REPUBLIC OF KENYA

SECTOR PLAN

FOR

OIL AND OTHER MINERAL RESOURCES

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KENYA VISION 2030

STATEMENT BY THE CABINET SECRETARY THE NATIONAL TREASURY AND PLANNING

Kenya's long term development blue-print, Kenya Vision 2030, is in its third implementation phase under the Third Medium Term Plan (MTP III) 2018-2022. A total of 28 MTP III Sector Plans have concurrently been prepared through 25 MTP Working Groups and three (3) Thematic Working Groups. The Plans provide in detail policies, programmes and projects to be implemented in each sector for the period 2018-2022. The Plans also incorporate policies, programmes and projects necessary for the effective implementation of the “Big Four” initiatives namely: manufacturing and agro-processing; food and nutrition security; universal health coverage and affordable housing. Ongoing flagship projects and other priority programmes and projects carried forward from the previous Medium Term Plans will also be implemented. The Sector Plans have also mainstreamed key priorities outlined in the Manifesto of the Jubilee Government.

The MTP III and the Sector Plans have been prepared through a participatory and inclusive process involving representatives from the government, development partners, private sector, Civil Society, NGOs, organizations representing vulnerable groups, faith-based organizations and professional associations, among others and in line with the constitutional requirements.

The Sector Plans detail specific programmes and projects for implementation during the plan period, 2018-2022.The programmes and projects outlined in these plans will be implemented in close consultation and collaboration with county governments and in line with the Fourth Schedule of the Constitution. The Public Private Partnerships (PPPs) framework will be the vehicle through which the private sector will contribute to the implementation of programmes and projects highlighted in the plans.

The County Integrated Development Plans, County Spatial Plans and Ministries, Departments and Agencies (MDAs) Strategic Plans (2018-2022) will be aligned to the MTP III and the National Spatial Plan. Implementation of these plans will also be linked to the Results-Based Management Framework through Performance Contracts and Staff Performance Appraisal System.

A robust monitoring and evaluation framework will be put in place. In this regard, National Integrated Monitoring and Evaluation System (NIMES), County Integrated Monitoring and Evaluation System (CIMES) and the electronic Project Monitoring Information System (e-ProMIS) will be fully integrated with other governmental financial systems. This will ensure effective tracking of implementation of programmes and projects and also boost Public Investment Management.

In conclusion, I would like to appreciate the respective Cabinet Secretaries, Chief Administrative Secretaries, Principal Secretaries, staff in the MDAs and all those involved in the preparation of the Sector Plans for their valuable inputs. In addition, I commend staff from State Department for Planning led by Principal Secretary, Planning for the effective coordination of the MTP III preparation process.

Henry Rotich, EGH
Cabinet Secretary
The National Treasury and Planning

FOREWORD

The Oil and Other Mineral Resources Sector Plan for 2018 - 2022 provides the roadmap for the sector to guide implementation of the Third Medium Term Plan (MTPIII) of the Kenya Vision 2030. It outlines programmes and projects; and Policy, Legal and Institutional Reforms to be undertaken in the sector within the MTP III period to facilitate accelerated exploitation, development and management of mineral resources and the associated value chain activities. These will result in employment creation, increased export earnings, alleviation of poverty and bridging the inequality gap. The mineral exploitation value chain will integrate climate change adaptation and mitigation measures.

This Sector Plan demonstrates that the potential for higher contribution to the national development exists following the discoveries of strategic minerals such as oil in Turkana County, Titanium and Rare Earth Elements (REE) in Kwale County, and, coal and gas in Kitui and Lamu Counties. These discoveries, coupled with development and management of oil, gas and other mineral resources, industrial growth will be realized. This Plan therefore prioritizes programmes and projects initiated in MTP II period as well as new ones that are key to the aspirations of the MTP III and Vision 2030. Further, the Plan is aligned to the government's transformative agenda of food and nutrition security, affordable housing, manufacturing and affordable healthcare for all.

Priorities for MTP III include: Commercialization of the Oil and Gas; Construction of Lokichar-Lamu Crude Oil Pipeline; Enhancement of Refined Petroleum Products Storage Capacity; National LPG Enhancement Project (Mwananchi LPG Project); Security of Supply of Petroleum Products; Geophysical Surveys; Internationally Accredited Mineral Certification Laboratory (IAMCL); establishment of Geological Data Bank; Development of African Mineral Development Centre; Geological Mapping, Mineral Exploration & Evaluation; Mineral Value Addition; and capacity building programmes among others.

Effective and successful implementation of this Plan envisages commitment from all stakeholders in the sector. I therefore call upon our stakeholders including development partners to fully support the implementation of the planned programmes and projects.

Hon. John K. Munyes, EGH
Cabinet Secretary
Ministry of Petroleum and Mining

PREFACE

The Oil and other Mineral Resources Sector is one of the priority sectors under the Economic Pillar of the Vision 2030 and key in the realization of the Sustainable Development Goals (SDGs) goal No. 7 of reliable, clean and affordable energy for all by 2030. This Plan therefore is an important framework for realizing government's commitment of a transformed and competitive extractive industry that will be a key driver of the successful implementation of Kenya Vision 2030 and making Kenya the regional focal point and a frontier for foreign direct investment.

The Sector contributes about one (1) per cent to Gross Domestic Product (GDP) and three (3) per cent to the total export earnings. However, we take cognizance of the several emerging concerns that affect investments and growth of the sector. These include the global decline of crude oil and other mineral prices which slow down exploration activities resulting in reduced investment by international companies; insecurity incidences negatively impacting on development of projects in areas prone to attacks; regional re-alignment which led to crude oil pipeline route adjustment and oil and gas importation and transportation through the Central Corridor.

This Sector Plan has been produced through a consultative stakeholder process with participation involving Government institutions, private sector, development partners, civil society and other non-state actors in the sector. The Plan has integrated the transformative agenda of the Government with regard to manufacturing. Over the Plan period the government will strengthen national and county governments collaboration and other stakeholder engagements at all levels of programme/project development; enhance strategic partnership in project financing, execution and skills transfer; enhance involvement of key local professionals in all phases of project implementation to ensure capacity building and knowledge transfer; ensure the mainstreaming of climate change mitigation and adaptation across all the operations of the sector in accordance with Climate Change Act 2016, among others. Policy, legal and institutional reforms will be on measures aimed at achieving efficient and effective service delivery and streamlining of the sector operations. It is envisaged that pending Policies and Bills will be finalized to facilitate the requisite environment and establish institutions to foster sector growth.

This Sector Plan will be monitored through the National Integrated Monitoring and Evaluation System (NIMES). The Plan has an integral Monitoring and Evaluation (M&E) framework to fast track its implementation.

In conclusion, we take this opportunity to appreciate the commitment of those who were involved in the preparation of this Plan. These include government officers, private sector partners, the civil society and the Development Partners. Special recognition is the Ministry of Devolution and Planning, the State Department for Planning and Statistics for guidance and effective leadership in the Plan preparation process.

Andrew N. Kamau, CBS
Principal Secretary
State Department for Petroleum

Geol. John M. Omenge, FGSK
Principal Secretary
State Department for Mining

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ABBREVIATIONS AND ACRONYMS

AGO	-	Automotive Gas Oil
DRSRS	-	Directorate of Resource Surveys and Remote Sensing
DPs	-	Development Partners
EOPS	-	Early Oil Pilot Scheme
FDI	-	Foreign Direct Investment
GDP	-	Gross Domestic Product
GETI	-	Geological Exploration Technological Institute
GoK	-	Government of Kenya
GoR	-	Government of Rwanda
GoU	-	Government of Uganda
ICT	-	Information and Communication Technology
IOCs	-	International Oil Companies
IPOs	-	Initial Public Offerings
KJV	-	Kenya Joint Venture
KEPTAP	-	Kenya Petroleum Technical Assistance Project
KETRACO	-	Kenya Electricity Transmission Company
KOT	-	Kipevu Oil Terminal
KOSF	-	Kipevu Oil Storage Facility
KPA	-	Kenya Ports Authority
KPC	-	Kenya Pipeline Corporation
KPRL	-	Kenya Petroleum Refineries Ltd
KSh.	-	Kenya Shilling
LAPSSET	-	Lamu Port & South Sudan-Ethiopia Transport
LPG	-	Liquefied Petroleum Gas
LNG	-	Liquefied Natural Gas
M^3	-	Cubic Metres
MoE&P	-	Ministry of Energy and Petroleum
MIOG	-	Morendat Institute of Oil and Gas

MSP	-	Motor Spirit Premium
MTP	-	Medium Term Plan
MW	-	Megawatts
NAFFAC	-	National Fossil Fuel Advisory Committee
NDT	-	Non-Destructive Testing
NLC	-	National Land Commission
NMC	-	National Mining Corporation
NOCK	-	National Oil Corporation Kenya
OADJ	-	Office of Attorney Department of Justice
OEL	-	Oil Exploration License
OTS	-	Open Tender System
PPP	-	Public Private Partnership
REE	-	Rare Earth Elements
SAGAs	-	Semi-Autonomous Government Agencies
SDGs	-	Sustainable Development Goals
SPM	-	State Department for Mining
SDP	-	State Department for Petroleum
SOT	-	Shanzu Oil Terminal
TOR	-	Terms of Reference
USD	-	United States Dollars
VTTI	-	Vitol Tank Terminals International

EXECUTIVE SUMMARY

The Government of Kenya recognizes the importance of Oil and other Mineral Resources Sector in facilitating economic growth and development. The Oil and other Mineral Resources sector is one of the priority sectors under the Economic Pillar of the Kenya Vision 2030. The extractive industry has emerged as an important player in Kenya's economic development and realization of the Sustainable Development Goals (SDGs). The sector contributes about one (1) per cent to Gross Domestic Product (GDP) and three (3) per cent of the total export earnings and has the potential for higher contribution, in view of the discoveries of oil in Turkana County, Titanium and Rare Earth Elements (REE) in Kwale County, coal and gas in Kitui and Lamu Counties.

