REPUBLIC OF KENYA

MINISTRY OF ENERGY & PETROLEUM

SCIENCE, TECHNOLOGY, AND INNOVATION MAINSTREAMING STRATEGY 2025 - 2029

MAY 2025

Foreword

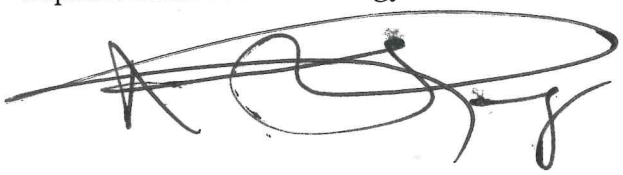
Energy and Petroleum are socio-economic transformation enablers towards the attainment of Government priorities. These priorities are anchored in the Kenya Vision 2030 and its constituent Medium-Term Plans (MTPs), the Bottom-up Economic Transformation Agenda (BETA), and international obligations as anchored in the United Nations Vision 2030, Africa Agenda 2063 and East Africa Community Agenda 2050.

Emerging from the Energy and Oil and Gas Sector's situation analysis for the period 2018-2024, there are emerging global trends in the sector informed by sustained research in Energy, Oil and Gas. These include emerging technologies, Innovations among others. The global trends have informed the ever-changing energy and Petroleum demands from the various sectors of the economy.

To meet these ever-changing demands, there is need for the evolution of the Energy and Oil & Gas sectors to match the emerging trends. Science, Technology and Innovation (STI) is a reliable platform that informs and aids this evolution over time. Research plays a key role in the generation of new knowledge that is relevant to the development of the Energy and Oil & Gas. Similarly, technology and innovation play a key role in aiding the application of emerging knowledge in the sector.

This Strategy therefore, will go a long way in institutionalizing mainstreaming of STI in formulation and implementation of the Ministry's programmes and projects for the period 2025-2029.

I take this opportunity to call upon all the staff under the Ministry of Energy and Petroleum, and key stakeholders to take an active role through total commitment in the successful implementation of this strategy.



Hon. J. Opiyo Wandayi, EGH
CABINET SECRETARY FOR ENERGY AND PETROLEUM

Acknowledgment

The Science, Technology and Innovation (STI) strategy development was undertaken through a consultative process involving the Ministry's Heads of Directorates/Departments/Units and STI Mainstreaming Committee, and guided by the National Commission for Science, Technology and Innovation (NACOSTI). Development of the Strategy was informed by the Ministry of Energy and Petroleum Strategic Plan (2023-2027); the 21st Cycle Performance Contracting Guidelines; 2024/25 Financial Year Ministry of Energy and Petroleum Performance Contract; Energy, Infrastructure and ICT Sector Budget Report among other relevant reference materials.

Special appreciation goes to the Cabinet Secretary, Ministry of Energy and Petroleum for his strategic leadership throughout the Strategy development process, including facilitating and aiding the process.

We equally appreciate NACOSTI for guiding the Ministry through the STI mainstreaming process. This includes their pivot role in midwifing the development of this Strategy and sensitization of the Ministry's STI committee members, staff and stakeholders.

We further appreciate the Ministry's Heads of Directorates, Departments and Units, STI Mainstreaming Committee as well as the general staff for their input and dedication towards the preparation of this Strategy.

It is our sincere desire that this strategy shall be successfully implemented in facilitating the entrenchment of STI in the Ministry's programmes and projects.

Sign

Alex Wachira, CBS
Principal Secretary for Energy

Sign

Mohamed Liban, CBS
Principal Secretary for Petroleum

Abbreviations and Acronyms

BETA	Bottom-Up Economic Transformation Agenda
EAC	East African Community
CEEC	Centre of Energy Efficiency and Conservation
FY	Financial Year
ICT	Information Communication Technology
ISACA	Information Systems Audit Control Association
KAM	Kenya Association of Manufacturers
MTP	Medium-Term Plan
MoU	Memorandum of Understanding
MSMEs	Micro, Small and Medium Enterprises
M&E	Monitoring and Evaluation
NACOSTI	National Commission for Science, Technology and Innovation
No.	Number
PSC	Public Service Commission
R&D	Research & Development
RSTI	Research, Science, Technology and Innovation
SDE	State Department for Energy
SDG	Sustainable Development Goals
SDP	State Department for Petroleum
STEM	Science, Technology, Engineering, Mathematics
STI	Science Technology and Innovation
SWOT	Strengths, Weaknesses, Opportunities and Threats
UN	United Nations

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EXECUTIVE SUMMARY

The Ministry of Energy and Petroleum has developed its first Science, Technology and Innovation (STI) Strategy for the period 2025-2029 to guide the promotion, coordination and implementation of STI Mainstreaming within its programmes and projects.

