KENYA'S FINANCING STRATEGY

FOR NATIONALLY DETERMINED CONTRIBUTION

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Acronyms

AAU	Assigned Amount Unit
AE	Accredited Entity
AFC	Agricultural Finance Corporation
AFOLU	Agriculture Forestry and Land Use
AfRSDRR	African Regional Strategy for Disaster Risk Reduction
ARUD	Agriculture Rural and Urban Development
ARC	African Risk Capacity
ASAL	Arid and Semi-Arid Lands
ASTGS	Agricultural Sector Transformation and Growth Strategy
ATAR	Adaptation Technical Analysis Report
BAU	Business as Usual
BPS	Budget Policy Statement
BMUs	Beach Management Units
BRT	Bus Rapid Transit
CAADP	Comprehensive Africa Agriculture Development Programme
Cat DDO	Catastrophe Deferred Drawdown Option
CCA	Climate Change Act 2016
CC	Climate Change
CCD	Climate Change Directorate
CCCF	County Climate Change Fund
CDM	Clean Development Mechanism
CEEC	Centre for Energy Efficiency and Conservation
CEF	County Emergency Funds
CF	Contingency Funds
CIDP	County Integrated Development Plan
CPI	Consumer Price Index
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
DAE	Direct Access Entities
DDA	Demand Driven Approach
DFI	Development Finance Institution
DLP	Digital Learning Programme
DPs	Development Partners
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
EU-ETS	European Union Emissions Trading Scheme
EMCA	Environmental Management and Coordination Act
ETR	Environmental Task Reforms
ETS	Emissions Trading System
FCMA	Forest Conservation Management Act
FY	Financial Year
GBP	Green Bond Principles
GEF	Global Environment Facility
GCF	Green Climate Fund
GDP	Gross Domestic Product
GIIF	Global Index Insurance Facility
GOK	Government of Kenya
GHG	Green House Gas
HSNP	Hunger Safety Net Programme
IAE	Indirect Access Entities
ITMO	Internationally Transferred Mitigation Outcomes
KAIRMP	Kenya Agricultural Insurance and Risk Management Programme
KAM	Kenya Association of Manufacturers
KCEP-CRAL	Kenya Cereal Enhancement Programme – Climate Resilient Agricultural Livelihood
KLIP	Kenya Livestock Insurance Program
LECRD	Low Emission and Climate Resilient Development
LPG	Liquified Petroleum Gas
LRT	Light Rail Transit
LULUCF	Land Use, Land Use Change and Forestry
LUCF	Land Use Cover and Forestry
MDA	Ministries, Department and Agencies
MOALF	Ministry of Agriculture, Livestock and Fisheries
MOE	Ministry of Energy
MOH	Ministry of Health
MOTI	Ministry of Trade and Industries
MRT	Mass Rapid Transit
MSME	Micro Small Medium Enterprise
MTAR	Mitigation Technical Analysis Report
MTEF	Medium Term Expenditure Framework
MTP	Medium Term Plan
$MtCO_2e$	Carbon Dioxide in Metric tonnes
MVAR	Megavolt-Ampere Reactive
NAP	National Adaptation Plan
NAMA	Nationally Appropriate Mitigation Actions
NCCAP	National Climate Change Action Plan
NCCC	National Climate Change Council
NCCRS	National Climate Change Strategy
NDA	Non-Designated Authority
NDEF	National Drought Emergency Fund
NDMA	National Development Management Authority
NEE	Nama Executing Entities
NGAAF	National Government Affirmative Action Plan
NMC	Numerical Machining Complex
NMT	Non-Motorized Transport
NSE	Nairobi Security Exchange
NTSA	National Transport and Safety Authority
NYES	National Youth Empowerment Strategy
ODA	Official Development Assistance
PA	Paris Agreement
PFMA	Public Finance and Management Act
PFM	Public Finance Management
PGTMP	Power Generation and Transmission Masterplan
PPP	Public Private Partnership
PWD	People with Disabilities
SAGA	Semi-Autonomous Government Agencies
SDA	State Department for Agriculture
SDDA	State Department for Development of ASALs
SDG	Sustainable Development Goals
SDL	State Department for Livestock
SEZ	Special Economic Zones
SIVAP	Small-Scale Irrigation and Value Addition Project
SFDRR	Sendai Framework for Disaster Risk Reduction
SMEs	Small and Medium Enterprises
SNC	Second National Communication
TMT	Transport Master Plan
TNT	The National Treasury
UNFCCC	United Nations Conference on Climate Change
URTI	Upper Respiratory Tract Infections
WEF	Women Enterprise Fund
WASREB	Water Services Regulatory Board

Definition of Terms

Carbon market is a market created by trading units of greenhouse gas (HFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3) emissions.

Climate priority areas include disaster risk management; food and nutrition security; water and the blue economy; forestry; wildlife, and tourism; health, sanitation and human settlements; manufacturing; and energy and transport that were identified in the NCCAP 2018-2022.

Climate intervention areas refer to NDC sectoral areas whose climate actions will contribute to climate change adaptation and resilience, mitigation and low-carbon development.

Climate change refers to a change in the climate system caused by significant changes in the concentration of greenhouse gases due to human activities and that is in addition to the natural climate change observed during a considerable period.

Consumer price index is a measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them.

Financial de-risking measures are steps to make private and public sector investments in climate change projects less likely to incur a financial loss.

Food inflation refers to a situation in which the wholesale price index of essential food items (defined as the food basket) increases relative to general inflation or the consumer price index.

Funding gap/Interventional gap refers to climate change mitigation and adaptation activities that are neither explicitly articulated nor costed in the government's main planning documents but that appear in NCCAP 2018-2022.

Gender issues include all aspects and concerns related to women's and men's lives and status in society: how they interrelate; their differences in access to and use of resources; their activities; and how they react to changes, interventions and policies.

Gender mainstreaming refers to stimulating the equitable participation of both men and women in efforts to implement climate actions.

Green bonds are debt securities earmarked for climate and environmental projects.

Investment risk is the probability or likelihood of losses relative to the expected return on any particular investment; in this case, climate-related investments.

Nationally Determined Contributions: national climate plans highlighting climate actions, including climate-related targets, policies and measures that governments aim to implement.

A. Executive Summary

The historic Paris Agreement (PA) brought together 196 countries as Parties to the United Nations Framework Convention on Climate Change (UNFCCC) to focus on reducing greenhouse gas (GHG) emissions and adapting to the impacts of climate change (CC) and to provide financial assistance to developing countries affected by a changing climate.

Nationally Determined Contributions (NDCs) are at the heart of the Agreement. They embody each country's efforts to reduce national emissions and adapt to the impacts of CC. Article 4, paragraph 2 of the Agreement requires each Party to prepare, communicate and maintain successive NDCs that it intends to achieve. Those include long-term goals for adaptation to increase the ability to adapt to the adverse impacts of CC, foster climate resilience and ensure low-GHG emissions development, without threatening food production. The Agreement calls on each country to outline and communicate their post-2020 climate actions - their NDCs. Globally, these climate actions determine whether the world will achieve the Agreement's long-term goals.

Emission reductions are to be undertaken on the basis of equity and in the context of sustainable development and efforts to eradicate poverty, which are critical development priorities for many developing countries. The success of the PA therefore depends on parties' implementation of their NDCs, which are conditional upon receiving international support (finance, technology transfer and/or capacity-building).

This is the context in which Kenya's NDC financing strategy has been developed. The main objectives of the assignment were to: prepare costing details for climate priority actions considering the funding available through government sources; assess funding gaps that require international and private sector support; and identify opportunities to address those gaps

The strategy also considers Kenya's NDCs, submitted in 2016, which set out an ambitious mitigation contribution. This involves reducing GHG emissions by 30 percent by 2030 relative to the business-as- usual (BAU) scenario of 143 MtCO2e, conditional upon international support in the form of finance, investment, technology development and transfer, and capacity-building. The main goal of the financing strategy is to enhance funding mobilization to implement CC adaptation and mitigation priority actions, thus supporting the country in achieving its commitment under the PA.

The strategy is guided by the National Policy on Climate Finance 2016 which was established, inter alia, to improve the ability to mobilize and effectively manage and track adequate and predictable CC finance. The Policy creates the legal, institutional and reporting frameworks to access and manage climate finance, consistent with the institutional structures and framework set out in the Climate Change Act, 2016. The goal of the Policy is to further Kenya's national development goals through enhanced mobilization of climate finance that contributes to low-carbon, climate-resilient development goals.