During MTP II, the sector registered several achievements. In the oil and gas subsector, achievements include: Construction of a 122 km long, 12-inch diameter, parallel petroleum pipeline from Sinendet to Kisumu; installation of mainline Pumps in seven inter-stations along the Mombasa-Nairobi pipeline (Line I); modification of tanks and related facilities for receipt of crude oil for the interim scope for the Early Oil Pilot Scheme (EOPS); drilling of 17 oil exploratory and 22 appraisal wells; development of petroleum master plan and gazettement of additional 17 new oil exploration blocks; development of the Strategic Environment and Social Assessment (SESA), and Gender Assessment Guidelines. Similarly, extraction of heavy sands in Kwale County, enactment of the Mining Act, 2016, construction of the Gemstone Value Addition Centre in Taita Taveta County and upgrading of the Online Transaction Mining Cadaster Portal were undertaken in the other mineral resources sub sector.

The sector undertook key policy, legal and institutional reforms during the MTPII period. These included: Formulation of the National Energy and Petroleum Policy 2015; Petroleum Bill 2015 prepared, passed by the National Assembly and submitted to the Senate; completion and approval by the Cabinet of a model Production Sharing Agreement in 2015; preparation of the Petroleum Exploration, Development and Production (Local Content) Regulations, 2014; development of the Mining and Mineral Policy in 2014 and approved by Cabinet in April 2015; Mining Act 2016 came into effect in May 2016 replacing the colonial Mining Act of 1940 (Cap 306); drafting of 14 of the targeted 21 sets of Mining Regulations and Guidelines to operationalize the Mining Act completed, among others.

During the MTP period, various issues emerged, challenges were experienced and lessons learnt which were crucial in setting of priorities for the MTP III. Critical emerging issues were: slowdown in investment in sector due to decline of international crude oil and other minerals prices; incidences of insecurity which affect exploitation of resources in areas prone to attacks; regional geopolitics/re-alignment and mainstreaming of Climate Change Act 2016 in programmes and projects Lessons learnt include the need to strengthen national and county governments collaboration and other stakeholder engagements at all levels of programme/project development, strategic partnership in project financing, execution and skills transfer; enhanced involvement of key local professionals; need for a structured framework for managing community expectations and, the need for a national oil and chemical spill contingency plan for the onshore and offshore exploration activities among others.

The Oil and Other Mineral Resources Sector Plan for 2018 - 2022 prioritizes programmes and projects and the requisite policy, legal and institutional reforms to be implemented. The sector has realigned the programmes/projects to the Big Four (4) Government priority areas: Manufacturing, affordable housing, food and nutrition security and universal health care. It is noted that the sector has potential to generate revenue to support the achievement of the Big Four. Flagship projects and programmes in the oil and gas subsector include: Security of Supply of Petroleum Products; Quality Assurance of Petroleum Products;

Commercialization of the Oil and Gas; Expansion of National Pipeline Network; Construction of Lokichar-Lamu Crude Oil Pipeline; LPG distribution and storage Project in Mombasa and Nairobi; Enhancement of Refined Petroleum Products Storage Capacity in Mombasa; National LPG Enhancement Project (Mwananchi LPG Project). Similarly, in the other Mineral Resources subsector, planned projects and programmes are: Geophysical Surveys; Internationally Accredited Mineral Certification Laboratory (IAMCL); establishment of Geological Data Bank; development of African Mineral Development Centre and Geological Mapping, among others.

The implementation of the sector plan will be anchored on Policy, Legal and Institutional Reforms in conformity with the Constitution of Kenya. The focus will be on reforms to achieve efficient and effective service delivery and streamlining of the sector operations. The Policy and legal reforms will include: implementation of the provisions of the revised Energy and Petroleum Policy, Petroleum Bill 2015, the Mining and Mineral Policy of 2016 and the Mining Act, 2016. Other reforms will include the implementation of provisions of the Public Participation Bill, 2016, once enacted and Implement the Land Laws (Amendment) Act, of 2016. Environmental and Social reforms for the sector will focus on mainstreaming climate change and gender.

The MTPIII implementation matrix provides an elaborate framework for executing programmes/projects within the set timeframe. The monitoring and evaluation matrix has been structured to monitor the performance of sector projects and programmes.

1.0 INTRODUCTION

The extractive industry is emerging as an important sector in Kenya's economy. Extractive[1] resources are spread across the Republic. This is recognized in the Kenya Vision 2030 and its subsequent Medium-Term Plans. Specifically, the Second Medium Term Plan (MTP II) reaffirmed this position by introducing oil and other mineral resources as the seventh sector under the Economic Pillar of Vision 2030. Article 69 of the Constitution provides for sustainable exploitation, utilization, management and conservation of the environment and natural resources and equitable sharing of accruing benefits. These are also recognized in the international and regional development commitments such as Sustainable Development Goals (SDGs) and African Agenda 2063 which Kenya is a signatory to. This calls for a balance in sustainable growth and equity in use of resources for the future of the sector.

The sector currently contributes about one (1) per cent to Gross Domestic Product (GDP) and three (3) per cent to the total export earnings to the economy. The potential for higher contribution exists following the recent discoveries of natural resources minerals such as oil in Turkana County, Titanium and Rare Earth Elements (REE) in Kwale County, coal and gas in Kitui and Lamu Counties. It is expected that with the discoveries, and development and management of oil, gas and other mineral resources, industrial growth can be realized. Accelerated exploitation of mineral resources and the associated value chain activities will result in employment creation, increased export earnings, alleviation of poverty and bridging the inequality gap. These activities have also improved development of infrastructure thus improving the livelihood of the communities. Other minerals contributing towards this growth include: precious metals (gold, silver); base metals (copper); dimension stones (granite, marble and limestone); industrial minerals (fluorspar, titanium and limestone); gemstones (ruby, sapphire, rhodolite); chemical minerals (soda ash, carbon dioxide, salt and hydrocarbons or oil) and fossil fuels (coal, oil and gas).

During the MTP II period, the volume of petroleum fuel imports expanded by 62 per cent from 2.95 million tons in 2013 to 4.84 million tons in 2016. This is attributed to increased number of automobiles translating to high demand for petroleum products by 35 per cent. Mining and quarrying contributed 0.8 percent to the Gross Domestic Product (GDP) in 2016. Achievements in the oil sub-sector include: construction of a parallel petroleum pipeline from Sinendet to Kisumu (122 km), installation of mainline pumps in seven inter-stations along the Mombasa-Nairobi pipeline (Line I); modification of tanks and related facilities for the Early Oil Pilot Scheme (EOPS); drilling of 17 exploratory oil wells and 22 appraisal wells; completion of a roadmap report towards the Petroleum Master Plan for Kenya and gazettement of additional 17 new oil exploration blocks. In addition, 51 wells were drilled (well density of 10 per year). Similarly, in the other mineral resources subsector, major achievements included extraction of heavy sands in Kwale County, construction of Gemstone Value Addition Centre, upgrading of an Online Transaction Mining Cadastre Portal and enactment of the Mining Act, 2016.

Several regulations and strategies were developed, and institutions established to support implementation of programmes and projects in the sector. Specifically, local content regulations in energy and oil exploration were developed; National Mining Corporation established; regulations to effect the Mining Act 2016; Strategic Environmental and Social Assessment (SESA); National Communication Strategy (NCS) and Gender Assessment Guidelines for Oil and Gas.

[1]Extractive resources include oil, gas and other minerals extracted from the earth surface

A number of challenges were encountered in the implementation of MTP II. These include among others: land access and compensation causing project delays and increased cost; Inadequate financial resources; high incidences of insecurity in project areas; inadequate equipment and technical skills in the sector.

On the other hand, key issues that emerged include slowdown in investment due to decline of international crude oil and other minerals prices; Regional re-alignment which led to crude oil pipeline route adjustment, among others. Similarly several lessons were learnt. These include the need to strengthen national and county governments collaboration; need for strategic partnership in project financing, execution and skills transfer; enhanced involvement of key local professionals in all phases of project implementation among others.

The Oil and Other Mineral Resources Sector Plan for 2018-2022 outlines priority programmes and projects, and the policy, legal and institutional reforms. The reforms envisaged in MTPIII are aimed at efficient service delivery and streamlining operations in the sector. The planned projects and programmes will be undertaken in collaboration with county governments, development partners and the private sector. In the implementation process, environmental sustainability and gender concerns will be mainstreamed.

2.0 SITUATION ANALYSIS

2.1 Overview

The Government recognizes the importance of oil and other mineral resources sector in facilitating economic growth and development, and is one of the priority sectors under the Economic Pillar of Kenya Vision 2030. This chapter analyses the progress made in terms of projects and programmes implementation during the MTP II, outlining completed programmes and projects as well as the status of the ongoing ones. It also highlights achievements of the policy, legal and institutional reforms.

2.1.1 Oil and Gas

Exploration, Appraisal and development of oil and gas in Kenya have been on the rise since 2012 after the first major commercial discovery of oil in the South Lokichar Basin. Cumulatively, ninety (90) wells have been drilled with oil being discovered in forty five (45) wells in the Tertiary Rift and Lamu Basins. Similarly, natural gas has also been discovered in Mbawa 1 well offshore Block L8 and Sala 1 in Block 9 in Tertiary Rift and Anza Basins respectively. Discoveries in the Tertiary Rift and Lamu Basins indicate the existence of commercial quantities of hydro-carbons. The country has already embarked on Field Development Program for the South Lokichar Basin in order to commercialize the extracted crude oil.

Enhanced oil and gas discoveries has resulted increased interest by International Oil Companies (IOCs) in upstream fossil fuel activities in the country. The IOCs and the National Oil Corporation Kenya (NOCK) are carrying out exploration activities in forty five (45) licensed blocks out of the gazetted sixty three (63) blocks. The exploration initiatives range from preliminary stages of geological and geophysical data acquisition, exploratory, appraisal drilling and field development. These initiatives will accelerate exploration and further discoveries of oil and gas, as well as fast track commercialization of the extracted crude.

2.1.2 Other Mineral Resources

The other Mineral Resources sub-sector was characterized by low production of varied minerals such as soda ash, fluorspar, cement, gold, titanium, copper, iron ore, coal, manganese and semi-precious stones amongst others. Mining and quarrying was ranked as the 3rd highest growing sub-sector in the year 2016, signifying the sub-sector potential contribution to economic growth.

Currently, mineral sands and soda ash contribute significantly to GDP. However, there is potential for the sector to contribute more by focusing on gold, copper, iron and coal. This sector contributed KSh 1.35 billion to government revenues, and is estimated to have created 13,000 formal and 30,000 informal jobs.

