachers trained in pedagogical content knowledge (PCK)	No	7.00	29096.00	10000.00
C34_3	Capacity of QASO to monitor and support teachers in curriculum implementation enhanced	No	2.00	384.00	350.00
C34_5	Workshop for MoE and TSC regional Directors on CEMASTEA activities conducted	No	1.00	N/A	16.00
C34_6	Teachers trained on ICT integration in teaching and learning	No	4.00	1965.00	2000.00
C34_7	Podcasts on STEM education produced	No	2.00	N/A	4.00
C34_8	Principals and teachers from the STEM model schools trained in climate change education	No	3.00	N/A	515.00

S/no.	Performance Criteria	Unit of Measure	Weight (%)	Status Previous Year 2022/2023	Target (FY 2023/2024
C34_9	STEM boot camp and mentorship for learners conducted	No	2.00	100.00	1.00
C34_10	Manual on improvisation of STEM teaching and learning resources for JSS developed	%	2.00	N/A	100.00
C34_11	CEMASTEA programs and activities publicized	No	2.00	N/A	4.00
C34_12	Research and Development documentation reviewed to align with CEMASTEA Mandate	%	2.00	N/A	100.00
C34_13	Classroom Practice Research Conducted	%	3.00	100.00	100.00
C34_14	Practitioner Journal of Mathematics and Science Teachers (PJMST) Published	%	2.00	100.00	100.00
C34_15	Monitoring and Evaluation of CEMASTEA INSET and Workshops conducted	%	3.00	N/A	100.00
C34_16	One workshop conducted to disseminate research findings to stakeholders.	%	2.00	N/A	100.00
C34_17	Staff trained on quantitative and qualitative data analysis methods	%	2.00	N/A	100.00
C34_18	Symposia on effective classroom practices conducted	%	3.00	N/A	100.00
C34_20	Collaborative partnerships to support STEM education established	%	2.00	N/A	100.00
C34_21	Advocacy and networking forums on STEM education conducted	%	3.00	N/A	100.00
C34_22	Innovative STEM education activities and outreach for learners conducted	%	3.00	N/A	100.00
C34_23	Strategic Plan Developed	%	3.00	N/A	100.00
C34_24	Project Completion Rate	%	2.00	100.00	100.00
C34_25	Science, Technology and Innovation Mainstreaming	%	2.00	100.00	100.00

S/no.	Performance Criteria	Unit of Measure	Weight (%)	Status Previous Year 2022/2023	Target (FY 2023/2024
C34_2 6	Productivity Mainstreaming	%	3.00	N/A	100.00
C34_2 7	Junior Secondary school teachers supported in the use of virtual laboratories in teaching and learning	No	2.00	N/A	47.00
	Weight Sub-total		**65.00**		
D	**Implementation of Presidential Directives**				
D1	Implementation of Presidential Directives	%	2.00	100.00	100.00
	Weight Sub-total		**2.00**		
E	**Affirmative Action in Procurement**				
E1	Access to Government Procurement Opportunities	Kshs	2.00	92501766.79	92501766.79
E2	Promotion of Local Content in Procurement	Kshs	2.00	131047301.00	123335689.06
	Weight Sub-total		**4.00**		
F	**Cross – Cutting**				
F1	Asset Management	%	0.50	100.00	100.00
F2	Youth Internships/ Industrial Attachments/ Apprenticeships	No	1.00	31.00	32.00
F3	Competence Development	%	1.00	100.00	100.00
F4	National Values and Principles of Governance	%	1.00	100.00	100.00
F5	Road Safety Mainstreaming	%	0.50	100.00	100.00
	Weight Sub-total		**4.00**		
	Total Weight		**100.00**		



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