Emerging from the situation analysis, five (5) STI strategic issues were identified as follows:

1. Science, Technology and Innovation (STI) Education, Communication, Talent Development, and Next - generation Workforce;
2. Research and Development R&D) Strengthening, R&D Priorities, R&D Financing and R&D Infrastructure;
3. STI Inclusivity, Diversity, Advocacy, Diplomacy, Governance, legal framework, and Policy Reviews;
4. Technology Protection, Diffusion, and Commercialization; and
5. Strategic Multi-Agency, Multisectoral, and International Cooperation and Partnerships in Research, Science, Technology and innovation (RSTI).

The Ministry has developed five strategic objectives to address the identified strategic issues which will inform the mainstreaming of STI. These are;

1. To enhance quality and capacity of human resource and talent management;
2. To enhance and strengthen STI infrastructure to support Programmes in priority areas and develop mechanisms for sustainable financial resource mobilization and investment in STI;
3. To enhance inclusivity/diversity in STI related programmes/ decision making processes through advocacy awareness creation and promotion of gender equality;
4. To promote energy and petroleum technologies development, transfer and diffusion; and
5. To establish and strengthen strategic collaborations and partnerships on STI at national, regional and international levels.

The key milestones targeted during the implementation of this strategy include: An STI Knowledge management portal; Promotion of various energy and petroleum technologies; Cascading of the STI mainstreaming to State Agencies under the Ministry; Integration of STI in delivery of programmes and projects Modernized equipment for STI Mainstreaming; STI Mainstreamed strategies and policies within Ministry; A Ministerial Intellectual Property policy; a Ministerial Research Policy; and Capacity building of the Ministry on STI.

To implement the strategy effectively and efficiently, both financial and technical resources are required. An estimated total financial requirement of Kshs. 192,085 million is required.

To raise these resources the Ministry will mobilize funding from the Government, development partners, leverage on ICT, engage the private sector through the Public Private Partnership (PPP), and collaborate with relevant stakeholders to realize the technical resources required.

Towards the successful implementation of the Strategy, the Ministry will develop a robust STI mainstreamed Monitoring, Evaluation and Reporting (MER) Framework to track progress, assess performance and inform evidence-based decision making.

The Strategy is divided into five chapters. Chapter One provides a brief historical background of the Ministry, the legal framework establishing it, its mandate and the institutional framework; Chapter Two presents the situation analysis of STI in the Ministry, vis a vis the current status in the country as well as summary of Strengths, Weaknesses, Opportunities and Threats (SWOT). Chapter Three presents the Vision, Mission and Core Values of the Ministry, objectives and guiding principles of the strategy, as well as Strategies for the mainstreaming of STI; Chapter Four outlines the implementation framework of the strategy; while Chapter Five presents the Monitoring, Evaluation and Reporting Frameworks.

1. INTRODUCTION

1.1 History and Background

The Ministry of Energy was established in 1976 and has evolved over time. In 2015, through reorganization of National Government, the Ministry of Energy was renamed to the Ministry of Energy and Petroleum comprising of two State Departments; the State Department for Energy and the State Department for Petroleum dealing with energy and petroleum functions respectively. The Executive Order No. 1 of June 2018 established the Ministry of Energy as a stand-alone Ministry, with petroleum as state department under the Ministry of petroleum and mining.

The Government, through the Executive Order No. 2 of November 2023, merged the Ministry of Energy with the State Department for Petroleum to form the Ministry of Energy and Petroleum with two State Departments namely: The State Department for Energy and the State Department for Petroleum.