A major setback is the lack of an effective strategy for marketing, promotion and value-addition of minerals due to inadequate geological data coupled with low investment. Most of the minerals mined are exported in raw form and as a result, the country does not reap maximum returns from her mineral wealth. To exploit the sub-sector's potential, a Mining and Mineral Policy was developed and the Mining Act, 2016 enacted in May 2016. MTP II (2013-2017) flagship projects are at different levels of completion and their implementation will continue into the MTP III (2018-2022) period.

2.2 Achievements in Programmes and Projects during the Second Medium Term Plan 2013-17

This section presents achievements realised in the implementation of flagship and other programmes and projects during the MTP II priod.

Flagship projects

1. Subdivision and creation of new petroleum exploration blocks based on technical data

There are four (4) petroleum exploration basins and these are: Lamu Basin, Anza Basin, Mandera Basin and Tertiary Rift Basin. Oil and gas exploration in the country began in 1956 and the breakthrough came in March 2012 with the discovery of a well –Ngamia 1 Well, in Lokichar Basin in Turkana County. Eighty three (83) wells have been drilled with fifteen (15) hydrocarbon discoveries. The following projects were completed:

- Subdivision of oil and gas exploration blocks resulting in increasment of blocks from 21 in 2008 to 46 in 2012 and to 63 in 2017. Thirty seven (37) of were licensed and are operated by 18 International Oil Exploration Companies (IOCs).
- Eighty three (83) wells were drilled within the four sedimentary basins of Lamu, Tertiary Rift, Anza and Mandera by May 2017. The oil reserve recoverable is estimated at 750 million Barrels (Mbbls).

2. Enhanced primary data acquisition, analysis and interpretation in the open blocks

Data acquisition through geological and geophysical surveys was undertaken in blocks L19 and L19A to assess potential of the blocks in order to attack investors.

3. Establishment of a National Petroleum Data Centre (NDC)

A strategic partnership for modernization of the NDC was established and legacy petroleum data was uploaded into the NDC system. The benefit of the data centre is to enhance marketability of Kenya's exploration acreage through secure and efficient access to archived hydrocarbon data and help the Country pursue opportunities to offer (data hosting services), seismic processing and data visualization to organizations operating within the country and regionally.

4. Conducting a National Airborne Geo- Physical Survey (NAGS)

Due diligence on Geological Exploration Technological Institute (GETI) was conducted and procurement of the NAGS supervisor is ongoing and the terms of reference for engagement of contractor have been finalized.

5. Establishment of an Internationally accredited Mineral certification laboratory and Audit unit

An Internationally accredited Mineral Certification and Laboratory was established. A new laboratory block was constructed. In addition, highly specialized equipmemt was provided.

6. Establishment of minerals and Metal commodity exchange

The modalities for establishing the Minerals and Metals Commodity Exchange are in progress. This is in collaboration with Central Bank of Kenya, Kenya Revenue Authority and Nairobi Securities Exchange.

7. Minerals Value Addition Centres

A Gemstone Value Addition Centre was constructed in Taita-Taveta County and procurement of equipment is in progress. A consultancy to carry out a feasibility study on Granite Processing Plant in Vihiga County was also procured.

8. Skills Development

Skills Development and enhancement of local expertise in petroleum exploration and production was done through training and technical collaboration with exploration companies and universities. Some of the Capacity Building projects include:

a. Kenya Petroleum Technical Assistance Project (KEPTAP)
The objective of this project is to strengthen the capacity to manage the petroleum sector and wealth for sustainable development in the country.

Achievements during the MTP II include:

i. Improved coordination of the Petroleum sector organisations. A total of 794 officers from various government agencies were trained on different disciplines in oil and gas sector as well as skills enhancement in management and regulation of the petroleum sector. Trainings were in 71 oil and gas related courses and 33% of the trained officers were females and 67% were male.
ii. Transaction Advisory (TA) Services were procured to support negotiations within the upstream sector.
iii. Institutional Review Study was commissioned in 2016 to facilitate operationalization of the provisions of the Petroleum Law with regard to establishment of institutions institutions. The Study outlined clear organizational mandates and highlighted areas of overlap and possible solutions in the energy and petroleum sector
iv. Strategic Environmental and Social Assessment (SESA) was undertaken and its Report approved by the Bank. Implementation of the report will be undertaken during the MTP III period.
v. National Petroleum Master Plan (NPMP): procurement of consultancy services to develop a National Petroleum Master Plan commenced. The consultancy will support GoK in developing a Vision, Strategies and Policy positions related to importation, storage and distribution of petroleum products (including LPG) and to support developing of a domestic gas market.
vi. Accreditation of Kenya Bureau of Standards (KEBS): The Bureau is in the process of reaccrediting its laboratories with the South African National Accreditation Service (SANAS). Accreditation is a requirement for KeBS to engage in the Oil and Gas project as a testing authority of choice.
vii. ERC 5-Year Strategy: The five (5) year Strategic Plan (2017/18-2021/22) developed to assist ERC enhance its regulatory role in the energy sector in Kenya.
viii. Cost of Service Study: A study was commissioned to analyze the petroleum sub-sector supply chain in Kenya from import of refined petroleum products, assessing the cost elements in each node and at the most efficient level translate them into a retail price build-up structure. The study also identified potential inefficiencies and deficiencies in the supply chain, their causes and proposed solutions and, the triggers of the changes of the retail price and the tolerance levels.

b. Morendat Institute of Oil and Gas

The Morendat Institute of Oil & Gas (MIOG) was established in 2016 to build capacity in pipeline management, oil and gas operations and maintenance for Kenya and the region. The Institute trained 210 Kenyans on technical courses covering instrumentation and control, basic and advanced firefighting, oil jetty operation and laboratory technologies during the period under review.

c. Other Capacity Building Initiatives

During MTP II Norway supported oil and gas capacity building. Similarly, Toyota Tsusho Corporation (TTC) and Japan Oil, Gas and Metals National Corporation (JOGMEC) supported the following trainings under capacity building programs:

- Geophysical prospecting and basin analysis.
- Seismic data interpretation and risk analysis.
- Fundamental of petroleum geology and remote sensing.
- Oil Field Development and Field Development Plan (FDP) Review in Kenya.

d. Collaboration with Training Institutions

The National Government instituted elaborate and multifaceted strategies towards provision of skilled manpower in oil and gas sector through competency based training in the local Technical Vocational Education Training Institutions and Universities.

County Governments also entered into a Memorandum of Understanding (MOU) with Australia Africa Energy and Minerals Institute (AAEMI), establishing a strategic partnership for capacity building offering country wide trainings in the Minerals, Energy, Oil and Gas sector.

9. Kwale Mineral Sands

The contract to commercially produce mineral sands in Kwale was issued to Base Titanium and the company has extracted 1.56 Million Metric tons of heavy sands translating to KSh 32.1 Billion of mineral sales. The royalty received from sales of heavy sands is approximately KSh 828 Million annually.

10. Logistics and supply chains management for the oil, gas and other minerals,

a. Enhancement of Petroleum Products Storage Capacity in Mombasa:

Access to affordable, competitive, reliable, quality, safe and sustainable energy is the core mandate of the sub sector. The country imports its entire petroleum products after the suspension of Kenya Petroleum Refinery Limited (KPRL) refining operations in September, 2013. The total petroleum storage capacity was enhanced after the completion and operationalization of the petrocity (Konza) and VTTI depots enhancing the total storage capacity to 989,000M^3. This increase in storage capacity enhanced operational reserves to 49 stock days cover for all products imported through Mombasa from 15 in 2013.

b. Quality Assurance of Petroleum Products.

The objective of quality assuarance is to maintain high quality of petroleum products sold, prevent tax evasion from diversion of products meant for export market into the local market and eradicate illegal Liquefied Petroleum Gas (LPG) refilling. Proliferation of substandard petroleum dispensing and storage site pose environmental, health and safety risks. The resultant effects include adverse impact on motor vehicles and machinery and a shift to the use of the Central Corridor for transportation of transit products hence loss of revenue for both National and County governments.

To address this challenge, monitoring of petroleum quality standards was undertaken through regular spot checks within petroleum stations, depots and LPG filling plants, resulting in 24,941 samples tested from different sampled distribution points.

11. Effective management of the environment and social footprints
This entailed undertaking of Strategic Envrironmental and Social Environment Assessment (SESA): KEPTAP commissioned and finalized Strategic Environmental and Social Impact Assessment for the Petroleum Sector in Kenya which was a World Bank Safeguard requirement. The report was approved by the National Environment Management Authority (NEMA). The outcomes of the report included identification of areas for environmental and social reforms in the petroleum sector; and availability of a Strategic reference document for sector development planning..

Other programmes and projects implemented during MTP II

1. **Geological Mapping, Mineral exploration and evaluation**
Geological mapping and mineral exploration was conducted for coal in Taru; base metals, construction and industrial minerals in Homa Bay and Tharaka-Nithi and Kitui Counties, Kwale and Kilifi Counties, and along the Standard Gauge Railway between Port Reitz and Mackinnon Road in Mombasa County.

2. **Geo- Hazard Mapping and Monitoring**
Mapping of geo-hazard prone areas was conducted in Nakuru, Narok, Makueni and Taita Taveta Counties and four (4) technical reports prepared. This will facilitate planning and early warning.

3. **Mineral Audit Agency**
The Mineral Audit Unit was established in the Directorate of Mines which enhanced revenue collection (royalty) from KSh 21 Million in 2013 to KSh 1.35 Billion in 2015/2016 financial year. Moreover, the framework for the Unit was developed and the process of procuring the consultancy for Revenue Management System is in progress.

4. **Geological Data Bank**
A building to host the Geological Data Bank was identified and most of the equipment were procured. Digital scanning of hard copy records is in progress. In addition, the government developed and agreed on terms of reference with the British Geological Survey for repatriating of colonial geological data back to Kenya.

5. **Online Transaction Mining Cadastre Portal**
This is a web-based system launched in February 2015 that allows for online application, renewal and payment for mining rights at the convenience of the mining holder. This led to improved mining rights concession management that has increased transparency and accountability as it has minimized interaction between mining holders and government officials. A transparent and accountable system allows for better collection of fees for licenses and permits. The system worked 100% under the old Mining Act Cap 306 but is being reconfigured to conform to the new Mining Act, 2016.