According to the financing strategy estimate, US$39.982 million are needed for the next 10 years (2020 - 2030) to implement priority climate mitigation and adaptation actions. The need for the first five years (2019/20 - 2023/24) totals $18.586 million and an additional $21.396 million are projected to cover the period 2024 - 2030. This funding gap (investment gap) is a conservative estimate, derived from the analysis of the costs of CC activities in the main government planning reports (the medium-term expenditure framework (MTEF) 2018/19 and 2019/2020 reports; the third medium term plan (MTP2018-2022 or MTP III); and the NCCAP 2018-2022 or NCCAPII). The methodology for developing this financing strategy involved analysing the government's planning and budgetary reports (MTEF, MTP III and NCCAPII) with a view to identifying priority climate action costs and the financing gap. Other reports reviewed included sectoral strategies and development reports. The resulting climate actions in government reports were compared with the priority actions identified over the short, medium and long term.

The funding gap is composed primarily of CC mitigation and adaptation activities, which are not articulated explicitly or costed in the government's main planning documents. These activities are laid out clearly in the NCCAP II as climate priority actions that need additional funding. The financing strategy was developed through a participatory consultative process with key stakeholders drawn from government and non-governmental organizations, who validated the methodology, findings and final report.

Sectoral analyses of the costs of CC activities in the intervention areas were carried out and the funding gap was determined as described above. Sectors with intervention areas whose climate actions will contribute mainly to CC adaptation and resilience were identified and distinguished from those sectors whose climate actions will contribute to mitigation and low-carbon development.

Table A 1: Financing gap for priority actions on climate change adaptation and climate resilience

MTEF SECTORS: CC INTERVENTION AREAS / STRATEGIC OBJECTIVES	TOTAL IN $ MILLIONS
1. Social protection, devolution and ASAL/Disaster (drought and flood) risk management: Reduce risks resulting from climate-related droughts, floods, etc.	918
2. Agriculture, livestock and fisheries/ Food and nutrition security: Increase food and nutrition security through enhanced agricultural systems	2.738
3. Water and irrigation/Water and the blue economy: Enhance resilience of the water sector for economic uses	4.261
4. Health, environment and sanitation/Health, sanitation and human settlements: Reduce incidence of vector diseases and strengthen climate resilient settlement	500
5. Environment and devolution/Solid waste management: Put solid waste management infrastructure in place in urban and rural areas	274
TOTAL ($ MILLIONS)	**8.691**

The table below summarizes financing gaps for intervention areas that will achieve CC mitigation and low-carbon development.

Table A 2: Financing gap for intervention on climate change mitigation and low-carbon development

MTEF SECTORS	CLIMATE CHANGE INTERVENTION AREAS / STRATEGIC OBJECTIVES	TOTAL IN $ MILLIONS
6. Forestry, wildlife and tourism	**Forestry, wildlife and tourism:** Increase forest cover to 10% of total land area; increase resilience of the wildlife and tourism sector	616
7. Trade and industrialization	**Manufacturing:** Improve energy and resource efficiency in manufacturing sector	47
8. Infrastructure - Energy	**Energy:** Encourage renewable energy development; increase uptake of clean cooking solutions	7.033
9. Infrastructure - Transport	**Transport:** Climate-proof transport infrastructure and develop sustainable transport systems	2.200
TOTAL ($ MILLIONS)		**9.934**

Gender issues in each of the sector and CC intervention areas have been identified, articulated and embedded in sector priorities and an accountability framework. Coordination is crucial among the ministry responsible for gender, the CC units/departments within the ministries and the Climate Change Directorate (CCD) is crucial to identify and cost gender concerns.

The three main strategic objectives are to enhance:

- mobilization of funding from public finance sources (domestic and international);
- mobilization of funding from private sector participation and investment sources; and,
- access to innovative financing mechanisms.

Mobilizing resources from domestic and international public finance sources is particularly crucial for adaptation and climate resilient priority actions. Funding NDC climate actions from public finance sources will enhance national ownership, provide greater flexibility in allocating financial resources to different sectors and jurisdictions, and leverage additional public and private investment. In the context of the NDC, international public finance is important to support NDC implementation, including through leveraging private investment.

The private sector (both local and international) is already involved in climate mitigation and adaptation projects in the forestry, energy, waste, transport and ICT sectors. However, challenges persist, including weak transport infrastructure and logistics systems; and high energy costs. A weak and interrupted power supply can also cripple businesses, especially manufacturers. The overall business environment and ease of doing business must be improved and a robust regulatory framework must be established to channel investment into the priority sectors identified by the government. In the long run, creative incentives for the private sector to invest in climate priority actions will provide solutions to some of these challenges, while reducing emissions. The strategy presents an opportunity for the private and public sectors to work hand-in-hand through public private partnerships and to tap into the rowing global green bond market, as well as innovative financing mechanisms such as challenge funds, blended finance, crowd funding and impact investment.

The strategy recommends measures including:

- capacitating lead organizations;
- implementing climate budget codes in the budgetary planning system to trace CC funds, including integration into future MTEF and planning processes; and,
- ensuring that CC is costed properly in the programmes.

The implementing framework showing how each strategic option can be operationalized is also attached. It should be reviewed every five years to determine whether it is still consistent with the implementation of NDC priority actions, whether there is a need for amendments based on changes with financing organizations, and whether it should be aligned with new policies and other government planning documents (for example, the MTP IV).

1. Introduction

1.1 Background

Nationally determined contributions (NDCs) are national climate plans highlighting climate actions, including climate-related targets, policies and measures that governments seek to implement in response to CC, to contribute to global climate action and to fulfil the Paris Agreement (PA). Each country is required to present the national efforts it plans to take as of 2020 to fulfil the PA's most ambitious objectives. Those include keeping the increase in global temperature to well below 2°C with respect to the pre-industrial era, with the further aim of limiting it to 1.5°C; strengthening the capacity to adapt to the adverse effects of CC; and, increase resilience.[1]

Kenya has little historical or current responsibility for global CC as the country's GHG emissions represent less than 0.1 percent of total global emissions. While adaptation is Kenya's priority, action is still needed to reduce GHG emissions that are projected to increase due to population and economic growth. Of that growth, 75 percent is expected to come from the land use, land-use change and forestry (LULUCF) and agriculture sectors.

Climate change has adverse impacts on Kenya's socioeconomic development and threatens the realisation of the Vision 2030 goals, which call for creating a competitive and prosperous nation with a high quality of life. This is because the Kenya's economy depends on climate-sensitive natural resources. As such, all of the country's sectors are vulnerable to CC change and its impacts. Thus, recurring droughts, erratic rainfall patterns and floods will continue to negatively impact livelihoods and community assets. CC challenges have increased the cost of development, making it both difficult and very costly for the country to achieve its Vision 2030 of becoming a middle-income country. To address CC, all economic sectors must develop using low-carbon technologies, follow climate-resilient development pathways, build the capacity of its institutions and actors, and improve infrastructure. These require additional funding over and above normal development financing.

Kenya's NDC, which was submitted to United Nations Framework Convention on Climate Change (UNFCCC), includes mitigation and adaptation actions. In terms of mitigation, Kenya seeks to transform to a low-carbon society and reduce its GHG emissions far beyond the 30 percent by 2030 relative to the BAU scenario of 143 MtCO2eq outlined in the NDC. Achieving this transformation will require both international and domestic support and investment in the form of finance, technology development and capacity-building from the public and private sectors. In terms of adaptation, Kenya plans to ensure enhanced resilience to CC towards attaining Vision 2030 by mainstreaming CC into its medium-term plans (MTPs) and implementing adaptation actions. Kenya's priority climate actions fall in the six mitigation sectors set out in the UNFCCC: agriculture, energy, forestry, industry, transport, and waste. These actions are expected to support low-carbon sustainable development and lower GHG emissions and help Kenya meet its NDC goal of reducing emissions by 30 percent by 2030, relative to business as usual.

1.2 Justification for NDC financing strategy

The National Climate Change Action Plan (NCCAP) 2018-2022 provides the framework to deliver Kenya's NDC for the 2018-2022 period. NCCAP 2018-2022 has aligned sectors to support this goal by prioritizing seven action areas:

- Disaster risk management;
- Food and nutrition security;
- Water and the blue economy;
- Forestry, wildlife, and tourism;
- Health, sanitation and human settlements;
- Manufacturing; and,
- Energy and transport.

1 (Acciona, 2019)

Through these priority areas, CC action is aligned to the government's Big Four Agenda and the Sustainable Development Goals (SDG). NCCAP 2018-2022 aims to further Kenya's development goals by providing mechanisms and measures to achieve low-carbon, climate-resilient development in a manner that prioritizes adaptation. NCCAP II guides the climate actions of the national and county Governments, the private sector, civil society and other actors as Kenya transitions to a low-carbon, climate-resilient development pathway. The NCCAP consists of two main comprehensive reports: the Adaptation Technical Analysis Report (ATAR) and the Mitigation Technical Analysis Report (MTAR). The Climate Change Act 2016 (CCA 2016) provides the basis for financing climate actions in the country by calling for the required mainstreaming of CC in all government ministry, department and agency (MDAs) plans, policies and programmes, including budget planning, to ensure that public climate financing is incorporated in all sectors of the economy. CCA 2016 also created a Climate Change Fund to facilitate climate action. The National Treasury (TNT) is the National Designated Authority (NDA) for climate finance in Kenya and oversees the implementing entities for various climate finance streams and tracks the financed on-budget and off-budget activities. NCCAP has estimated that $18.312 billion is needed to implement the priority actions in the next five years (2019 - 2023). This strategy has identified the climate priority actions and analysed the costs of these actions in the sectoral intervention areas that are more consistent with the NDC; that is, they will support low-carbon sustainable development, lower GHG emissions, and lead to community resilience and CC adaptation, thus assisting Kenya in meeting its NDC goal to reduce emissions beyond 30 percent by 2030.