1.2 Mandate

The mandate of the Ministry of Energy and Petroleum' State Departments as anchored in the Executive Order No.2 of November, 2023 is as follows:

1.2.1 Mandate of the State Department for Energy

i. National Energy Policy Development and Management;
ii. Thermal Power Development;
iii. Rural Electrification Programme;
iv. Energy Regulation, Security and Conservation;
v. Hydropower Development;
vi. Geothermal Exploration and Development;
vii. Promotion of Renewable Energy;

1.2.2 Mandate of the State Department for Petroleum

i. Petroleum Policy;
ii. Strategic Petroleum Stock Management;
iii. Management of Upstream Petroleum Products Marketing;
iv. Oil and Gas Exploration Policy Development;
v. Oil/Gas Sector Capacity Development;
vi. Petroleum Products, Import/Export Marketing Policy Management;
vii. Licensing of Petroleum Marketing and Handling; and
viii. Quality Control of Petroleum products

1.3 Institutional Framework

The Ministry is in charge of providing policy and strategic direction within the Energy, and Oil & Gas Sectors. The Ministry comprises of the two State Departments (Energy and Petroleum). The state department for energy comprises of four Directorates namely; Electrical Power Development, Renewable Energy, Geo-Exploration as well as Administrative and support services. Similarly, the state department for petroleum comprises of four directorates namely; the Upstream, Mid/Downstream, Petroleum Compliance and Analysis, and Administrative and Support services.

The Ministry implements its mandate through the support of the following ten State Agencies:

i. Kenya Electricity Generating Company PLC (KenGen);
ii. Nuclear Power and Energy Agency (NuPEA);
iii. Rural Electrification and Renewable Energy Corporation (REREC);
iv. Energy and Petroleum Regulatory Authority (EPRA);
v. Kenya Power and Lighting Company PLC (KPLC);
vi. Kenya Electricity Transmission Company (KETRACO); and
vii. Geothermal Development Company (GDC).
viii. Kenya Pipeline Company (KPC)
ix. National Oil Corporation of Kenya (NOCK)
x. Kenya Petroleum Refineries Limited (KPRL)

2. SITUATIONAL ANALYSIS AND RATIONALE

2.1 Situational Analysis

The Ministry of Energy and Petroleum undertook a situational analysis of its Science Technology and Innovation (STI) Mainstreaming based on STI Strategic/Operational Priorities, vis-a-vis the current status of STI in the country. This was done by analyzing The Ministry's Strengths, Weaknesses, Opportunities and Threats (SWOT).

Table 2. 1: SWOT Analysis

Strengths	Weaknesses
• Clear mandate and vision. • STI compliance structures. • Supportive leadership. • Specialized equipment and new technologies. • Competencies and capabilities in science and technology.	• Inadequate framework for Research and Innovation. • Inadequate funding for Research and Innovation. • Inadequate specialized skills in STI. • Inadequate specialized equipment, technologies and infrastructure. • Existing gaps in sector specific statistics. • Inadequate energy and petroleum resource mapping. • Inadequate knowledge management in STI.
Opportunities	**Threats**
• Policy support by the Government. • Government support in implementation of STI. • Goodwill and collaboration from stakeholders and development partners. • Global technological advancement. • Energy transitions that are providing avenues for research and development. • Recognition of the role of energy and petroleum in the national development agenda.	• Cyber attacks • Disruptions in the operational environment due to climate change and natural disasters. • Global Policy shifts. • Insecurity in project research areas. • Dependency on technology providers.

2.2 Rationale for STI Mainstreaming Strategy

Kenya's long-term development agenda as set out in the Kenya Vision 2030 is to make Kenya a globally competitive and prosperous country by transforming it into an industrialized middle-income nation, providing high quality of life for all its citizens in a clean and secure environment.

The Kenya Vision 2030 in its Fourth Medium-Term Plan (MTP) IV recognizes Science, Technology and Innovation (STI) as one of the foundation pillars. STI will play an important

role towards the achievement of the Sustainable Development Goals (SDGs), Africa Union Agenda 2063, East African Community (EAC) Vision 2050, and Bottom-Up Economic Transformation Agenda (BETA). Mainstreaming and integrating STI strategies in the Ministry's programmes and projects will enhance realization of commitments to service delivery.

To meet the evolving energy and petroleum demands nationally and regionally, there is need for a sustained progressive change in the structure, formulation and implementation of the Ministry's programmes/projects. The Ministry lacks adequate framework for research, development and innovation, which hinders adoption of emerging technology in implementation of its mandate. This Strategy provides a framework for institutionalizing the mainstreaming of STI in the formulation and implementation of the Ministry's programmes and projects for the period 2025-2029

This Strategy is aligned to the Ministry of Energy and Petroleum Strategic Plan for the period 2023-2027. It therefore provides the Ministry with an additional mechanism to facilitate realization of the Strategic Plan goals and objectives. In addition, the Strategy will provide a road-map for long-term success and will guide on resource use to meet the objectives of the Ministry.