6. **National Mining Institute**
The National Mining Institute was established and will provide opportunity for training manpower and upgrade skills in mining related fields for the mining sector. The trainings will be offered by the

University of Nairobi and Taita-Taveta University at certificate, diploma, higher national diploma, degree and post-degree levels. The two universities were identified by the Cabinet to collaborate with the Ministry of Mining to offer training for the mining sector. In addition, the Ministry has drafted memorandum of understanding to be signed by the Ministry, University of Nairobi and Taita Taveta University as a means to bind the three institutions together to deliver the training. A Joint Secretariat has been formed between Ministry of Mining, University of Nairobi and Taita Taveta University to spearhead the establishment of the National Mining Institute.

7. National Mining Corporation

The establishment of the National Mining Corporation was approved by the Cabinet in April 2016 as contained in the Mining Act, 2016. The Corporation will act as the investment arm of the National Government in mining.

8. Development of Petroleum Master Plan

The government with the support from World Bank undertook a consultancy towards the development of a petroleum sector master plan for Kenya. The purpose of the master plan is to integrate all elements of the oil and gas value chain- from exploration, production, transport, processing, storage and distribution, and usage in domestic and export market. The expected higher outcome of this plan is the government formulates a vision for development of its petroleum sector policies and investment decisions at earliest possible opportunity to maximize the value from its oil and natural gas resources and stimulate investment in the domestic market.

9. Stakeholders' Engagements

The governments conducted stakeholder's engagements within the oil blocks. These included host communities, other government agencies, investors, political leaders, county assemblies and county governments.

10. Construction of Pipeline from Sinendet to Kisumu (Line 6)

The construction of the 122 km, 10-inch pipeline parallel to the existing 6-inch pipeline from Sinendet to Kisumu (Line 3) was completed in April 2016. The project has provided capacity to deliver an additional $350m^3$/hr to meet the increasing demand for petroleum products in Western Kenya and the neighboring countries. The immediate impact of the project has been operational flexibility and efficiency. This has resulted in enhancement of products stocks at the western Kenya depots of Eldoret and Kisumu. Stock-out days have reduced by approximately 85%. This new pipeline will facilitate development of other projects such as the Kisumu Oil Jetty (KOJ) and Kisumu – Busia Pipeline.

11. Installation of Mainline Pumps in Mombasa

In order to meet the rising demand for petroleum products in the region, an additional pump was installed in each of the seven intermediate pumping stations along the Mombasa – Nairobi 14-inch pipeline. The project enabled continuous parallel operation of the pumps in each pump station in a 2 duty – 1 standby configuration. This resulted in increase in overall system availability and average flow rate from Mombasa to Nairobi.

12. Construction of Additional Truck Loading Facility at Eldoret Depot

This project entails installation of additional loading facilities in Eldoret to cope with the rising numbers of loading orders. The project will enhance evacuation of products at Eldoret Depot and ensure a faster turn-around of trucks which sometimes have to wait for days to load or have to travel as far as Nairobi and Mombasa to pick products. The project will further enhance operational flexibility at Eldoret and increase service delivery efficiency.

13. Nairobi 130 Metric Tones (MT) LPG Storage, Bottling and Distribution Facilities

The overall objective of developing LPG facilities is to ensure availability and accessibility of LPG at cost effective prices, promote use of LPG as a household fuel among the urban poor and the rural population and enhance socio-economic development.

14. Construction of Mombasa – Nairobi New Refined Products Pipeline (Line 5)

The 14-inch multi-product pipeline installed between Mombasa and Nairobi is over 39 years old and according to the in-line inspection done in 2010, the pipeline is substantially corroded in sections and requires replacement. The recommendation was to construct a new pipeline with sufficient capacity to meet projected regional demand up to the year 2044.

A 20-inch diameter pipeline is being constructed from Mombasa-Nairobi which will employ the highest international standards in safety and technology and will have installed capacity of up to 1000 m^3/hr, on commissioning. The pipeline is designed to ultimately achieve a flow rate of 1800 m^3/hr through the installation of four additional pumping stations. This new pipeline will reduce pipeline maintenance costs, ensure security of supply for the country and the region, enhance safety and environment and reduce petroleum trucks from the highway. The project is in its final stages of completion and will be commissioned by 31st July 2017. The pipeline network is of strategic importance and without it over 450 petroleum trucks would be required to deliver products in Nairobi and beyond daily.

15. Construction of Additional Tanks at Nairobi Terminal

This project involves construction of four petroleum products tanks with a total capacity of 133,000 m^3: 2 No. AGO tanks, 1 No, AGO/MSP swing tank and 1 N. MSP tank. The project will provide sufficient capacity for receipt of higher volumes of products expected from the new Mombasa – Nairobi pipeline; increase storage capacity for ground fuels in Nairobi from the current 100,580m^3 to 233,580m^3; provide capacity to build stocks in Nairobi for hinterland demand from 7 days to 17 days assuming 2016 consumption; enhance operational flexibility and evacuation of products at KOSF thereby create more ullage at KOSF and reduce demurrage charges.

16. The Kenya-Uganda Oil Pipeline Project

The Government of Kenya and the Government of Uganda signed a Memorandum of Understanding in in 1995 to undertake a feasibility study on the Eldoret – Kampala refined petroleum products pipeline. Upon completion of the feasibility study, a second MOU was signed in 2000 allowing for the implementation of the project. In 2013, the project was expanded to include the Kampala Kigali Segment.

The project is coordinated by the ministries responsible for energy in Kenya, Uganda and Rwanda and was earmarked for implementation in MTP II. However, due to challenges in securing a private investor and funding for construction works, the project was not implemented. In 2014, the three Governments, resolved to source for funds under Engineering, Procurement and Construction (EPC) framework and will proceed with the project once the necessary funds are secured.

17. Kisumu Oil Jetty

Lake Victoria provides an opportunity for transportation of transit petroleum products using barges. Currently, transit products along the Northern Corridor are transported by road from the pipeline depots and Mombasa, and with the increasing demand, there has been a corresponding change in the number of petroleum tankers on the roads. The project commenced in May 2017. It will further secure the regional market in petroleum products, provide alternative product transportation mode and enhance regional integration.

18. Enhancement of Refined Petroleum Products Storage Capacity in Mombasa

Following the closure of the refineries in September 2013, KPRL changed its business model from refining to provision of services such as storage and handling of refined petroleum products. In 2015, the KPRL was identified as a refined petroleum products OTS delivery point and 140,00m^3 storage capacity has so far been added to boost ullage for imports.

KPC and KPRL entered into a Lease Agreement in March 2017 through which KPRL leased its facilities to KPC for purpose of carrying on and expanding the existing and/or new business lines. Under this arrangement, the KPC and KPRL facilities will be fully integrated and idle tanks will be converted to refined petroleum products storage to provide additional ullage and efficiency in handling of petroleum imports thereby reducing demurrage expenses, enhancing security of supply of petroleum products and positively impact the pump price.

19. Early Oil Pilot Scheme

Early Oil Pilot Scheme (EOPS) is a key strategic project under the Vision 2030 that involves exploiting and marketing its oil in small scale in order to test the international market for Kenyan crude oil and establish Kenya as an oil exporter. The project was expected to start by mid-2017 until mid-2019 and upon completion will involve trucking of crude oil from South Lokichar Fields to KPRL Mombasa by insulated and heated tanktainers for storage and onward export. The first shipment of the crude export.

20. Modification of Facilities in KPRL and KOT for Crude Oil Export

In addition to the completed modification work at KPRL to enable receipt of crude oil at KPRL, additional work involving heat tracing and insulation of process pipework, installation of boilers, pumps and meters, modification of the existing KOT loading arms is ongoing to enable export of crude oil for the duration of the EOPS, which is until the crude oil pipeline is commissioned.

21. Develop Mombasa as an Oil and Gas Trading Hub

This project was approved by Cabinet in 2013 as one of the 47 priority Public Private Partnership Projects. The initial feasibility study was done and approval to engage a transaction advisor given by the PPP Unit of The National Treasury and tendering for the same undertaken. Project partnership engagements were held between NOCK, KPA, KPC and Mombasa County. However, the project is currently on hold awaiting further consultations.

21. Petroleum Retail Network Expansion

As a measure of increasing reliable access, security of supply and cushioning the public against supply shocks, the government has registered a total of 1,700 retail petrol stations located in major towns and major highways with 110 of these retail stations being owned by National Oil Corporation. The government plans to increase the Corporation's market share to at least thirty

(30) percent. This will enable the Corporation to have a retail presence in every county headquarter in Kenya as well as in rural market centers and smaller towns across the country.

Policy, Legal and Institutional Reforms

During the MTP II period the sector undertook a number of Policy, Legal and Institutional reforms. They include: formulation of the National Energy and Petroleum Policy 2015; Petroleum Bill 2015 prepared, passed by the National Assembly and submitted to the Senate; Completion of a model Production Sharing Contract (PSC) in 2015 and approved by the Cabinet; preparation of the Petroleum Exploration, development and Production (Local Content) Regulations, 2014; Petroleum Road Transport Businesses Regulations and the Energy (Petroleum Information and Statistics) Regulations 2013.

3.0 EMERGING ISSUES, CHALLENGES AND LESSONS LEARNT

During the implementation of MTP II, several issues emerged, challenges were encountered and lessons learnt. This will inform the implementation of programmes and projects for MTP III.

3.1 Emerging Issues

i. Slowdown in investment in sector due to decline of international crude oil and other minerals prices.
ii. Insecurity which affects exploitation of resources in areas prone to attacks.
iii. Regional re-alignment which led to crude oil pipeline route adjustment and oil and gas importation and transportation through the Central Corridor

3.2 Challenges

i. Land access and compensation causing project delays and increased cost.
ii. Inadequate financial resources during the initial stages of projects before their bankability is determined.
iii. High incidences of insecurity in project areas which affect exploitation and development of resources
iv. Inadequate technical skills and technical equipment in the sector.
v. Maritime boundaries disputes hindering extractive activities.
vi. High community expectations in exploration and development which slow down project implementation.
vii. Inadequate data on oil and gas blocks, and other minerals to inform investment decisions
viii. Inadequate legal and regulatory frameworks
ix. Constrained ullage due to the exponential expansion of Oil-marketing companies (OMCs) leading to delays in discharge of products from import vessels .
x. Inadequate storage and infrastructure capacity for petroleum products. This has resulted in the country relying on a private Bulk LPG handling facility leading to high importation, handling costs translating to higher product prices.