1.3 National situational context

1.3.1 Kenya's vulnerability

Kenya's vulnerability to CC and the threat this poses to achieving long-term development goals has been recognised. As a result, Kenya initiated a concerted national effort to respond to CC. This began with the development of the National Climate Change Response Strategy (NCCRS) in 2010. Arid and semi-arid lands (ASALs), which make up 83 per cent of Kenya's landmass, are fragile ecosystems. The lack of investment in public goods and services in these areas increases the country's vulnerability to CC. The Strategy was the first national planning document dedicated to addressing the threats posed by CC and that took advantage of potential CC-related opportunities. The NCCRS identified the need to develop a comprehensive national policy on CC. This financing strategy is part of the government's commitment to mobilize adequate resources to help reduce vulnerability and build the resilience of the Kenyan people, property, environment and economy. This financing strategy is part of the armoury to enhance the resilience and adaptive capacity of poor communities in the face of projected CC impacts and vulnerability arising from increased food insecurity and escalating public health threats.

1.3.2 GHG context

Kenya's GHG emissions total 60.2 $MtCO_2e$, which is only 0.13 percent of the world's total (45,261 $MtCO_2e$). Kenya's GHG emissions, excluding LUCF, increased by 24.07 MtCO2e from 1990 to 2013. The average annual change in total emissions during this period was 2.5 percent, with sector-specific average annual changes as follows: agriculture (2.6 percent), energy (2.6 percent),[2]industrial processes (6.3 percent) and waste (2.6 percent). Kenya's Second National Communication (SNC) to the UNFCCC, which includes a GHG inventory for the period 1995-2010, shows LUCF to be a source of emissions, rather than a sink. The SNC shows that LUCF activities released an average of 17.2 MtCO2 per year from 1990 to 2010, which it notes to be consistent with the observed loss of forest cover in Kenya over the same time. Other government and international sources have also cited deforestation in Kenya.8 Despite the difference in LUCF findings, both the SNC inventory and WRI CAIT show the agriculture sector to be the leading source of GHG emissions in Kenya, followed by energy. The change in emissions in the two highest emitting sectors is discussed below.

2 WRI CAIT 2.0, 2017. WRI draws on international data from the FAO for the LUCF sector and notes that its data is useful as reference only and may not coincide with LUCF emissions reported by countries to the UNFCCC (WRI. CAIT Country Greenhouse Gas Emissions: Sources and Methods, 2015).

Kenya currently contributes very little to global GHG emissions.[3] However, a significant number of priority development initiatives outlined in Vision 2030 and regular MTPs will impact the country's levels of GHG emissions. Actions that will positively impact GHG emissions include increased geothermal electricity generation in the energy sector, switching the movement of freight from road to rail in the transport sector, reforestation in the forestry sector, and agroforestry in the agricultural sector. To attain low-carbon growth, the government will take steps outlined in this policy by implementing regulatory mechanisms that mainstream low-carbon growth options into the national and county governments' planning processes and functions.

1.4 The strategy's policy, legal and institutional framework

Kenya Vision 2030 identified eight priority sectors with a high potential to spur the country's economic growth and development. To mainstream CC in these sectors, the country has put in place comprehensive policy, legal and policy frameworks for enhanced and coordinated climate actions. The 2016 CCA, in particular, is an impetus to plan, fund and implement the NDC and emphasizes the need for gender mainstreaming in CC actions. The Act requires the government to develop five-year National Climate Change Action Plans (NCCAP) to guide the mainstreaming of adaptation and mitigation actions into sector functions of national and county governments. The second National Climate Change Action Plan (NCCAP) for the period 2018-2022, with a vision of low-carbon, climate-resilient development, has been completed. This NCCAP II develops priority actions across seven strategic intervention areas and enabling actions across sectors. Meeting the targets and implementing the priority actions will require significant support, investments, partnerships and technology innovations to implement the actions and achieve the goal of a low-carbon, climate-resilient pathway.

CCA 2016 sets out the institutional structures and responsibilities in the oversight and management of NCCAPs, including this NCCAP II. The National Climate Change Council (NCCC) is responsible for overall coordination, while the Cabinet Secretary responsible for CC affairs submits NCCAPs for approval and reports to NCCC and Parliament on their implementation. NCCAP 2018- 2022 implementation is based on and supported by a number of national, county, and sectoral policies and plans that have been developed, such as the NCCRS(2010), the National Adaptation Plan (NAP 2015-2030), the Kenya Climate Smart Agriculture Strategy (2017-2026) and the National Climate Finance Policy (2017). County governments are enacting regulations to allocate a portion of their development budgets to support CC action. State departments and national public entities are required to establish CC units to integrate NCCAP 2018-2022 into their strategies and implementation plans and to report to NCCC on an annual basis. County governments are to integrate actions in NCCAP 2018-2022 into their County Integrated Development Plans (CIDPs) for the 2018-2022 period and designate a County Executive Committee member to coordinate CC affairs.

The NDC financing strategy is guided by the National Policy on Climate Finance 2016 which was established, inter alia, to improve the ability to mobilize and effectively manage and track adequate and predictable CC finance. The Policy creates the legal, institutional and reporting frameworks to access and manage climate finance, consistent with the institutional structures and framework set out in the CCA 2016. The goal of the Policy is to further Kenya's national development goals through enhanced mobilization of climate finance that contributes to low-carbon, climate-resilient development goals.

The objectives of the policy include tracking, monitoring, evaluating and reporting on sources, applications and impacts of climate finance; enhancing the country's capacity to mobilize CC finance to support sustainable development; and encouraging private sector participation in climate relevant financing opportunities. One of the most relevant strategic interventions is to attract climate finance and promote climate investment through financial and economic instruments and cooperative approaches/market-based instruments in which benefits and risks are distributed equitably. To operationalize the policy, the Government of Kenya (GOK) is set to finalize the establishment of the Public Finance Management (Climate Change Fund) Regulations, 2018. Its whose initial capitalization is budgeted at Ksh 500 million ($4.85 million), appropriated by Parliament in the financial year (FY) 2018/2019.

3 Republic of Kenya. Kenya's Second National Communication (SNC) to the UNFCCC, 2015. The SNC uses GWPs from the IPCC SAR. In keeping with good practice, Kenya conducted an uncertainty analysis of its GHG inventory that identified the highest uncertainty of emissions estimates to be related to estimates of forest carbon stocks in the land use, land use change and forestry (LULUCF) sector.

1.4.1 Climate change policy

According to Kenya's Sessional Paper No. 3 of 2016 on the National Climate Change Policy Framework, the funding for financing CC responses will be mobilized from both internal and external sources. In this context, resource mobilization will be closely linked to Kenya's climate finance strategy, particularly in regard to mobilizing external financing. Governments at all levels will be required to integrate climate CC actions into budgetary processes. This will complement and be in addition to any external climate finance resources. In particular, sufficient budgetary allocation for all institutions performing CC functions will be prioritised to ensure that the necessary human, technical and financial resources are available. The policy underscores the GOK's commitment to increase public private partnership (PPP) initiatives for actions that help to achieve low-carbon, climate-resilient development. Policy statements on resource mobilization note that the government will:

i. allocate resources for CC actions in national and county budgetary processes;

ii. build capacity to mobilize and enhance absorption of resources for CC interventions;

iii. mobilize substantial levels of climate finance to fund implementation of this policy and associated CC action plans from internal and external sources; and,

iv. put in place mechanisms to attract and leverage PPPs as a vehicle to mobilize resources and enhance private sector participation in low-carbon, climate-resilient development activities.

1.4.2 Climate change institutional arrangements

Under the CCA 2016, the National Climate Change Council (NCCC) is responsible for overall coordination of all climate matters, while the Cabinet Secretary for Ministry of Environment and Forestry is responsible for CC activities, including budget planning approval, and reports to NCCC and Parliament on implementation. In discharging the duties and functions, the Cabinet Secretary shall be assisted by the CCD responsible for CC. The Directorate shall be the government's lead agency on national CC plans and actions to deliver operational coordination and shall report to the Cabinet Secretary. State departments and national public entities are required to establish/ and or strengthen CC units to integrate priority climate actions into their strategies and implementation plans and to report to NCCC annually. County governments are to integrate NCCAP 2018-2022 actions into their CIDPs for the 2018-2022 period and designate a county executive committee member to coordinate CC affairs. The duties and functions of the CCD, the government's lead agency on national CC plans and actions, include serving as the national knowledge and information management centre for collating, verifying, refining, and disseminating knowledge and information on CC. The Climate Change Policy, CCA 2016 and the Public Finance Management (Climate Change Fund) Regulations 2018 provide direction on climate financing.