3. STRATEGIC ORIENTATION

3.1 Vision Statement

A regional leader in provision of energy and petroleum for sustainable development.

3.2 Mission Statement

To promote access to clean, renewable, reliable and competitive energy and petroleum products and services through sustainable exploitation and management of energy and petroleum resources in Kenya.

3.3 Core Values

The Ministry will adhere to the following core values in the discharge of its core mandate;

i. Professionalism and Integrity through adherence to high standards of professional competence and ethics;

ii. Transparency and accountability through enhancing openness, sharing of information and taking responsibility;

iii. Innovativeness by promoting creativity and reward new solutions and ideas in creating values for customers and stakeholders;

iv. Stakeholder participation by involving stakeholders in implementation of programmes and projects;

v. Customer centric by putting the needs of customers first in-service delivery;

vi. Teamwork and Commitment by promoting collaboration and information sharing;

vii. Sustainability through adoption of best practices to ensure efficient management of resources; and

viii. Inclusivity and impartiality by ensuring participation and equitable sharing of benefits.

3.4 Objectives of the Strategy

The following objectives have been identified to inform the promotion, coordination and implementation of Science, Technology and Innovation within the Ministry.

i. To enhance quality and capacity of human resource and talent management.

ii. To enhance and strengthen STI infrastructure to support Programmes in priority areas and develop mechanisms for sustainable financial resource mobilization and investment in STI.

iii. To enhance inclusivity/diversity in STI related programmes/ decision making processes through advocacy awareness creation and promotion of gender equality.

iv. To promote energy and petroleum technologies development, transfer and diffusion

v. To establish and strengthen strategic collaborations and partnerships on STI at national, regional and international levels.

3.5 Guiding Principles of the Strategy

This STI Strategy was guided by national development priorities, regional and international development frameworks namely; the United Nations 2030 Agenda for Sustainable Development, African Union Agenda 2063, East African Community Vision 2050, the Constitution of Kenya, Kenya Vision 2030, Bottom-Up Economic Transformation Agenda, the Fourth Medium Term Plan, the Ministry of Energy and Petroleum Fifth Generation Strategic Plan 2023-2027 and the sector Policies and Legislations.

3.5.1 United Nations 2030 Agenda for Sustainable Development

The 2030 Agenda for sustainable development recognizes science, technology and innovation (STI) as a key driver for addressing global challenges such as poverty, inequality, climate change, and environmental degradation. It applies across multiple SDGs, facilitating solutions that enhance health, education, energy, water, and more. For instance, to attain the aspirations in SDG 7 (Ensure access to affordable, reliable, sustainable and modern energy for all) advancements in energy technologies and energy efficiency are crucial. STI enables growth in clean energy access and overall energy efficiency.

The integration of STI into Kenya's energy, and Oil & Gas sectors is pivotal for achieving the SDGs outlined in the UN 2030 Agenda for Sustainable Development by; fostering a supportive environment for research & development, leveraging international partnerships, and investing in infrastructure to ensure sustainable and inclusive growth.

3.5.2 African Union Agenda 2063

The African Union's Agenda 2063 highlights STI as key enabler for Africa's socio-economic transformation. It aims to promote homegrown innovations, build robust STI infrastructure, and enhance education systems to focus on Science, Technology, Engineering, Mathematics (STEM). The agenda encourages public-private partnerships, increases investment in R&D, and leverages technology to tackle socio-economic challenges. It emphasizes creating enabling policies, fostering regional cooperation, and integrating STI into sustainable development strategies. Integrating STI into the Ministry's programmes and projects will foster the promotion, exploitation and development of energy and petroleum resources in the country while protecting the environment to promote Africa's social economic development.

3.5.3 East Africa Community Vision 2050

The Vision aims at making the East Africa a globally competitive upper-middle income region with a high quality of life for its population based on the principles of inclusivity and accountability. It lays out STI as a crucial driver for this socio-economic transformation and sustainable development. This vision will be realized through long-term transformation, value addition and growth of infrastructure including Petroleum, Energy and Information Technology among others, needed to accelerate sustained growth over the long term.