3.3 Lessons Learnt

i. Need to strengthen national and county governments collaboration and other stakeholders engagement at all levels of programme/project development.
ii. Need for strategic partnership in project financing, execution and skills transfer.
iii. Enhanced involvement of key local professionals in all phases of project implementation, including conceptualization, design, construction and commissioning to ensure capacity building and knowledge transfer.
iv. Need for a structured legal and strategic framework for managing community expectations.
v. Need for a national oil and chemical spill contingency plan for the onshore and offshore exploration activities
vi. Development and review of regulations to manage chemicals and hazardous waste from oil and mineral processes is necessary

vii. Need for guidelines for development and rehabilitation to minimize loss of biodiversity, destruction of cultural heritage sites and sensitive natural habitats including wildlife migratory routes.
viii. There is need for enforcement and compliance to Climate Change Act 2016 on on levels of Green House Gases (GHGs) emission reduction.
ix. Enhanced capacity building in Counties in the extractive sector through partnerships with the national government, Technical, Vocational Education & Training institutions, Universities and investors
x. Need to improve competitiveness and value addition of the minerals.
xi. Strengthening of linkages with other sectors with a coordinated approach in the implementation of the various flagship projects. The collaboration will entail capacity building with various technical institutions, environmental matters, occupational safety and health services concerns.

4.0 PROGRAMMES AND PROJECTS FOR 2018-2022

Key Programmes and Projects to be implemented during the Third Medium Term Plan 2018-2022 are:

4.1 Oil and Gas

During the MTP III period, the following programmes and projects will be implemented:

(1) Exploration and Commercialization of Oil and Gas discoveries

Drilling of Exploratory and Appraisal Wells whereby Twenty (20) exploratory and appraisal wells will be undertaken to ascertain the commercial viability of the resource. Further, 450 production and re-injection wells will be drilled. The programme will also entail Gas Exploration, Production and Utilization in order to promote and facilitate investment opportunities in gas exploration, production and utilization in the country. A feasibility study was commissioned to undertake Floating Liquefied Natural Gas (FLNG) in Mombasa. The objective of the study was to asses; the commerciality of a FLNG fed power plant at the port city of Mombasa, the resulting implication on the cost of electricity, and the feasibility for an offshore LNG terminal and equity financing options for the required capital investment. This will be accomplished with the MTP period.

The programme will also entail Finalization of Field Development Plan for South Lokichar. The objective of Field Development Plans (FDPs) is to give the best technical solutions for field optimization. FDPs comprise all activities and processes required to develop a field. These activities include: Environmental and social Impact Assessment; Geological and Geophysical modelling; Reservoir Characterization; Production Technology; Infrastructure plan and development; Well design and construction, completion design, surface facilities, and Economics and risk assessment.

(2) Complete Early Oil Pilot Scheme (EOPS) Project

The Early Oil Pilot Scheme (EOPS) is an initiative by the Government of Kenya (GOK) and the Kenya Joint Venture (Tullow Oil, Africa Oil Corporation and Maersk) to use the existing road infrastructure to transport crude oil from Lokichar to Mombasa for export. The key objectives for EOPS are to enable Full Field Development and establish Kenya as an oil exporter commencing with testing the international market for Turkana crude. Although the project is not generating profits, it is envisaged that the scheme would create an investment case that would capture the immediate non-monetary benefits of early oil for the key stakeholders involved.

(3) Capacity Development for Oil and Gas

In the MTPIII period, government through KEPTAP will enhance capacity of institutions in Petroleum sector through supporting training and implementation of the requisite policies and plans. These entail: Capacity Building and Field Development Planning; Implementation of Institutional Review Study; Procurement of an internationally recognized consultancy to review and ascertain the credibility of South Lokichar Field Development Plan (FDP) and development of local content policy and regulations to govern local content in the oil and gas sector.

(4) De-risking Exploration Acreage

Enhancing attractiveness of the country's exploration blocks and reducing the cost to government in cost recovery component in Production Sharing Contracts (PSCs) is crucial. In implementing the programme, two (2) multi-client ventures surveys will be undertaken in the open acreage for data acquisition and Digitization of the National Data Centre (NDC) completed.

The government will undertake three (3) licensing bid rounds. The objective is to attract technically and financially robust companies to accelerate exploration through shortening exploration cycle and reduce overall cost of exploration especially in low oil price environment through acquisition and provision of sufficient and reliable data for revaluation. Availability of data will facilitate licensing rounds.

(5) Construction of Lokichar-Lamu Crude Oil Pipeline.

Following the discovery of crude oil in the Lokichar Basin in Northern Kenya, the Government will in partnership with the International Oil Companies develop the crude oil pipeline from Lokichar to Lamu for transportation of the oil for export and early monetization of the resource. The 840-km pipeline project will include the marine terminal and load out facility.

(6) National Liquified Petroleum Gas (LPG) Enhancement Project (Mwananchi LPG project)

The government will enhance the use of Liquefied Petroleum Gas (LPG) through the Mwananchi LPG Project to reduce reliance on unclean soures of energy. To enhance usage of LPG as clean energy source, during the MTP III period the Government will promote LPG usage by increasing LPG per capita consumption from the two (2) Kg per person per year to fifteen (15) kg. Five (5) million, 6 kg LPG cylinders will be purchased and distributed across the country in order to enhance LPG penetration from 10% to 70% in the plan period. In addition, over 40 mini LPG storage and filling plants (LPG skids will be installed to be operated by women and youth.

(7) Enhancement of Petroleum Products Storage Capacity in Mombasa:

Access to affordable, competitive, reliable, quality, safe and sustainable energy is key to the country's national development. In 2016 the demand for petroleum products was 5 million MT and is expected to increase to 7.06 million MT by 2022. Within the integrated petroleum supply infrastructure, the existing storage capacity is 989,000 m^3 comprising of 622,000 m^3 at Kenya Pipeline Company/KOSF; 140,000 m^3 within KPRL, 110,000 m^3 within VTTI; 38,000 m^3 in Petrocity in Konza and 79,000 m^3 in OMCs depots in Nairobi. These facilities provide 15 days stock cover for local demand. To ensure sufficient supply of petroleum products, additional storage tanks are under construction by KPC in Nairobi which will increase the capacity by 133,000 m^3 and an additional 100,000 m^3 will be made available in KPRL after conversion of the idle tanks for refined petroleum products. Completion of these projects during MTP III will therefore increase the overall storage capacity available to 1,222,000 m^3. This will improve the stock days to thirty (30).

KPC and KPRL entered into a lease agreement in March 2017 through which KPRL leased its facilities to KPC for purpose of carrying on and expanding the existing and new business lines. During MTP III, the idle storage tanks will be converted for white oil use. This will also involve integration of th facilities to the pipeline thereby expanding the oil and gas facilities. It will also position Mombasa as a regional oil and gas hub. The integration of facilities will result in additional ullage and efficiency in handling of petroleum imports, thereby reduce demurrage expenses, enhancing supply and positively impactingthe pump price.

(8) Expansion of National Pipeline Network

Bulk of petroleum products is still transported by road from the pipeline depots to various towns and markets. The government will undertake a pipeline expansion aimed at constructing spur lines/extending the pipeline to key towns. This will ensure that efficiency, environmental and safety benefits of pipeline transportation are spread throughout the country. A feasibility study will be finalized to inform and prioritize the pipeline expansion investments in the MTP III period.

(9) Liquid Petroleum Gas (LPG) import and storage in Mombasa and Nairobi.

The LPG project is aimed at ensuring availability and accessibility of LPG at cost effective prices to support promotion of use of LPG as a household fuel among the urban poor and the rural population and, enhance socio-economic development. A study on LPG demand in the country undertaken in 2013 indicated that under optimistic demand scenario, LPG demand could rise to 368,000 MT in year 2022. KNBS, indicated that demand for LPG in 2016 was 151,700 MT.

The governmement provided a policy directive that all LPG consumed in the country be imported through Mombasa. The t existing 1,200 MT LPG facilities at KPRL will be enhanced to 20,000 MT and new bulk LPG import handling and storage facilities be integrated to the existing facilities. In addition, bulk LPG storage facilities will be developed in Nairobi.

(10) Establishment of Centre of Excellence impacting in Oil and Gas:

The government through Kenya Pipeline Company in collaboration with Southern Alberta Institute of Technology (SAIT) of Canada will fast track the establishment of a Centre of Excellence in Oil and Gas at the Morendat Institute of Oil & Gas (MIOG). The Centre's objective will be to bridge the skills gap and, build capacity in pipeline management, Oil and Gas operations and maintenance for Kenya and the region.

(11) Development of a Regional Hub for Upstream Petroleum Services

The growing scope of petroleum exploration activities presents an opportunity for the country to become a regional hub for petroleum upstream services. As part of developing a hub in the region and enhancing local content development, the government will set up an Upstream Drilling Service Unit with the objective of ensuring a permanent rig presence which will result in lower mobilization costs and rig turnaround time. This will be implemented through Foreign Direct Investment (FDI) and local content. The government will put measures to attract FDI related to drilling services while National Oil Corporation will drive local content through local companies including those in joint ventures (JVs) with international firms. In the process, there will be technology transfer and development of national capabilities that would position the country as a regional hub. The following projects will also be undertaken:

11.1 National oil and gas Seismic Processing Centre

A National Seismic Processing Centre will be set up in Nairobi to provide specialized seismic data processing to oil and gas exploration companies operating locally and within the region thus reducing costs and turnaround time.

11.2 Geochemical and Petro-physical laboratory

A geochemical and petrophysical laboratory in Nairobi will be set up in the plan period of 2018-2022. The laboratory will offer a wide range of analytical services to support oil and gas industry both locally and regionally and help build local expertise in geochemical analysis.

(12) Quality Assurance of Petroleum Products.

Proliferation of substandard petroleum dispensing and storage sites pose environment health and safety risks resulting in dumping of export products in to the local market. To address this challenge, monitoring of petroleum quality standards be intensified to ensure compliance, prevent diversion of products meant for export into the local market and eradicate illegal LPG refilling. This will involve regular spot checks within petroleum stations, depots and LPG filling plants. Dealers and operators found culpable will be prosecuted as per the law.

4.2 Other Mineral Resources

In the Other Mineral Resources subsector, the following flagship Programmes and Projects will be implemented by the during the MTP III include:

(1) Geological Mapping, Mineral Exploration & Evaluation: The programme will entail detailed systematic geological mapping, surveys, exploring and the evaluation of minerals in Kenya. Emphasis will however be given to the precious and base metals, gemstones, and construction and industrial minerals. to propel the mining sector that have been earmarked to propel the mining sector the programme has the following projects.