1.5 Objectives, scope and methodology

The main objectives of this assignment were to prepare costing details for climate priority actions considering the funding available through government sources, assess funding gaps that require international and private sector support and identify opportunities to address those gaps.

The scope as per the terms of reference was as follows:

1. Identify financing sources within government to ensure that national and country governments implement NDC actions. In this regard, the planned expenditure stipulated in the third medium-term plan (MTP III), the second-generation County Integrated Development Plan (CIDP), the MTEF 2018/19 and 2019/2020, and sectoral budgets were the main source references;

2. Identify financing sources from public and private sources, both domestic and international. The key multilateral funding institutions include the operating entities of the UNFCCC financial mechanism; that is, the Global Environment

Facility (GEF) and the Green Climate Fund (GCF). The other options are climate financing through international funds, cooperative approaches under Article 6.2 of the PA, carbon markets as defined in Article 6.4 of the Agreement and private sector financing;

3. Conduct a stakeholder mapping to identify the stakeholders implementing the actions, their responsibilities and realistic timelines to achieve the priority actions identified in the NCCAP 2018-2022 over the short, medium and long term;

4. Identify capacity gaps for lead organizations and recommend awareness-raising and trainings on business plans and innovative financing for climate priority actions under the NCCAP, with the ultimate goal of strengthening public private partnerships to deliver on the CC goals; and,

5. Identify policy, regulatory and incentive gaps to bring the private sector on board. Examining innovative ways to strengthen the private sector's engagement and reduce its investment risk through targeted national and international incentives is important.

In summary, the methodology entailed analysing the government's planning and budgetary reports with a view to identifying costs of priority climate actions and the financing gap. The reports reviewed included, but were not limited to, the MTEF 2018/19 and 2019/2020, the third MTP III 2018-2022, and sectoral strategies and development reports. Resultant climate actions were compared with the priority actions identified in the NCCAP 2018-2022 over the short, medium and long term. The funding and investment gaps were derived based on the analysis of costs within the MTEF and MTP III; the foundational assumption is that the CC mitigation and adaptation activities costed in these reports are priority government intervention areas and, therefore, more likely to be implemented using domestic, bilateral and multilateral budgets. The CC activities that are not expressed in these reports (MTEF and MTP III) but that appear in NCCAP II are treated as additional climate priority actions that need funding. The costs of these climate actions thus constitute the investment gap. Stakeholder consultations were carried out during the inception stage, which involved discussions on the methodology and refining the priority sectors. Sector-specific consultation was conducted to ascertain the costs of climate priority actions and the gap. The first draft report was reviewed at a four-day workshop, where sector specialists from the eight sectors and non-state actors (NGO and private sector representatives) analysed the document and provided verbal and written feedback. The revised report was reviewed further by a high-level committee composed of representatives from CCD, UNDP and TNT for guidance on certain sensitive information. Stakeholders validated the final report.

1.6 Mainstreaming gender in the climate change financing strategy

Climate change has widened the gender equality gap. This is because men and women of different ages, abilities and socioeconomic backgrounds experience CC impacts differently and have different priorities concerning response measures. For example, women experience different limitations on and opportunities for CC adaptation and mitigation compared to men. They are often less able to adapt to CC because of financial or resource constraints; less access to information and extension services resulting from factors including low literacy levels; and cultural and social barriers. However, while women are active agents in adaptation actions and provide food for the family in many cultural contexts, their contribution to climate action is not well recognized and their issues are downplayed. They lack decision-making power in issues that affect their lives most. Hence, gender issues must be considered at the local, national and global levels to ensure that adaptation and mitigation actions are effective. Climate programmes, initiatives and actions should help to empower and engage women and other vulnerable groups as key actors, beneficiaries and leaders. Lead organizations should thus ensure that the planning and budgeting processes, including implementation, monitoring and evaluation, take gender issues into account. This can be done at the sector level and for each CC intervention area. To achieve this, the ministry responsible for gender, the CC units/departments within the ministries and the CCD should strengthen their engagement and coordination.

2. Situation Anylysis of Costs of the Intervention Areas

2.1 Analysis of climate action costing for the period 2018 -2022

The CC goal of the third MTP III is to enhance climate actions towards low-carbon and climate resilient development. The main focus of the plan's MTP III is to mainstream climate actions into development planning in all sectors of the economy at the national and county levels; that is, implementing the PA and SDG 13 on climate action. Finally, it seeks to ensure that mitigation and adaptation actions are mainstreamed in the Big Four Agenda relating to food and nutrition security, manufacturing and health. Formulating and implementing the second NCCAP 2018-2022 is one of the flagship programmes under MTP III. Executing the actions in various sectors of the economy will enable Kenya to achieve the NDC targets under the PA.

In submitting the NDC to the UNFCCC, GOK estimated the cost of implementing the mitigation and adaptation actions across sectors to 2030 at $40 billion. The money was to be sourced from both domestic and international sources with strong private sector participation.

As required by the CCA 2016, Kenya developed the NCCAP for the period 2018-2022. This also serves as a framework for implementing the NDC to cover both mitigation and adaptation actions across sectors up to 2030.

Table 2.1 summarizes the nine priority CC intervention areas articulated in NCCAP II, with indicative budgets. Three of the priority actions also reflect the goals of the Big Four Agenda: food and nutrition, manufacturing and health, which includes sanitation and solid waste management.

Table 2.1: Summary of sectors and climate change intervention areas and funding gap

STRATEGIC OBJECTIVES OF SECTOR CLIMATE CHANGE INTERVENTION AREAS	TOTAL (S MILLIONS)
1. Social protection, devolution and ASAL/ Disaster (Drought and Flood) Risk Management: Reduce risks resulting from climate-related droughts, floods, etc.	918
2. Agriculture, livestock and fisheries/ Food and nutrition security: Increase food and nutrition security through enhanced agricultural systems	2.738
3. Water, sanitation and irrigation/Water and the blue economy: Enhance resilience of the water sector for economic uses	4.261
4. Health, environment and sanitation/Health, sanitation and human settlements: Reduce incidence of vector diseases and strengthen solid waste management and climate-resilient settlement.	500
5. Environment and devolution: Solid waste management: Put in place a solid waste management infrastructure in urban and rural areas	274
6. Forest, tourism and wildlife forestry/Wildlife and tourism: Increase forest cover to 10% of total land area; increase resilience of the wildlife and tourism sector	616
7. Trade and industrialization/Manufacturing: Improve energy and resource efficiency in manufacturing sector	47
8. Infrastructure/Energy: Encourage renewable energy development; increase uptake of clean cooking solutions	7,033
9. Infrastructure/Transport: Climate-proof transport infrastructure and develop sustainable transport systems	2,200
TOTAL ($ MILLIONS)	**18,625**

The government will seek financing domestically and internationally from the private sector, non-state actors, bilateral, multilateral and public sources to achieve the NCCAP. The total funding gap (investment gap) is estimated at $18.625 million (2019 - 2023).

This funding gap (investment gap) is a conservative estimate, derived from the analysis of costs within the MTEF, MTP III and NCCAPII. The gap is composed essentially of CC mitigation and adaptation activities that are not explicitly articulated or costed in the government's main planning documents; that is the MTEF, MTP III and CIDP. These activities are laid out well in the NCCAP II as climate priority actions that need additional funding.

2.2 Analysis of financing gap in the climate change adaptation and resilience sectors

Based on the analysis of MTP III, the MTEF and NCCAP 2018-2022, the financing gap for climate priority actions in intervention areas that will bring about CC adaptation and climate resilience are shown in the table below:

Table 2.2 Priority climate actions – Adaptation and climate-resilient sectors 2019 - 2023

MTEF SECTORS: CC INTERVENTION AREAS/ STRATEGIC OBJECTIVES	TOTAL ($ MILLIONS)
1. Social protection, devolution and ASAL: Disaster (drought and flood) risk management: Reduce risks resulting from climate-related droughts, floods, etc.	918
2. Agriculture, livestock and fisheries: Food and nutrition security: Increase food and nutrition security through enhanced agricultural systems	2,738
3. Water and irrigation: Water and the blue economy: Enhance resilience of the water sector for economic uses	4.261
4. Health, environment and sanitation: Health, sanitation and human settlements: Reduce incidences of vector diseases and strengthen climate resilient settlement	500
5. Environment and devolution: Solid waste management: Put in place a solid waste management infrastructure in urban and rural areas	274
TOTAL ($ MILLIONS)	**8,691**

The cost (which is a gap) of implementing climate adaptation and resilience measures outlined in the NCCAP 2018-2022 totals $8.691 million. The section below reviews the sectoral CC intervention areas to determine the financing available based on MTEF, MTP III and relevant sectoral development reports.