The East African Community has outlined the following key areas to support STI; Fostering a digital inclusive society, Double the number of STEM graduates in STEM fields by 2050, Promote collaborations & knowledge sharing on matters STI and increase expenditure on research & development. In line with this vision the Ministry will promote and support development of new technologies and information transfer.

3.5.4 Constitution of Kenya

The Constitution of Kenya establishes a strong linkage with STI through various provisions that include; sustainable development as part of the national values and principles of governance (Article 10 (2)(d)), recognize the role of science and indigenous technologies in the development of the nation (Article 11 (2)(b)) and promotion of intellectual property rights of the people of Kenya (Article 11 (2)(c)) among others. These constitutional principles are more particularly prescribed in the Science, Technology and Innovation Act, 2013 (Rev. 2014). These provide the framework for STI mainstreaming within the Ministry.

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

Under Vision 2030, Kenya aims to become "a middle-income, newly-industrializing country offering a high quality of life to all its citizens in a secure environment". The Vision is anchored on Economic, Social and Political pillars that are critical in achieving the desired socio-economic transformation by 2030. The Economic pillar emphasizes the role of STI in improving productivity and competitiveness in sectors such as agriculture and manufacturing. The Social pillar leverages on STI to enhance delivery of services in sectors like health and education. The political pillar aims to foster governance framework that supports STI through policies, regulations etc. Through the MTP IV, STI is anticipated to drive economic growth, create employment and improve overall quality of life which aligns to the vision of the Ministry as an enabler to the realization of the Vision 2030.

The Bottom-up Economic Transformation Agenda (BETA) emphasizes leveraging on STI to drive inclusive economic growth from the grassroots level. It focuses on empowering local communities through the adoption of appropriate technologies, enhancing education and

skills in STEM fields, and fostering innovation and entrepreneurship. The Ministry commits to develop policies, foster collaborations, conduct capacity building programmes and monitor impacts among others to drive innovation and improved service delivery.

3.5.6 Sector Policies and Laws

The following will guide the operations of this strategy; Energy Policy, 2018; Gender Policy in Energy, 2018; Petroleum Act Cap. 308; and the Energy Act, Cap. 314.

3.6 STI Strategies for the Ministry of Energy and Petroleum

This STI Strategy was guided by national development priorities, regional and international development frameworks namely; the United Nations 2030 Agenda for Sustainable Development, African Union Agenda 2063, East African Community Vision 2050, the Constitution of Kenya, Kenya Vision 2030, Bottom-Up Economic Transformation Agenda, the Fourth Medium Term Plan as well as the Ministry of Energy and Petroleum Strategic Plan 2023-2027.

Table 3. 1: Strategies

	The Strategic Issue	Strategic Objective(s)	Strategies for Research, Science, Technology, and Innovation
1.	Science, Technology and Innovation (STI) Education, Communication, Talent Development, and Next - generation Workforce	To enhance quality and capacity of human resource and talent management	• Strengthen human resource capacity in STI through training on issues on RSTI • Establish and implement sanctions to promote STI • Participate in conferences, exhibitions/fairs and STI networks • Collaborate with accredited academic institutions to promote uptake of STEM
2.	R&D Strengthening, R&D Priorities, R&D Financing and R&D Infrastructure	To enhance and strengthen STI infrastructure to support Programmes in priority areas and develop mechanisms for sustainable financial resource mobilization and investment in STI	• Establish the status of STI infrastructure and digital readiness • Mobilize and allocate resources for STI mainstreaming in the Ministry through the Medium-Term Expenditure Framework Process.
3.	STI Inclusivity, Diversity, Advocacy,	To enhance inclusivity/diversity in STI related	• Enhance awareness on STI • Cascade STI Mainstreaming to the Ministry and all the 10 State