1.1 Nationwide Airborne Geophysical Survey.

project will entail a statematic collection of geophysical data by aircraft and covering the whole country, a one off exercise that gives seamless geology of the country and carrying out airborne geophysical surveys for the whole of the country carrying out airborne geophysical surveys to establish potential areas of mineralization.

1.2 Nationwide Geological Survey Ground Follow-up

New Ground geosurvey follow up in areas where high quality geophysical data sets have become available ground magnetics radiometrics, electrical resistivity etc; geological and mineral mapping, core drilling.

1.3 Marine Geophysical survey,

Geophysical survey of Kenya Marine territory including the continental shelf using various geophysical techniques to collect data and information on geology and mineral resources of Kenya Marine territory including the continental shelf.

(2) Internationally Accredited Mineral Certification Laboratory (IAMCL)

The project entails procurement of specialized laboratory equipment and ensure geo-technical laboratory is incorporated in the IAMCL. In addition, the accreditation process will be pursued.

(3) Establishment of the Geological Data Bank

The project will entail equipping and commissioning a repository centre to host geological data and information. This will generate additional revenues to government as the data and information on known mineral quantities will be accessed at a cost

(4) Enhancing Mining for Development: The programme will propel the country to realize economic growth from minerals and lead to creation of wealth and employment. This programme will undertake the following projects;

4.1 Mineral Value Addition Centres: This will entail equipping and commissioning the Gemstone Value Addition Centre in Taita-Taveta County, construction and equipping of Granite Processing Plant in Vihiga County; Gold Refinery in Kakamega County; and Gypsum Products Manufacturing Plant in Garissa/Tana River County, mineral Promotion and Investment, minerals and Metals Commodity Exchange and establishment of an African Mineral Development Centre.

4.2 Mineral Promotion and Investment: This project aims to market Kenya as a mining and investment destination promoting Kenyan gems and minerals in international trade fair and exhibitions.

4.3 **Minerals and Metals Commodity Exchange:** The project will entail establishment of commodities exchange to facilitate mineral trading.

4.4 **African Mineral Development Centre:** A bid was floated to the African Union for Kenya to host the African Mineral Development Centre to spearhead and coordinate development of policies to govern the extractive sector. Kenya expects to become the African Mineral Research Center thus improving the country's overall image to the investors.

(5) **Capacity Building of Artisanal and Small Scale Miners (ASM):** The programme has four projects mainly: Formalization of Artisanal and Small-Scale Miners,Monitoring of mining and quarrying activities, prepare inventory and zoning of areas with construction materials and establishment of a National Mining Institute. The Institute will provide relevant middle and high expertise in the mining sector.

4.3 Other Programmes and Projects

1) **Security of Supply of Petroleum Products:** The project will enhance storage capacity of petroleum products from 989,000 m^3 to 1,222,000 m^3. This will be achieved through construction of additional storage tanks in Nairobi (133,000 M^3) and conversion of existing crude oil tanks at Kenya Petroleum Refineries Limited (KPRL) to white oil service (100,000 M^3).

2) **Environmental and Social Impact Monitoring, Evaluation and Reporting:** Trends in growth of Oil and Mineral Resources Sector demonstrate potential for increased impacts on the environment. Many exploration sites support biodiversity among other natural resources. During the MTP III therefore, environmental monitoring on the impacts of exploration of oil and other minerals resources will be undertaken.

2.1 **Effective management of the environment and social footprints:** The Sector will continue to implement existing laws and regulations such as the Environment Management and Co-ordination Act Chapter 387 of the Laws of Kenya, EMCA CAP 387, Section 57A and 58(1); Regulations on Environment Impact Assessment, Air and Water Quality and Waste Management. In addition certain intervention will be undertaken to such as reduction of greenhouse gases emissions.

2.2 **Implementation of Climate Change Act, 2016:** This is achieved through enforcement of the Climate Change Act, 2016 and the Environment Management and Coordination (Air Quality) Regulations, 2015 by NEMA. This will entail: regulating, enforcement and monitoring compliance on levels of Green House Gases (GHGs) emission reduction, and integrate climate risk and vulnerability assessment into all forms of assessment with lead agencies.

3) **Natural Resource Mapping:** The natural resource mapping in the country is important to enhance planning and decision making. This programme will comprise of two projects;

3.1 **Rangeland Resource Inventory, Mapping and Monitoring**
The objective of this project is to generate data/information on livestock and wildlife population including environment/ecological attributes in the Kenya Rangelands for planning conservation and management. Under this program, aerial survey of rangeland resources will be assessed, mapped and monitored.

3.2 Digital Spatial Land Use and Land Cover Mapping

The project aims to strengthen and improve national and county spatial planning and land based resource management systems; and, to strengthen and upgrade capacities in land use and land cover mapping. This project has been on going and during the MTP III period it will target three counties for implementation and will also cover urban land use in some specific areas.

4) Geohazards and Engineering Geology

This project will entails mapping and documentation of geoharzard areas in the country, development of a National Geoharzard Atlas and setting up of a modern geotechnical laboratory The project will faciliate collection of the requisite data for National Geo-hazards atlas. The data generated will be utilized for disaster preparedness and mitigation and, monitor geo-hazard prone areas in the country.

5) Kenya National Seismological Network

The objective of establishing a National Seismological Network is to enable monitoring of earthquakes within Kenya and the region. This will enable the Government to provide accurate and up to date data and information on local and regional seismicity, preparation of seismic zoning maps, seismic risk maps and publications. This will entail establishment of a National Seismological Network of stations to monitor both Local and global seismicity (earthquake activity) and for receiving and processing of seismological data in the country. This will entail building, equipping and operating the seismic receiving and processing center.

5.0 POLICY, LEGAL AND INSTITUTIONAL REFORMS

Successful implementation of the outlined programmes and projects requires that requisite policy, legal and institutional reforms are put in place. This chapter outlines reforms that will provide an effective plan implementation framework for successful sustainable exploitation of oil,gas and othe mineral resources. The Medium Term Plan III will focus on reforms aimed at enhancing service delivery in the sector. The reforms are:

5.1 Policy Reforms

- Implementation of the National Energy and Petroleum Policy.
- Implementation of the Mining and Mineral Policy;
- Development of Local Content Policy and Regulations;
- Development of rules and regulations for the establishment of metals and minerals commodity exchange; and
- Development of the National Extractive Policy.

5.2 Legal Reforms

i. Enactment and implementation of Petroleum (Exploration, Development and Production) Bill, 2015:
   - Establishment of the Upstream Petroleum Regulatory Authority to regulate petroleum operations in Kenya;
   - Establish an upstream advisory committee to advise government on petroleum exploration and development matters;
   - Establish an upstream petroleum laboratory;
   - Development and review of relevant Regulations.

ii. Enactment of the Energy Bill 2015
   - Establishment of the Energy and Petroleum Institute as a Centre of excellence;
   - Establishment of the Energy and Petroleum Tribunal to hear and determine disputes arising from the decisions of the Energy Regulatory Authority;.
   - Acquisition of KPRL by KPC, and
   - Review and restructure of National Oil Corporation of Kenya to expand the petroleum upstream function.

iii. Development of the outstanding seven (7) Regulations to operationalize the Mining Act, 2016.

5.3 Institutional Reforms

- Strengthening of Mineral Audit Unit: to enhance revenue collection and determine the mineral royalty rates;
- Establishment of National Mining Corporation: The Corporation will act as an investment arm of the national government in the mining sector;
- Establishment of Mineral Royalty Fund: to provide structured disbursement of mineral royalty to counties and targeted communities and
- Upgrade of Online Transaction Mining Cadaster Portal: to provide efficient licensing concession management that promote accountability and transparency

5.4 Cross Cutting Reforms

In addition to the Policy, Legal and Institutional Reforms, the sector will endear community participation. This will entail:

C**ommunity Involvement in Oil and Other Minerals Sector Projects and Programmes:** This will involve the implementation of provisions of the Public Participation Bill, 2016, once enacted, will enhance local communities' involvement in projects and programmes.

Land Acquisition and Compensation: The sector will implement the Land (Amendment) Act, No. 28 of 2016 which provides procedures for compensation to affected person during compulsory acquisition of land for the sector.

Environmental and Social reforms including integration of Climate Change Act 2016: The National Environmental Management Authority (NEMA) in collaboration with the sector will spearhead implementation of the following environmental management reforms:

- Development of environmental regulations (onshore and offshore) for the Oil and Gas sector (upstream, midstream and downstream).
- Development of onshore and offshore hydrocarbon escape prevention, preparedness and response capacity
- Review of Environmental Standards and Develop Procedures, Standards and processes related to Hazardous Waste Management and Gas flaring.
- Development of Environmental Conservation Plans for different ecosystems like marine, forests, Game reserves in areas with oil blocks
- Develop and enforce air quality laws and regulations in collaboration with relevant agencies.
- Update and enforce the specifications and standards for supply of clean fuels.

Mainstreaming Affirmative Action: The sector commits to promote equity and gender parity in the management of resources and programmes/projects implementation

Ratification of International Treaties, Conventions and Bilateral Agreements: The country is obligated to align its activities to promote implementation of International Treaties, Conventions and Bilateral Agreements such as the SDGs, Agenda 2063, Paris Agreement on Climate Change among others. The sector commits to ensure conformity to the international agreed exploration and exploitation standards of oil and other minerals resources.