2.2.1 Disaster Risk (Floods and Drought) Management

Disaster Risk Management (DRM) is the responsibility of two state departments located in two ministries: i) the State Department of Social Protection, domiciled in the Ministry of Labour and Social Protection, whose mandate is to formulate policies and actions, including legislative measures, that seek to enhance the capacity of and opportunities for the poor and vulnerable to improve and sustain their livelihoods and welfare; and ii) the State Department for Development of the ASALs (SDDA), domiciled in the Ministry of Devolution and ASALs, whose mandate is to formulate and implement policies and strategies that fast-track development of ASAL areas to reduce inequalities and vulnerabilities. According to MTP III, DRM was not effectively mainstreamed into the development agenda during MTP II (2013 – 2017). As a result, the GOK and the World Bank assessment indicates that disasters have adversely impacted Kenya's key economic sectors. DRM is prioritized in the MTP III (2018 – 2022) as a standalone Thematic Working Group with its own Sector Working Plan. It was also mainstreamed in the County Integrated Development Plans (CIDPs). Additionally, the DRM financing strategy and monitoring and evaluation framework is under development. It aims at strengthening the government's ability to manage future and "residual risks" by putting together financing instruments that enhance preparedness and, ultimately, reduce the impacts of disasters on the economy and the Kenyan people. It complements the government's broader disaster risk management, social protection and agricultural risk management agendas, as well as TNT's overall fiscal risk management framework. Its goal is to increase the ability of the national and county governments to respond effectively to disasters, thereby protecting development goals, fiscal stability and the well-being of its citizens. In addition to residual risk management, the DRM financing strategy has put in place post-disaster financing strategies to enable effective and timely action in the event of a disaster as part of a more comprehensive approach to disaster risk management. The DRM financing strategy has four priorities:

1. Ensure a coordinated approach to disaster risk financing across national and county government institutions managing various disaster risk financing instruments;
2. Improve sovereign financing capacity by strengthening and expanding the national and county governments' portfolio of disaster risk financing instruments;
3. Support key programmes to protect the most vulnerable populations from the impacts of disasters and contribute to building resilience; and,
4. Enhance the capacity to respond to disasters of national MDAs, as well as county governments.

These four strategic priorities support Kenya's international commitments and domestic need to reduce disaster risks and build resilience under the Sendai Framework for Disaster Risk Reduction (SFDRR), the PA and the SDG. GOK is a signatory to global, regional and national instruments and conventions, including the SFDRR 2015-2030, the African Regional Strategy for Disaster Risk Reduction (AfRSDRR), and Aspirations 1 and 5 of the African Union's Agenda 2063 and AFR100 by 2030. Kenya has also committed 5.1 million hectares by 2030 under the Bonn Challenge.

The problem addressed is how to curb the incidence, frequency and magnitude of drought disasters, which have increased, thereby exacerbating the vulnerability of many populations around the country and eroding economic growth. The strategic objective was designed in response: to reduce the vulnerability of communities to drought-related disasters through improved institutional resilience (preparedness and response) at all levels (national, county and community).

TNT allocates funding to the MDAs responsible for disaster risk management through existing risk financing instruments administered by relevant sectors. In addition, TNT administers the Contingencies Fund for disasters and emergencies. After exhausting that Fund when severe disaster strikes', it relies on budget reallocations. Budget reallocations have restrictions in terms of handling disasters, partly because their magnitude cannot be predicted and partly because it is difficult to obtain sufficient funds to address disaster issues through reallocations, as the Public Finance and Management Act (PFMA) 2012 regulates the reallocation of appropriated funds strictly. As such, the government relies on contributions from international donors. For instance, 98 percent of humanitarian funds provided in the period 2002-2012 were as a result of humanitarian appeals. The disaster response donor funding gap totalled, on average, $136 million per year during the years that humanitarian appeals were launched, or 37 percent. Humanitarian assistance tends to be subject to delays, unpredictable and may be cost-inefficient.

2.2.1.1 DRM sector financing gap

While Kenya has a growing portfolio of DRF instruments, analysis of the current approach to disaster risk financing has revealed that gaps remain in financing recurrent, localized, non-drought events, such as floods. Droughts remain the most important hazard in Kenya in terms of economic and humanitarian impacts, but a gap exists in the management of disaster risk reduction (DRR) strategies, as well as other hazards that the country is predisposed to. In line with the SFDRR 2015 -2030 and international best practices, the portfolio of instruments should cover different needs (national level or localized disasters), and types of hazards (including droughts and floods). The review of financing instruments and post-disaster support programmes presented below provides some useful insights into Kenya's overall approach to disaster response, level of preparedness and financing gap:

1. The PFMA 2012 does not require county governments to establish county emergency funds (CEF). To date, only 19 counties have established such funds, but they cannot spend more than 2 percent of the previous year's total audited revenue for CEF;
2. The National Drought Emergency Fund (NDEF), which is limited to addressing drought hazards in all 23 drought-prone counties, does not receive funds annually from TNT;
3. Given donor interest in the Hunger Safety Net Programme's (HSNP) scalability and drought response in the ASALs, the NDEF could be envisaged as a focal point to crowd in additional donor resources. Ensuring that a portion of NDEF funds are earmarked to finance HSNP scalability and that insurance premiums are listed as an eligible NDEF expenditure should support this effort.

4. The Kenyan government applied for a Development Policy Loan with a Catastrophe Deferred Drawdown Option (Cat DDO), a contingent financing line that provides immediate liquidity to countries to address natural disaster-related shocks and/or health-related events. Following a declaration of a state of emergency in keeping with the country's legal framework, TNT could request to drawdown all or part of the Cat DDO amount. Funds are disbursed as budget support to TNT.

DRM budgets in MTP III are very low and, ostensibly, intended to ensure an enabling environment for DRR management, capacity-building, and monitoring and evaluation. On the other hand, NCCAP 2018-2022 has isolated the following four programmes and budgeted $918 million to implement the following:

1. Increase the number of households and entities benefiting from (devolved) climate adaptation initiatives, including HSNP and County Climate Change Funds (CCCFs);
2. Improve drought preparedness and response mechanisms (people's ability to cope with drought);
3. Improve flood preparedness and response mechanisms; and,
4. Improve coordination and delivery of disaster management response.

> The most conservative estimate of the funds needed for priority climate actions in DRM totals $918 million.

2.2.2 Nutrition and Food Security

Nutrition and Food Security is the responsibility of the Ministry of Agriculture, Livestock, and Fisheries (MOALF), which has five crucial strategic objectives:

- Create an enabling environment for agricultural development;
- Increase productivity and outputs in the agricultural sector;
- Enhance national food security;
- Improve market access and trade; and,
- Strengthen institutional capacity.

To transform Kenya's agricultural sector and make it a regional powerhouse, the government has formulated the Agricultural Sector Transformation and Growth Strategy (ASTGS). The strategy is anchored in the belief that food security requires a vibrant, commercial and modern agricultural sector that sustainably supports Kenya's economic development, national priorities and commitments to the Malabo Declaration under the Comprehensive Africa Agriculture Development Programme (CAADP), and the United Nations SDGs.[4]

Wankuru et al., 2019 states that agriculture is both a major driver of growth for the Kenyan economy and the dominant source of employment. Between 2013-2017, the report notes that the agriculture sector contributed, on average, 21.9 percent of gross domestic product (GDP), with at least 56 percent of the total labour force employed in agriculture in 2017. It is also responsible for most of the country's exports, accounting for up to 65 percent of merchandise exports in 2017. As such, the sector is central to the government's Big Four development agenda, where agriculture aims to attain 100 percent food and nutrition security for all Kenyans by 2022 (World-Bank, 2018). Food and nutrition are also part of the Agriculture Rural and Urban Development (ARUD) MTEF sector. Kenya Vision 2030 has identified the ARUD sector as one of the six key economic sectors expected to drive the economy to a projected 10 percent economic growth annually in order for the country to achieve its long-term development objectives.

4 http://www.kilimo.go.ke/wp-content/uploads/2019/01/ASTGS-Full-Version.pdf

The overall goal of this sector is to attain national food and nutrition security. Given its importance, it is expected to play a significant role in ensuring food and nutrition security as well as driving the manufacturing sector by providing raw materials.

The main challenges facing ARUD[5] include: i) a changing climate regime; ii) competing land use; ii) inadequate human resources capacity; iii) inadequate funding; iv) low donor fund absorption due to inflexible contract terms; v) low technology absorption; vi) high production costs in the sector; vii) poor market access; viii) uncontrolled land subdivision; and, ix) land and environmental degradation.