	The Strategic Issue	Strategic Objective(s)	Strategies for Research, Science, Technology, and Innovation
	Diplomacy, Governance, legal framework, and Policy Reviews	programmes/ decision making processes through advocacy awareness creation and promotion of gender equality	Agencies under Energy and Petroleum • Undertake or participate in programmes/activities towards gender and social inclusion in STI mainstreaming • Enhance the institutional legal and regulatory framework for STI mainstreaming • Develop/review STI mainstreaming institutional, policy, legal and regulatory framework for the Ministry, research policy, and strategies) • Mainstream STI in various Energy/Petroleum related policies and strategies during development/review.
4.	Technology Protection, Diffusion, and Commercialization	To promote energy and petroleum technologies development, transfer and diffusion	• Enhance uptake of energy and petroleum technologies • To encourage private sector on innovative energy technology by offering tax incentive and subsidies (KOSAP subsidies) (geothermal resource licensees) • Support the launch of pilot projects that demonstrate emerging technology applications • Enhance intellectual property framework (IP policy)
5.	Strategic Multi-Agency, Multisectoral, and International Cooperation and Partnerships in Research, and STI	To establish and strengthen strategic collaborations and partnerships on STI at national, regional and international levels	• Enhance collaboration with the county governments to entrench STI in energy planning and the implementation of petroleum master plan • Enhance Energy and Petroleum Efficiency in Kenya • Enhance collaboration between Kenya and other countries and multilateral on energy and Petroleum technologies • Enhance collaborations on environmental conservation

	The Strategic Issue	Strategic Objective(s)	Strategies for Research, Science, Technology, and Innovation
			• Create networks and linkages for investments and partnerships in manufacturing, infrastructure development, MSMEs, Start-Ups, technology/industrial park among others. • Strengthen the industry-academia through programmes such as internships and attachments.

4. IMPLEMENTATION FRAMEWORK OF THE STI MAINSTREAMING STRATEGY

Table 4. 1: Implementation Framework of the Institutional STI Mainstreaming Strategy

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
Science, Technology and Innovation (STI) Education, Communication, Talent Development, and Next - generation Workforce	Strengthen human resource capacity in STI through training on issues on RSTI	Officers Trained annually on STI	% of officers Trained	100%	Back to office Training reports/ Certificates	50
		Officers recruited/promoted to support STI mainstreaming	No. of officers recruited /promoted	8	Appointment/ promotion letters	13
		Training needs for STI identified	No. of Training Needs Assessment carried out	2	Approved TNA report	5
		Skills gap identified	No. of Skills Audit undertaken	2	Approved skills audit report	5
		Improved performance in STI	No. of officers appraised on STI	21	Staff performance Appraisal report	0
		Stakeholders' sensitization on energy and petroleum technologies conducted	No. of stakeholder sensitization workshops conducted	5	Stakeholder sensitization reports	200
		Sensitization of County Governments on County Energy	No. of counties sensitized	47	Sensitization reports	100

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
		Planning and LPG installation conducted				
	Sanctions to promote STI established and implemented	Ministry's Guidelines on sanctions to promote STI	Ministry's Guidelines on sanctions to promote STI	1	Ministry's Guidelines	5
		Officers sanctioned	No. of awards	21	Awards	5
R&D Strengthening, R&D Priorities, R&D Financing and R&D Infrastructure	Establish the status of STI infrastructure and digital readiness	Baseline survey report to establish the status of STI infrastructure and digital readiness	A Baseline survey report to establish the status of STI infrastructure and digital readiness	1	Survey Report	5
	Enhance STI infrastructure	STI Knowledge Management Portal	An STI Knowledge Management Portal	1	Knowledge Management Portal	30
		Reviewed ICT Policies	No. of reviewed ICT Policies	2	Reviewed ICT Policies	6
		Upgraded network infrastructure	Proportion (%) of network infrastructure upgraded	100	Inspection reports/Certificate of Completion/SLA Agreements	50
		Digitalized Energy and Petroleum services	Proportion (%) of Energy and Petroleum services digitalized	100	BPR reports/End-user manuals/System Requirement Report	200

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
		Acquired and installed software	No. of licenses acquired and installed	1,000	No. of Software acquired and installed	700
		Biogas Knowledge Management platform	Biogas Knowledge Management platform	1	Biogas Knowledge Management platform	9
		GIS Knowledge Management platform	GIS Knowledge Management platform	1	GIS Knowledge Management platform	100
		Business Continuity and Disaster Management Plan Developed/ reviewed	No. of Business Continuity and Disaster Management Plans developed/reviewer	2	Business Continuity and Disaster Management Plans	8
		Business Continuity and Disaster Management Plan implemented	% implementation of the Business Continuity and Disaster Management plan	100	Implementation reports	100
		Acquired and maintained Geo-Scientific exploration equipment	No. of Geo-Scientific exploration equipment acquired/ maintained	20	Geo-Scientific exploration equipment acquired/ maintained	500
		E-Mobility demonstration charging center constructed	% Completion of the E-mobility charging demonstration center	100	E-Mobility charging demonstration	30