ANNEX 1: IMPLEMENTATION MATRIX

Goal:	Enhance commercialisation of discoveries, develop the requisite skills and infrastructure for production in the oil, gas and other minerals sector, and improve access to competitive, reliable and secure supply of petroleum products											
Strategic Objectives:	Upscale Data collection, collation and analysis; enhance effective partnerships in data exchange and access to new technology in order to reduce costs in exploration; skills development and enhancement of local expertise; increase commercial production of oil and other mineral resources; development of the requisite infrastructure and facilities; Promote exploration and development investments in the oil, gas and other mineral resources sector while conserving the environment; and, enhance access to competitive, reliable and secure supply of petroleum products.											
Programmes /Projects	**Objectives**	**Expected Outcomes/Outputs**	**Performance Indicators**	**Implementing Agencies**	**Time Frame**	**Source of Funds**	**Total Cost**	**Budget (in Kshs million)**				
								2018/19	**2019/20**	**2020/21**	**2021/22**	**2022/23**
OIL AND GAS												
Exploration and Commercialization of the Oil and Gas discoveries	Increased availability and access to oil and gas	Petroleum Exploration Blocks marketed Nationally and Internationally.	No. of petroleum Exploration Blocks marketed.	SDP	2018-2022	GoK	5300	752	950	1000	1100	1500
Complete Early Oil Pilot Scheme	To enable export of crude oil for the duration of the EOPS	2000 bpd of crude oil exported	2000 bpd of crude oil delivered.	KPC/KPRL/ IOCs	2018-19	GoK and IOCs	3165	170	180	180	1320	1315
Capacity Development for Oil and Gas: Kenya Petroleum Technical Assistance Project (KEPTAP)	To enhance Capacity on 21 Beneficiary organization in Oil and Gas sector	• Organizations in Oil and Gas sector capacity enhanced • Kenya National Petroleum Master Plan (KNPMP) developed	• Number of officers trained under KEPTAP. • A National Petroleum Master Plan	SDP, NT, MOITC	2018-2022	IDA/ GAC	3750	996	930	840	840	144
Automation of the Petroleum Data Inventory system	To design study for automated petroleum cadastral system	A Modernized Petroleum Data Ce ntre	Automated Petroleum Data Centre	NOC/ KEPTAP	2019	IDA/ GAC	50		50			
Construction of Lokichar-Lamu Crude Oil Pipeline	To Construct infrastructure for transportation and export of crude oil	Crude oil Pipeline constructed	Lokichar-Lamu Crude Oil Pipeline	Pipeline Company once established.	2018-2022	GoK	9700	215	230	280	4490	4485
National Liquid Petroleum Gas (LPG) Enhancement Project 'Mwananchi LPG project'	To enhance LPG uptake	Promotion of use of LPG as a clean fuel alternative to biomass among the low income households	No. of cylinders distributed	SDP /NOC	2018-2021	GoK	7900	2496	2666	2676	62	

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/19	2019/20	2020/21	2021/22	2022/23
Enhancement of Petroleum Products Storage Capacity in Mombasa	Increase capacity for import storage and additional ullage.	Additional Storage Capacity	100,000m^3 additional white oil storage at Mombasa	KPC/KPRL	2018-2019	KPC	1000	1,000	-	-	-	-
Expansion of Pipeline Network	To ensure that pipeline transportation is spread throughout the country	Pipeline extension and/or spur line constructed.	Pipeline network in Km (to be determined)	KPC	2020-2022	KPC	5800	-	-	3,000	2,800	-
Liquefied Petroleum Gas (LG) Import and Storage in Mombasa	To provide capacity for importation of bulk LPG	Import handling and storage facilities constructed	20,000MT LPG Import and storage facility in Mombasa	KPC/KPRL	2018-2020	KPC	3000	1,500	1,500	-	-	-
LPG Bulk Storage Facilities in Nairobi	To provided capacity for Storage of bulk LPG.	Bulk Storage facilities in Nairobi constructed	Bulk LPG storage facilities	KPC	2018-2020	KPC	2000	1,000	1,000	-	-	-
Establish Centre of Excellence in Oil and Gas	To build capacity in Pipeline management, Operations and Maintenance	Skilled manpower on oil and Gas	No of Skilled Manpower	KPC	2018-2022	KPC	3360	1,300	760	500	400	400
National oil and gas Seismic Processing Centre	To provide specialized upstream services	Operational Seismic Processing Center installed	Operational Seismic Processing Center	NOC	2018-2022	NOC	315	115	50	50	50	50
Geochemical and Petrophysical laboratory	To provide specialized oil and gas upstream services	Operational Geochemical and Petrophysical laboratory	Operational Geochemical and Petrophysical laboratory	NOC	2018-2022	JV	700	300	100	100`	100	100
Quality Assurance of Petroleum Products	To effectively monitor and enforce quality assurance standards to alleviate dumping and adulteration of petroleum products	Quality and secure petroleum products marketed nationally and regionally	No. of samples of petroleum products tested	SDP/ERC	2018-2022	GoK	333	33	75	75	75	75

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/19	2019/20	2020/21	2021/22	2022/23
OTHER MINERAL RESOURCES												
Nationwide Airborne Geophysics survey	To identify areas of mineral potential.	Geological data and information on potential mineralization	Per cent of the country mapped/surveyed	SDM	2018-2022	GoK	9000	0	1320	1320	3180	3180
Nationwide Geological Ground Follow-up survey	To ascertain the occurrence of minerals in the mineralized areas revealed by airborne	Geological data and information on minerals, quality and quantity of minerals	Per cent area mapped	SDM	2021-2022	GoK	1500	-	-	-	800	700
Marine Geophysics Survey	To conduct geophysical survey of Kenya's marine territory	Data and Information on geology and mineral resources	Per cent of the marine area mapped/surveyed	SDM	2021-2022	GoK	1.0	-	-	-	500	500
Geological Mapping, Mineral Exploration and Evaluation	To carry out detailed systematic geological mapping and surveys, exploration and evaluation of minerals in Kenya	Enhanced data and information on geology and mineral occurrences	Area in Km2 mapped. No. of reports	SDM	2018-2022	GoK	1000	200	200	200	200	200
International Accredited Laboratory	To provide quality testing services in Kenya and in the region	A modern Mineral Certification Laboratory.	Per cent ISO 17025 Certified laboratory	SDM	2018-2022	GoK	780	103	103	443	65	66
Geological Data Bank	To create a National Data Repository for geological data andand information	A well-equipped Geological data and information bank	% of geological data and information digitized	SDM	2018-2022	GoK, DFID	386	150	100	99	19	18
Geohazard and engineering geology	To map and monitor geo-hazards and climate change hotspots prone areas	Delineation of geo-hazards and climate change hotspots prone areas	National geo-hazard atlas	SDM	2018-2022	GoK	40	-	-	-	20	20
Kenya National Seismological Network	To monitor both local and global seismicity (intensity of earthquake)	Earthquake Risk mitigation	Operational Seismology Centre and Network	SDM	2021-2022	GoK	1500	-	-	-	750	750
Gemstone Value Addition	To add value to gemstone through processing of raw gemstone	value addition of gemstone	Gemstone Value added in Ksh	SDM	2018-2022	GoK	95	40	35	10	5	5

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/19	2019/20	2020/21	2021/22	2022/23
Granite Processing Plant, Vihiga	To add value to granite through processing of raw granite	granite processed	Granite Processing Plant	SDM	2018-2022	GoK	200	50	100	37	7	6
Gold Refinery, Kakamega County	To add value to gold through processing of raw gold	Gold refined	Gold Refinery	SDM	2020-2022	GoK	200	-	-	-	100	100
Gypsum Products processing Plants in Garissa and Tana River	To add value to gypsum in Garissa and Tana Athi through processing	Gypsum processed	Gypsum processing Plants	SDM	2020-2022	GoK	250	-	-	-	100	150
Mineral Promotion and Investment	To market Kenya as a mining and investment destination	Minerals investment Promoted	Capital inflows in Ksh	SDM	2020-2022	GoK	1900	-	-	-	950	950
Rangeland Resource Inventory, Mapping and Monitoring	To Generate data on livestock/wildlife population, distribution and the associated environment/ecological attributes in the Rangelands for planning, conservation and management	well managed rangelands and conservation of the wildlife	Technical reports (maps and statistics).	SDM	2020-2022	GoK	239.4	-	-	-	139.4	100
Digital Spatial Land Use and Land Cover Mapping	To strengthen and upgrade capacities in land use and land cover mapping	Strengthened national and county spatial planning through skilled manpower in land use and land cover mapping	Digital spatial and photographic land use and land cover maps and Geo-database	SDM and County governments	2018-2022	GoK	420	-	-	-	200	220
Artisanal and Small-scale Miners formalization in Kenya	To formalize and support ASM	Legal operations of artisanal and small scale miners	No. of artisanal and small scale miners formalized	SDM	2018-2022	GoK	335	-	-	-	200	135
Monitoring of mining and quarrying activities	To monitor compliance with and enforcement of Explosives Act	Compliance and enforcement of Explosives Act	Reports on compliance with and enforcement of Explosives Laws	SDM	2018-2022	GoK	650	-	-	-	300	350

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/ 19	2019/ 20	2020/ 21	2021/22	2022/ 23
Inventorying and zoning of areas with construction materials	To zone areas with construction materials in all 47 counties	Zoned areas with construction materials	National atlas for construction materials	SDM	2021-2022	GoK	250	-	-	-	100	150
Institutional reforms												
Mineral Audit Unit	To determine royalty rates and ensure royalty payments	Enhanced revenue collection	Revenue collected in Ksh	SDM	2018-2021	GoK	355	90	90	140	35	-
National Mining Corporation	To act as the investment arm of the National Government in the mining sector	Increased investment in the country	Capital inflows in Ksh	SDM	2021-2022	GoK	1810	-	-	-	1000	810
Mineral Royalty Fund	To provide structured disbursement of mineral royalties to counties and targeted communities	Transparency and accountability	Royalty Disbursed in Ksh to Mining Counties and Communities	SDM The National Treasury	2021-2022	GoK	450	-	-	-	200	250
Online Transaction Mining Cadastre Portal	To provide efficient licensing and concession management that promotes transparency and accountability	Efficiency, transparency and accountability in licensing	No. of licenses issued Online	SDM	2018-2022	GoK	348	50	100	185	13	-
National Mining Institute	To develop middle and high level expertise in mining sector	Skilled technical person on geology related field	No. of personnel trained	SDM MoEducation, University of Nairobi, Taita-Taveta University.	2021-2022	GoK	710	-	-	-	400	310
Minerals and Metals Commodity Exchange	To provide platform for mineral commodities trading	Increase investment in the country	No. of Minerals and Metals traded	SDM NSE CBK KRA	2021-2022	GoK	450	-	-	-	250	200
African Minerals Development Center (AMDC)	Host the AMDC for research development for the AMV	Research and development of minerals	AMDC	SDM	2018-2021	GoK	74	15	24	27	8	-
GRAND TOTAL							**70217.4**	**10575**	**10563**	**11062**	**20778.4**	**17239**