On the other hand, MTP III 2018-2022 states that the agriculture and livestock sector is expected to play a significant role in achieving food and nutrition security. The overriding challenge for MTP II was the increased frequency of severe droughts and floods and outbreaks of pests and disease as a result of global CC, which adversely affected the sector. The main lesson learned was the need to establish a robust response to CC as part of overall planning, with special emphasis on agriculture and livestock. Climate-smart agriculture (CSA) is one of the MTP III programmes whose adaptation and mitigation strategies will be developed, (including early warning, improved CSA technologies and practices)in order to promote suitable crop insurance products as a means of climate risk transfer. This will be complemented by the Kenya National Agricultural Insurance Programme (KNAIP; its target is to expand crop insurance to cover 31 counties. The Kenya Livestock Insurance Program (KLIP) will be expanded to cover 500,000 households in 14 ASAL counties. This will enhance the capacities of pastoral communities and stakeholders to use insurance products to reduce weather-related risks and rebuild livelihood support systems in drought-prone areas.

2.2.2.1 Financing gap in the food and nutrition sector

Food and nutrition security is the second climate intervention area in the NCCAPII. The strategic objective is to increase food and nutrition security by enhancing productivity and resilience of the agricultural sector in as low-carbon a manner as possible. The CC actions that need to be executed to improve food and nutrition security are categorized as below:

- Adaptation: Maintain or increase productivity and enhance resilience of agricultural systems through livelihood and crop diversification, increased water harvesting and storage, increased irrigation, sustainable land management, reduction in post-harvest losses, and uptake of insurance;
- Mitigation: Achieve GHG emissions of 2.61 MtCO2e by 2022 through agroforestry, minimum tillage systems, manure management and efficiency in livestock management.

Specific adaptation and mitigation intervention areas include: (i) improving crop productivity by implementing CSA interventions; (ii) increased crop productivity by improving irrigation; (iii) improving productivity in the livestock sector by implementing CSA interventions; an, (iv) diversifying livelihoods to adjust to a changing climate. Enabling actions include technology and knowledge management (KM).

> The amount needed for priority climate actions in the NCCAPII in this intervention areas totals $2.738 million.

2.2.3 Water and the blue economy

Kenya's Constitution and Vision 2030 aim to achieve universal access to safe water and sanitation for all by 2030 to meet SDG 6. As at 2017, water coverage stood at 55 percent in areas covered by water service providers in Kenya. Sewerage stood at 16 percent (WASREB Impact Report 10, 2018).[6]

5 MTEF 2018: AGRICULTURE RURAL AND URBAN DEVELOPMENT (ARUD) SECTOR REPORT 2019/20 - 2021/22
6 IMPACT: A Performance Report of Kenya's Water Services Sector 2015 / 16 and 2016 / 17.

The mission of the Ministry of Water, Sanitation and Irrigation is to contribute to national development by promoting and supporting integrated water resource management to enhance water availability and accessibility. It is responsible for the NDC's Water and Blue Economy climate change intervention areas. The blue economy refers to sustainable use of aquatic and marine spaces, including oceans, seas, coasts, lakes, rivers and underground water. It encompasses a range of productive sectors, including fisheries, aquaculture, tourism, transport, shipbuilding, energy, bioprospecting and underwater mining and related activities. The water sector is guided by the Water Act 2016, the Water Policy 1999 and the Water Strategic Plan 2013-2017, among others. The Water Act 2016 was enacted in 2016, replacing the Water Act 2002. The water policy is currently under review to align it with the Constitution of Kenya 2010, which recognizes water and sanitation as a basic human right, and with the devolved system of government.[7] In 2015, Kenya achieved water coverage of 56.9 percent and received $70 million for the water/sewerage system from TNT, $170 million from tariffs and $30 million from county governments. This was insufficient to achieve the Vision 2030 targets for water and sanitation. Kenya has a vision of achieving 100 percent coverage of safe water supply by 2030 and 100 percent access to basic sanitation services by 2030. The government budget available for water supply covers around 44 percent of the required investment cost, whilst the budget available for sewerage is about 6.5 percent (NWSS, 2015).[8] As stated in MTP III, the goal of water and the blue economy is to "Sustainably manage and develop the Blue Economy resources for enhanced socioeconomic benefits to Kenyans."

To achieve these targets, Kenya will require $12.9 billion for water supply, $4.8 billion for sewerage, $601 million for basic sanitation and $57 million for basic hygiene (all annual figures). The financing gap is estimated as $7.3 billion for water and $4.5 billion for sewerage. Kenya is endowed with rich coastal and maritime resources, which have huge potential for the future of the blue economy, but that have not been developed to full capacity. Development and exploitation of the blue economy could contribute to achieving the Big Four initiatives, thanks to its enormous forward and backward linkages with other productive sectors in wealth and employment creation, particularly food security, the service sector and manufacturing. MTP III outlines 14 blue economy flagship programmes and projects. However, a review of the above programmes reveals that CC is not mainstreamed in them.

The investment required to achieve 100 percent coverage in the water and sewerage sector by 2030 totals Ksh 1,765 million, with a financing gap of Ksh 1,172 billion, equivalent to Ksh 100 billion annually.[9] A 2013 JICA study compared the required investment costs (development costs) and the available government budget up to the year 2030 as estimated by GDP growth rate (Table 2.3). The estimated available government budget cannot cover the required investment costs in all subsectors.

Table 2.3 Required investment costs and available budget

SUBSECTOR REQUIRED	TOTAL INVESTMENT COST/ KSH MILLION	AVAILABLE GOVERNMENT BUDGET	COVERAGE
Water Supply 1	1,287.9	561.5	43.6%
Sewerage	476.5	30.9	6.5%
Irrigation*	796.2	580.4	72.9%
Hydropower	290.5	74.0	25.5%
TOTAL	**2,851.1**	**1,246.7**	**43.7%**

Note: * Private irrigation is excluded.

Source: JICA Study Team (Ref. Main Report Part A, Section 9.4) 2013

The government budget available for the water supply subsector covers around 44 percent of the required investment cost. The national government's share could be decreased gradually, with more private sector financing and other financing sources, such as ODA funds, introduced in this subsector. Generally, sewerage development depends largely on the government, but the budget available covers only 6.5 percent of the required investment cost. The government funds available for the irrigation subsector covers 73 percent of its required investment costs. The government's share of the hydropower subsector could be decreased gradually by utilizing ODA funds

7 **http://sanitationandwaterforall.org/wp-content/uploads/download-manager-files/2017%20Kenya%20Overview_final.pdf**
8 The National Water Services Strategy (NWSS), 2015.
9 WASREB Lender's Manual for Commercial Financing of the Water and Sanitation Sector of Kenya Report, 2015.

and private sector financing, especially for financially viable hydropower projects. Based on the above evaluation, we note that:

a. More private financing and ODA funds for development of hydropower and water supply sectors should be promoted in order to increase the government budget allocation to sewerage subsector. The possibility of private participation can be examined as individual projects are formulated; and,

b. Considering that the current government budget for water sector is only 0.2-0.3 percent of GDP and that average government expenditure for the water sector in other African countries against their GDP is 0.7 percent, GOK could increase the budget further.

2.2.3.1 Financing gap for water and the blue economy

NCCAP 2018-2022 describes the climate problem in this sector as follows: "Access to, and quality of, water is projected to decline because of CC impacts, particularly droughts and reduction of glaciers. Coastal areas are impacted by rising sea levels, storm surges, rising ocean temperatures and ocean acidification." To deal with these issues, NCCAP established a strategic objective on priority CC action for the water sector.[10]

The priority climate actions include:

1. Increase annual per capita water availability via development of infrastructure;
2. Climate-proof water harvesting and water storage infrastructure and improve flood control;
3. Promote water efficiency (monitor, reduce, re-use, recycle and model);
4. Improve access to good quality water; and,
5. Improve climate resilience of coastal communities.

> The total cost for climate actions in water and the blue economy - $4.261 million - is the additional cost needed to mainstream CC in this sector as it is not included in MTP III costs, and, therefore, constitutes a funding gap.

2.2.4 Health, sanitation and human settlement

Although sanitation is now a function of the Ministry of Water, Sanitation and Irrigation, it has been a joint function with the ministries responsible for water and health. The Ministry of Water is responsible for sanitation infrastructure (hardware), while the Ministry of Health has been responsible for primary prevention and rural sanitation (software), as well as tracking health outcomes, both positive and negative. The sanitation sector launched revised policies aligned to Vision 2030. The policy documents included: Kenya Environmental Sanitation and Hygiene Policy 2016-2030, Kenya Environmental Sanitation and Hygiene Strategic Framework 2016-2020, Kenya Environmental Sanitation and Hygiene Prototype Bill, and Kenya Open Defecation Free Campaign Roadmap 2016- 2020.