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
					center progress reports	
		Public institutions retrofitted with energy efficiency appliances	No. of public institutions retrofitted with energy efficiency appliances	50	Reports on Public institutions retrofitting with energy efficiency appliances	50
	Undertake Energy and Petroleum Studies	Energy systems studies undertaken (Power System Losses & Battery Energy Storage System)	No. of energy studies undertaken	3	Energy systems study reports	15
		Clean cooking sector studies	No. of clean cooking sector studies	5	Clean cooking sector studies Reports	22
		Geo-technical studies undertaken	No. of geo-technical research undertaken	10	Geo-technical Study Reports	40
	Mobilize and allocate resources for STI mainstreaming in the Ministry through the Medium-Term Expenditure Framework Process.	A Resource Mobilization Strategy developed	A Resource Mobilization Strategy	1	Approved Resource Mobilization Strategy	10

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
STI Inclusivity, Diversity, Advocacy, Diplomacy, Governance, legal framework, and Policy Reviews	Enhance awareness on STI	Increased awareness on STI	Proportion of Ministry's staff sensitized on STI	100%	Sensitization reports on STI	20
			No. of sensitization workshops or meetings conducted	13	Sensitization reports on STI	20
			No. of State Departments/agencies sensitized	12	Sensitization reports on STI	20
	Cascade STI Mainstreaming to the Ministry and all the 10 State Agencies under Energy and Petroleum	An STI mainstreaming Institutional framework in the Ministry and State Agencies	No. of STI mainstreaming Committees established	12	Committee appointment letters	0
			No of institutional STI strategies developed/implemented	10	STI strategies approved	50
	Entrench gender and social inclusion in STI mainstreaming	Gender inclusivity in STI programmes	% compliance to the 2/3 gender rule in the implementation of the STI programmes/ projects	100%	STI Mainstreaming Reports	0
			% compliance to the 2/3 gender rule in the composition of the STI committees	100%	Committee appointment letters	0

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
			% of STI related programmes inclusive of special interest groups	100%	STI mainstreaming Reports	0
			No. of STI Committees with at least one representative with the special needs	13	STI mainstreaming Reports	0
	Enhance the institutional, legal and regulatory framework for STI mainstreaming	An enhanced and institutional, legal and regulatory framework for STI mainstreaming	No. of STI mainstreaming institutional, policy, legal and regulatory frameworks developed/ reviewer	34	Approved Policies, regulation and framework	50
			Proportion of energy/ petroleum policies and strategies under review/ development mainstreamed to STI	100%	Approved policies and strategies	20
Technology Protection, Diffusion, and Commercialization	Enhance uptake of Energy and Petroleum technologies	Domestic biogas demonstration digesters constructed	No. of Domestic biogas digesters constructed	2,000	Project implementation reports	600
		Institutional Biogas plants constructed	No. of Institutional Biogas plants constructed	50	Project implementation reports	500

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
		Clean cooking units disseminated	No. of Clean cooking units disseminated	150,000	Project implementation reports	250
		Community Solar water pumps constructed	No. of Community Solar water pumps constructed	50	Project implementation reports	100
		Solar home systems installed	No. of Solar home systems installed	45,000	Project implementation reports	300
		Efficient charcoal kilns disseminated	No. of Efficient charcoal kilns disseminated	50	Project implementation reports	82
		Energy saving stoves installed in public institutions	No. of Energy saving stoves installed in public institutions	200	Project implementation reports	400
		LPG reticulation in households	No. of units under Affordable Housing Programme reticulated	7,000	Monitoring and Evaluation reports	175,000
		Clean cooking gas installed in public learning institutions	No. of public learning institutions with CCG	5,000	Monitoring and Evaluation reports	11,760
		Nuclear Research Reactor developed	% implementation of Nuclear Research Reactor Project	70	Project implementation reports	0