ANNEX 2: MONITORING AND EVALUATION MATRIX

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Yearly Targets				
						2018/19	2019/20	2020/21	2021/22	2022/23
OIL AND GAS										
Commercialization of the Oil and Gas discoveries	Increased availability and access to oil and gas	Petroleum Exploration Blocks marketed Nationally and Internationally.	No. of petroleum Exploration Blocks marketed.	MoEP	2018-2022	22	17	12	22	22
Complete Early Oil Pilot Scheme	To enable export of crude oil for the duration of the EOPS	2000 bpd of crude oil exported	2000 bpd of crude oil delivered.	KPC/KPRL/ IOCs	2018-19	2000				
Capacity Development for Oil and Gas: Kenya Petroleum Technical Assistance Project (KEPTAP)	To enhance Capacity on 21 Beneficiary organization in Oil and Gas sector	Organizations in Oil and Gas sector capacity enhanced	Number of officers trained under KEPTAP.	MoEP, NT, MOITC	2018-2021	310	320	200		
		Kenya National Petroleum Master Plan (KNPMP) developed	Petroleum Sector Master plan	MoEP	2018-2019	Petroleum Sector Master Plan				
Automation of the Petroleum Data Inventory system	To design study for automated petroleum cadastral system	A Modernized Petroleum Data Centre	Automated Petroleum Data Centre	NOC/ KEPTAP	2019-2020	Commence setting up of the data centre	Automated Petroleum Data Centre			
Construction of Lokichar-Lamu Crude Oil Pipeline	To Construct infrastructure for transportation and export of crude oil	Crude oil Pipeline constructed	% of Lokichar-Lamu Crude Oil Export Pipeline constructed	Pipeline Company (once established).	2019-2022	Complete Preliminary works	30	60	80	100
National Liquid Petroleum Gas (LPG) Enhancement Project 'Mwananchi LPG project'	To enhance LPG uptake	Promotion of use of LPG as a clean fuel alternative to biomass among the low income households	No. of cylinders distributed	MOEP/NOC	2018-2021	800,000	800,000	800,000	900,000	
Enhancement of Petroleum Products Storage Capacity in Mombasa	Increase capacity for import storage and additional ullage.	Additional Storage Capacity	100,000m³ additional white oil storage at Mombasa	KPC/KPRL	2018-2019	Tanks Conversion and rehabilitation works.	Operationalization			

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/19	2019/20	2020/21	2021/22	2022/23

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Yearly Targets				
						2018/19	2019/20	2020/21	2021/22	2022/23
Expansion of Pipeline Network	To ensure that pipeline transportation is spread throughout the country	Pipeline extension and/or spur line constructed.	Pipeline network in Km **(to be determined)**	KPC	2020-2022	Prioritize projects and obtain project approvals	Undertake FEED and ESIA for priority project	• Secure financing • Acquire Land • Commence works	Construction	Complete and commission at least 1 No. project.
Liquefied Petroleum Gas (LG) Import and Storage in Mombasa	To provide capacity for importation of bulk LPG	Import handling and storage facilities constructed	20,000MT LPG Import and storage facility in Mombasa	KPC/KPRL	2018-2020	• Secure land • Undertake ESIA and FEED • Procure EPC Contractor • Commence works	Commence works	Completion and Commissioning of the projects		
LPG Bulk Storage Facilities in Nairobi	To provided capacity for Storage of bulk LPG.	Bulk Storage facilities in Nairobi constructed	Bulk LPG storage facilities	KPC	2018-2020					
Establish Centre of Excellence in Oil and Gas	To build capacity in Pipeline management, Operations and Maintenance	Skilled manpower on oil and Gas	No of Skilled Manpower	KPC	2018-2022	350	385	623	865	1,012
National Oil and Gas Seismic Processing Centre	To provide specialized upstream services	Operational Seismic Processing Center installed	Operational Seismic Processing Center	NOC	2018-2019	100% (Operational Center)				
Geochemical and Petrophysical laboratory	To provide specialized oil and gas upstream services	Operational Geochemical and Petrophysical laboratory	Operational Geochemical and Petrophysical laboratory	NOC	2018-2021	50%	75%	100% (Operational laboratory)		
Quality Assurance of Petroleum Products	To effectively monitor and enforce quality assurance standards to alleviate dumping and adulteration of	Quality and secure petroleum products marketed nationally and regionally	No. of samples of petroleum products tested	SDP/ERC	2018-2022	3,000	6,000	6,000	6,000	6,000

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/19	2019/20	2020/21	2021/22	2022/23
Programmes /Projects	**Objectives**	**Expected Outcomes/Outputs**	**Performance Indicators**	**Implementing Agencies**	**Time Frame**	**Yearly Targets**						
						2018/19	**2019/20**	**2020/21**	**2021/22**	**2022/23**		
	petroleum products											
OTHER MINERAL RESOURCES												
Nationwide Airborne Geophysics survey	To identify areas of mineral potential.	Geological data and information on potential mineralization	Per cent of the country mapped/surveyed	MoM	2018-2022	25	50	75	100	-		
Nationwide Geological Ground Follow-up survey	To ascertain the occurrence of minerals in the mineralized areas revealed by airborne	Geological data and information on minerals, quality and quantity of minerals	Per cent area mapped	SDM	2020-2022		10	20	30	40		
Marine Geophysics Survey	To conduct geophysical survey of Kenya's marine territory	Data and Information on geology and mineral resources	Per cent of the marine area mapped/surveyed	SDM	2021-2022	0	0	0	25	50		
Geological mapping, mineral exploration and evaluation	To carry out detailed systematic geological mapping and surveys, exploration and evaluation of minerals in Kenya	Enhanced data and information on geology and mineral occurrences	Area in Km2 mapped.	SDM	2018-2022	730 Km2	730	730	730	730		
International Accredited Laboratory	To provide quality testing services in Kenya and in the region	i) A modern Mineral Certification Laboratory.	Per cent ISO 17025 Certified laboratory	SDM	2018-2022	10	40	70	100	-		
Geological Data Bank	To create a National Data Repository for geological data and information	A well-equipped Geological data and information bank	% of geological data and information digitized	SDM	2018-2022	10	40	70	100	-		
Geohazards and engineering geology	To map and monitor geo-hazards and climate change hotspots prone areas	Delineation of geo-hazards and climate change hotspots prone areas	National geo-hazard atlas	SDM	2021-2022				1			

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million)				
								2018/19	2019/20	2020/21	2021/22	2022/23

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Yearly Targets				
						2018/19	2019/20	2020/21	2021/22	2022/23
Kenya National Seismological Network	To monitor both local and global seismicity (intensity of earthquake)	Earthquake Risk mitigation	Operational Seismology Centre and Network	SDM	2021-2022				2	2
Gemstone Value Addition	To add value to gemstone through processing of raw gemstone	value addition of gemstone	Gemstone Value added in Ksh	SDM	2018-2022	10M	20M	35M	50M	100M
Granite Processing Plant, Vihiga	To add value to granite through processing of raw granite	granite processed	Granite Processing Plant	SDM	2021-2022				1	
Gold Refinery, Kakamega County	To add value to gold through processing of raw gold	Gold refined	Gold Refinery	SDM	2021-2022				1	
Gypsum Products processing Plants in Garissa and Tana River	To add value to gypsum in Garissa and Tana Athi through processing	Gypsum processed	Gypsum processing Plants	SDM	2020-2022			1	1	
Mineral Promotion and Investment	To market Kenya as a miningd an investment destination	Minerals investment Promoted	Capital inflows in Ksh	SDM	2018-2022	4Bn	7Bn	10Bn	12Bn	15Bn
Rangeland Resource Inventory, Mapping and Monitoring	To Generate data on livestock/wildlife population, distribution and the associated environment/ecological attributes in the Rangelands for planning, conservation and management	well managed rangelands and conservation of the wildlife	Technical reports (maps and statistics).	SDM	2018-2022	4	4	4	4	4
Digital Spatial Land Use and Land Cover Mapping	To strengthen and upgrade capacities in land use and land	Strengthened national and county spatial planning through skilled manpower in	Digital spatial and photographic land use and	MoM and County governments	2018-2022	5	5	5	5	5

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Source of Funds	Total Cost	Budget (in Kshs million) 2018/19	2019/20	2020/21	2021/22	2022/23

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Yearly Targets 2018/19	2019/20	2020/21	2021/22	2022/23
	cover mapping	land use and land cover mapping	land cover maps and Geo-database							
Artisanal and Small-scale Miners formalization in Kenya	To formalize and support ASM	Legal operations of artisanal and small scale miners	No. of artisanal and small scale miners formalized	SDM	2018-2022	100	200	500	1000	1500
Monitoring of mining and quarrying activities	To monitor compliance with and enforcement of Explosives Act	Compliance and enforcement of Explosives Act	Reports on compliance with and enforcement of Explosives Laws	SDM	2018-2022	4	4	4	4	4
Inventorying and zoning of areas with construction materials	To zone areas with construction materials in all 47 counties	Zoned areas with construction materials	National atlas for construction materials	SDM	2021-2022				1	
Institutional Reforms										
Mineral Audit Unit	To determine royalty rates and ensure royalty payments	Enhanced revenue collection	Revenue collected in Ksh	SDM	2018-2022	1.5Bn	2.0Bn	2.5Bn	3.0Bn	3.5Bn
National Mining Corporation	To act as the investment arm of the National Government in the mining sector	Increased investment in the country	Capital inflows in Ksh	SDM	2021-2022		1Bn	2Bn	4Bn	5Bn
Mineral Royalty Fund	To provide structured disbursement of mineral royalties to counties and targeted communities	Transparency and accountability	Royalty Disbursed in Ksh to Mining Counties and Communities	SDM The National Treasury	2020-2022		3M	3M	3M	4M
Online Transaction Mining Cadastre Portal	To provide efficient licensing and concession management that	Efficiency, transparency and accountability in licencing	No. of licenses issued Online	SDM	2018-2022	100	200	200	200	200

Programmes /Projects	Objectives	Expected Outcomes/Outputs	Performance Indicators	Implementing Agencies	Time Frame	Yearly Targets				
						2018/19	2019/20	2020/21	2021/22	2022/23
	promotes transparency and accountability									
National Mining Institute	To develop middle and high level expertise in mining sector	Skilled technical person on geology related field	No. of personnel trained	SDM MoEducation University of Nairobi Taita-Taveta University	2021-2022		100	100	100	100
Minerals and Metals Commodity Exchange	To provide platform for mineral commodities trading	Increase investment in the country	No. of Minerals and Metals traded	SDM NSE CBK KRA	2020-2022			2	4	6
African Minerals Development Center (AMDC)	Host the AMDC for research development for the AMV	research and developmentof minerals	AMDC	SDM	2021-2022				1	