National sanitation coverage, which includes sewerage and onsite sanitation, is estimated at 68 per cent. Climate change, inadequate water conservation strategies, and the growth of peri-urban and satellite towns have led to increased demand for water and sanitation services. Sustainable human settlements and sanitation services are essential for human health, which is a pillar of the government's Big Four Agenda. The sector will pay special attention to the Big Four initiatives, with particular focus on achieving universal health coverage by implementing programmes that increase health insurance coverage, increase access to quality healthcare services and offer

10 Enhance the resilience of the blue economy and water sector by ensuring adequate access to, and efficient use of, water for agriculture, manufacturing, domestic use, wildlife and other uses.

financial protection to people when accessing healthcare. This will continue the transformative agenda in line with the aspirations of Kenya Vision 2030 and the Constitution, which guarantee the highest attainable standard of health to all citizens. It is also consistent with Kenya Health Policy 2014-2030, which supports implementation of various MTP III priorities in the health sector to address prevention, diagnosis and treatment leading to universal health care. The government will also facilitate implementation of programmes and projects using health in all policy approaches to attain SDG 3 (Ensure healthy lives and promote well-being for all at all ages) and the aspirations of Africa's Agenda 2063.

Some of the emerging issues and challenges noted in MTP III include the emergence of drug-resistant strains of TB and other diseases, such as Ebola, bird flu, dengue fever and chikungunya. Others include low health insurance coverage and the high cost of health services. Additional challenges include health programmes' heavy reliance on donor funding, obsolete equipment, inadequate infrastructure, and the skewed distribution of infrastructure that is available, with a strong bias towards urban areas. MTP III does not identify CC and climate variability as challenges.

Changing climate conditions are expected to increase the risk of other vector-borne diseases and malaria (Dekens et al., 2013). Approximately 13 to 20 million Kenyans are at risk of malaria, with the percentage potentially increasing because CC facilitates the movement of malaria transmission up into the highlands. Rising temperatures would likely lead to a higher incidence of malaria at higher highland altitudes. Other illnesses include waterborne diseases, diseases related to temperature change, Kalazar, upper respiratory tract infections (URTI's). Indirect effects on non-communicable diseases such as cancer, diabetes and others, are the current leading fatal conditions in Kenya, attributable to air pollution either from ambient or household air pollution.

Seven MTP III Flagship Health Programmes and Projects are outlined for 2018-2022.

2.2.4.1 Financing gaps in health, sanitation and human settlement

NCCAP 2018-2022 proposes an integrated approach to climate actions that addresses sustainable human settlements and health and sanitation services. The CC strategic actions in the health sector include conducting climate-sensitive disease control and research to understand shifts in disease transmission and promoting climate-resilient and sustainable health infrastructure and technologies, such as adopting green building infrastructure design. Other actions include scaling up financial investments to reduce the number of deaths related to household and institutional air pollution linked to biomass stoves and introducing appropriate measures for surveillance and monitoring of climate change-related diseases and a sector-specific adaptation plan. This is key to creating an enabling environment to mainstream CC in the sector. Health adaptation opportunities include promoting preventive health care and treating diseases at the community level. Human safety opportunities include establishing early warning systems, building the capacity of the health work force and conducting public awareness programmes and avoidance and preparedness campaign.

Climate priority actions in the NCCAP 2018-2022 health and sanitation programmes include:

1. Reduce incidence of malaria and other vector-borne disease;
2. Promote recycling to divert collected waste away from disposal sites;
3. Climate-proof landfill sites;
4. Control flooding in human settlements; and,
5. Promote green buildings.

> NCCAP prioritized the above climate actions, which are not mainstreamed in the MTP III, and costed them at $500 million.

2.2.5 Solid waste management infrastructure and pollution control

Waste management is a devolved function; that is, it is governed at the national level by the Environmental Management and Co-ordination (Waste Management) Regulations 2006. Citing historical data from different sources, the National Solid Waste Management Strategy (NSWMS), provides the following percentages of solid waste collected: Kisumu, 20 percent; Nakuru, 45 percent; Eldoret, 55 percent; Thika, 60 percent; Mombasa, 65 percent; and, Nairobi, 80 percent. About 61 percent of the waste is residential and non-hazardous, with the rest being industrial and hospital/pharmaceutical waste, which is hazardous. The regulations stipulate measures and standards that counties must comply with in managing waste. Several counties now use appropriate waste transportation trucks to comply with NSWMS regulations.

The Kenya Environmental Sanitation and Hygiene Policy 2016-2030 complements the solid waste management strategy. The Ministry of Health policy focused on strategies to ensure universal access to improved sanitation and a clean and healthy environment. In Kenya, the waste sector was estimated to account for about three percent of total national GHG emissions in 2015. This is insignificant compared to other sectors, such as agriculture, LULUCF and energy. Building resilience to CC impacts on waste disposal systems and facilities is more important. Improperly managed solid waste can accumulate in areas otherwise intended for water runoff and flood control. Such conditions make cities and towns vulnerable to floods and contaminated water even from moderate rainfall, let alone the intense and heavy rains expected with CC. Areas of uncontrolled and improperly disposed waste can be sources of environmental pollution and health hazards.

Solid waste produces GHG emissions via disposal, treatment, recycling and incineration. The organic waste material in a landfill, such as food residues, paper and biomass, is decomposed by microbes, which generate a mixture of methane, carbon dioxide and traces of other gases. The gaseous mixture is referred to as landfill gas. In a wastewater treatment plant, methane is generated as organic matter and the breakdown of human sewage can also lead to significant amounts of indirect nitrous oxide emissions. Waste incineration, like other forms of combustion, generates CO2. Methane and nitrous oxide are more potent greenhouse gases than CO2 with global warming potentials, respectively, 25 and 265–298 times that of CO2 for a 100-year timescale (GoK, January 2017).

Kenya's capital, Nairobi, produces around 2,400 tons of waste per day. While 93 percent is potentially reusable, only five percent is actually recycled and composted. Moreover, only 33 percent of waste produced is collected for disposal at Nairobi's single official dumpsite, Dandora (JICA 2010). The rest is tipped on hundreds of illegal dumpsites, left next to houses or burned. Both the official dumpsite and, in particular, the illegal ones, are operated in unsystematic, unplanned and highly unsanitary fashion. As a result, poorly managed and improperly disposed solid waste pollutes the air, water and soil, causing significant health and environmental problems. This is especially true in slums and other low-income areas, where high population density, paired with lack of infrastructure and service provision, only aggravates these problems. More than half of Nairobi's 3.5 million inhabitants live in slums (UNDP, 2016) .

The issue of solid waste management appears throughout the MTP III, found under the health, population urbanization and housing sectors as well as the environment, water and sanitation. The main programmes in these sectors are, respectively:

- Solid waste management infrastructure: The main component of this programme includes solid waste separation at source; solid waste treatment plants; collection network infrastructure and capacity improvement; transfer station development; intermediate treatment; final disposal; and security lighting along the collection network.
- Waste management and pollution control: A National Solid Waste Management Strategy was developed in 2015; a plastic bag initiative was implemented via Gazette Notice No. 2334; municipal and industrial effluent standards within the Lake Victoria Basin were harmonized; sewerage treatment plants were built in Kisumu, Homa Bay, and Bomet towns; and, a system was developed to monitor nutrient and sediment losses from land use and covers in the Nyando Basin.

All urban areas in the 47 counties are grappling with solid generation in urban areas and the need to properly manage disposal to protect human health and the environment, while enhancing aesthetics. Waste is a resource and has considerable economic value. Organic waste, which constitutes 69 percent of Nairobi's waste, can be converted into compost. Industries use recyclable waste, such as paper, plastic, glass and metal (16 percent of waste), to manufacture new products (JICA, 2010). Large underserved markets exist in Kenya for these waste-to value products. The market for compost has enormous potential in Kenya. It is estimated that current demand exceeds 100,000 tons/year and is growing (Lachlan Kenya Ltd., December 2011). Compost production in Kenya currently totals less than 10,000 tons/year. Meanwhile, Kenya imports around 1.500 million tons/year of chemical fertilizer.

The market for recyclable materials is growing, as many raw materials become more expensive. Kenya has one of the largest manufacturing sectors in sub-Saharan Africa outside South Africa. However, this demand is largely underserved, as industries face the challenge of sourcing clean inputs. Junk shops and waste pickers recover recyclable wastes from mixed waste. This leads to high contamination, which leads to high cleaning costs for recycling industries. Thus, most materials recycling is economically unattractive and, consequently, only 10 percent of potentially recyclable materials are currently recovered for recycling.

Composting and recycling are not only beneficial in themselves. As more waste is composted and recycled, the less needs to be disposed of, thereby reducing costs for waste collection significantly. Selling recyclable materials to recycling industries generates additional revenues in the waste management value chain. This, in turn, makes it possible to expand waste collection coverage to low-income areas.

Introducing this circular economy approach will:

- make waste management affordable to almost all income earners, as the overwhelming majority (at least 90 percent) of collected wastes will be recycled;
- significantly reduce disposal costs (less than 10 percent of waste will be residual waste);
- generate additional revenues from the sale of recyclable materials;
- generate additional revenues from the sale of compost; and,
- generate additional revenues from the payment of tipping fees (for Nama Executing Entities owning and managing recycling points).