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
	Enhance intellectual property framework	An Intellectual Property Policy developed/ implemented	An Intellectual Property Policy developed	1	Intellectual Property Policy	50
Strategic Multi-Agency, Multisectoral, and International Cooperation and Partnerships in RSTI	Enhance collaboration with the county governments to entrench STI in energy planning and the implementation of petroleum master plan	County energy Planning mainstreamed with STI	No. of county energy plans mainstreamed with STI	31	County Energy Plans	310
		National petroleum Master Plan	No. of implementation reports	10	Reports	20
	Enhance Energy and Petroleum Efficiency in Kenya	A reviewed MoU between SDE and KAM on Centre of Energy Efficiency and Conservation (CEEC)	A reviewed MoU between SDE and KAM on CEEC	1	Reviewed MOU between SDE and KAM on CEEC	0
		Energy Audits by SDE and KAM	No. of Energy audits conducted	100	Audit Reports	175
		Quantity of petroleum products imported	No of metric tones	30 million	Vessel outturn reports	0
	Enhance collaboration between Kenya and other countries/	full implementation of signed MoUs on energy and	% implementation of signed MoUs on energy and	100	Implementation reports.	0

Strategic Issues	Strategy	Expected Results	Performance Indicator(s)	Target	Means of Verification	Estimated cost (Kshs. Million)
	multilaterals on energy and petroleum technologies	Petroleum technologies.	petroleum technologies.			
	Enhance collaborations on environmental conservation	full implementation of signed MoUs on environmental conservation	% implementation of MoU on environmental conservation	100	Implementation reports	0
	Create networks and linkages for investments and partnerships in manufacturing, infrastructure development, MSMEs, Start-Ups, technology/industrial park, among others.	Networks and linkages established	% of invited functions attended	100%	Conference/ exhibitions/ seminars/ trade fairs reports	100
			% Of energy /petroleum related conferences/ exhibitions/ seminars/ trade fair integrated with STI	100%	Conference/ exhibitions/ seminars/ trade fairs reports	
	Strengthen the industry- academia through programmes such as internship and attachments	Interns/Attaches exposed to real work experience	Proportion of interns allocated /attaches exposed to the work experience under the Ministry	100	PSC appointment letters/attachment letters/ Recommendation letters	0
					TOTAL BUDGET	192,085

5. MONITORING AND EVALUATION (M&E) AND REPORTING

5.1 Overview

This Chapter presents the Monitoring, Evaluation and Reporting Framework for the STI strategy. This will involve a systematic and continuous process of collecting and analyzing information based on the indicators, targets and provision of feedback. Table 4.1 provides an implementation framework that provides the strategies, expected results, performance indicators, means of verification and the estimated cost of implementation for the five-year duration of the strategy that will facilitate monitoring and evaluation. The results of M&E will be used to make corrective actions, improve implementation of activities and also inform future STI mainstreaming in the Ministry.

5.2 Internal Mechanisms for Monitoring and Evaluation

All Directorates under the two State Departments in the Ministry will be involved in monitoring and reporting on the progress of achievement of results and objectives based on the key indicators agreed upon in this STI Strategy. This will be done on a quarterly, bi-annual and annual basis or as outlined in the implementation matrix.

The Ministry is expected to report to NACOSTI on quarterly and Annual basis, by the 15th day after the end of each quarter/year as guided by the 21st Cycle performance Contracting Guidelines and the reporting templates provided by NACOSTI.

5.3 STI Strategy Review

The Evaluation of the implementation of this strategy will involve a systematic and objective process of examining the relevance, effectiveness, efficiency and impact (both expected and unexpected) of the strategies. Evaluation will be done through formal surveys and assessments and will look at milestones achieved against the set targets. Three major evaluation activities will be undertaken. These include mid-term evaluation; end- term evaluation and ad hoc evaluation (where necessary).

5.3.1 Mid-Term Evaluation

The Ministry will conduct a mid-term evaluation of this strategy to examine the progress towards achieving the set targets. The evaluation will be spearheaded internally by the Ministerial STI Committee, under the guidance of NACOSTI. This will be undertaken in the financial year **2026/2027**. The recommendations of mid-term evaluation will help in making improvements to the STI Strategy implementation process.

5.3.2 End-term Evaluation

This strategy will be reviewed after every five years or on needs basis through a consultative process involving all relevant stakeholders.

The End-term evaluation will be conducted at the end of the fifth year of the STI Strategy period (2028/2029 FY), and the achievements, challenges, lessons learnt and recommendation will inform the next cycle of the STI planning process for the Ministry.

5.3.3 Adhoc Evaluation

Ad hoc evaluation may be commissioned by the Principal Secretaries under the Ministry of Energy and Petroleum, in case of significant and unexplained variance between the planned and achieved performance targets. Such variances will be identified through the regular quarterly and annual reports.