The Ministry of Environment and Forest has proposed a Nationally Appropriate Mitigation Action (NAMA)-based approach to circular economy solid waste management for urban areas in Kenya, with a projected cost of $39 million. The model is designed to overcome existing barriers by offering a circular economy business model with a broad capacity development programme. The NAMA will support sorting centres, composting facilities, compost market development, and testing of other organic waste technologies, as well promote recycling industries. The interventions in solid waste management have both adaptation and mitigation benefits.

> Climate priority actions in solid waste management and the NAMA are estimated at $274 million.

2.3 Analysis of costs of climate change mitigation and low-carbon development

This section outlines CC intervention areas, which contribute primarily to emission reduction and low-carbon development. These intervention areas have huge adaptation and resilience co-benefits. Other areas, such as agroforestry, CSA and nutrition and food security, also contribute to mitigation but have not been included here because their emission reduction is not as significant. Thus, they are mainly adaptations that offer mitigation co-benefits. The table below summarizes the NDC CC mitigation sectors, intervention areas and costs of climate actions.

Table 2.4 Mitigation and low-carbon intervention, strategic objectives and costs for 2019 -2023 (5 years)

MTEF SECTORS	CLIMATE CHANGE INTERVENTION AREAS / STRATEGIC OBJECTIVES	TOTAL IN $ MILLIONS
1. Forest; Tourism and Wildlife	**Forestry, wildlife and tourism:** Increase forest cover to 10% of total land area; increase resilience of the wildlife and tourism sector	616
2. Trade and Industrialization	**Manufacturing:** Improve energy and resource efficiency in manufacturing sector	47
3. Infrastructure/Energy	**Energy:** encourage renewable energy development; increase uptake of clean cooking solutions	7,033
4. Infrastructure/Transport	**Transport:** Climate-proof transport infrastructure and develop sustainable transport systems	2,200
TOTAL ($ MILLIONS)		**9,934**

2.3.1 Forestry and environmental conservation

The Ministry of Environment and Forestry is responsible for forest management and conservation in Kenya. The MTP III categorizes forestry under the Social Pillar and the Environment, Water, Sanitation and Regional Development sector. The main strategic objective for forestry is to increase forest cover to 10 percent of total land area by 2030. Forest services are crucial to sustainable development and human well-being, but CC exacerbates forest degradation and land use change. Adaptation actions to address these impacts include forestry practices and tree species that are less vulnerable to droughts and fires. Actions to address adaptation priorities in the forest sector and achieve the Big Four Agenda and the SDG targets include: increasing forest cover per county by June 2023; enhancing forest landscape restoration initiatives with forest cover benefits; promoting afforestation/reforestation potential in the counties; encouraging sustainable timber production on privately-owned land; and, promoting non-wood forest products (Strategic Action Area 4).

2.3.1.1 Funding needed to close gap in forestry, wildlife and tourism

Climate priority actions in forestry, wildlife and tourism are summarized below:

1. Afforest and reforest degraded and deforested areas in the counties;
2. Implement initiatives to reduce deforestation and forest degradation;
3. Restore degraded landscapes (ASALs and rangelands);
4. Promote sustainable timber production on privately-owned land; and,
5. Conserve land area for wildlife.

> All the programmes reviewed in MTP III under the forest, tourism and wildlife sectors show that CC is not mainstreamed; hence, funding for the climate priority actions totals $616 million.

2.3.2 Manufacturing

MTP III prioritizes implementation of the manufacturing sector as one of the Big Four initiatives. Kenya aims to have a robust, diversified and competitive manufacturing sector to transform the country into a middle-income economy by 2030. The goals of the sector are to:

- increase its contribution to GDP from 9.2 percent in 2016 to 15 percent by 2022;
- create additional one million jobs annually;
- increase foreign direct investments to $2 billion; and,
- improve the ease of doing business ranking from 80 in 2017 to 45 by 2022.

In sum, the overall goal is to play a key role in the country's economic growth and development by facilitating employment creation, attracting investment and creating wealth. This will be done by implementing 12 programmes over the five-year period. They include;

- Ease of Doing Business Programme, whose target is to improve Kenya's World Bank ease of doing business ranking from position 80 in 2017 to 45 by 2022;
- Industrial Clusters Programme with two elements aimed at increasing investment in the textile and apparel industries; and,
- Agro-food Processing Programme, which involves value addition in agricultural, fisheries and livestock.

Others include the Special Economic Zones (SEZ) Programme, Industrial and Small and Medium Enterprises (SMEs) Parks Programme, and the Micro, Small and Medium Enterprises (MSMEs) Development Programme.

A review of the programmes' objectives, output, outcome performance indicators and budgets shows that CC mitigation and adaptation are not integrated in the above programme. It can therefore be assumed that the Ksh 633,363 million is for the business-as-usual scenario.

2.3.2.1 Financing gap in the manufacturing sector

The NCCAP 2018-2022 has focused on mainstreaming CC in manufacturing with the strategic objective of promoting energy and resource efficiency in the sector. The problem involves scarce resources, including water, electricity, and other inputs in manufacturing processes resulting from CC and inefficient energy use. Other factors include the use of unsustainable wood and charcoal in cement production, which increases GHG emissions. The climate actions are expected to improve efficiency in water use and industrial symbiosis (climate adaptation) and reduce GHG emissions by 0.45 MtCO2e by 2022 (climate mitigation) by producing sustainable briquettes and charcoal, improving industrial energy efficiency, and achieving industrial symbiosis. This sector is dominated by mitigation actions. They are to: (i) increase energy efficiency; (ii) improve water use and resource efficiency; (iii) optimize manufacturing and production processes; and (iv) promote industrial symbiosis in industrial zones (mitigation and adaptation).

> The cost of these climate mitigation actions totals $47 million.

2.3.3 Energy and transport sectors

Energy and transport enable socioeconomic development and play a major role in facilitating and accelerating development. MTP III cites, among other emerging issues, the need to develop infrastructure to enhance the exploitation of the blue economy as a new frontier for economic growth. However, the challenges facing these sectors include inadequate financing and high capital investment requirements; high construction and maintenance costs; encroachment of land earmarked for infrastructure development; and difficulties in wayleaves/right of way acquisition for infrastructure projects. MTP III does not single out CC as a challenge.

2.3.3.1 Energy sector

In the MTP III, the energy sector has seven notable programmes. Some are ongoing and some are in the pipeline, all focused on ramping up power supply in the country. They include:

1. Increase power generation: This programme seeks to promote the development and use of renewable energy sources to create a reliable, adequate and cost-effective energy supply regime to support industrial development. Key programmes and projects are prioritized for implementation to increase additional electricity installed capacity to 5,221 MW by 2022 from various sources;
2. Last mile connectivity project: Five million new households are targeted for electrical connection through grid and off-grid solutions and 15,739 public facilities (other than primary schools) will be connected. In addition, public street lighting project will be completed. To stimulate the 24-hour economy and catalyse the manufacturing sector, the cost of off-peak power to heavy industries will be reduced by 50 percent.
3. Renewable energy technologies: The programme will include preparing a renewable energy resources inventory and resource map; formulating a national strategy to coordinate research in renewable energy; and promoting the use of municipal waste for energy production.

2.3.3.2 Transport sector

The Integrated National Transport Policy of 2009 identifies road, rail, maritime and inland water, pipeline, air, and non-motorised and immediate means of transport as Kenya's main modes of transport. The country has experienced high rates of urbanization and development, but transport systems and infrastructure have not kept pace. Transport services are poorly integrated, overburdened and inaccessible to many Kenyans. According to MTP III, major transport infrastructure development projects were implemented during the first and second MTPs, including construction of 2,200 km of new roads and rehabilitation/ reconstruction of 1,860 km of roads. Recent developments in railway transport include upgrading the Nairobi commuter rail systems, completion of Phase 1 (Mombasa to Nairobi) of the Standard Gauge Railway (SGR) Project and initiation of the second phase (Nairobi to Naivasha). Phase 2 of the Nairobi commuter rail system will be upgraded to provide efficient movement of passengers from the SGR terminal in Syokimau to the city centre. This upgrading is part of the Nairobi Metropolitan Mass Transport Master Plan that aims to create a mass rapid transport (MRT) system offering bus rapid transit and commuter rail, complemented by non-motorized transport (NMT). The Nairobi County NMT Policy aims to develop and fully integrate NMT within the entire Nairobi transport system, in a "county where NMT is the mode of choice for short and medium trips" (pedestrian trips up to 5 km and cycling trips up to 15 km). Other major transport projects in the pipeline or at various stages of development include the Lamu Port-Southern Sudan-Ethiopia Transport Corridor and its components/ infrastructures and the East African Road Network Project.

2.3.3.3 Financing gap in the energy and transport sector

In terms of mitigation, Kenya's NDC "seeks to abate its overall greenhouse gas (GHG) emissions by 30 percent by 2030 relative to the business-as-usual (BAU) scenario." However, this does not necessarily translate into a 30 percent emission reduction target for the energy sector, which is equivalent to 12.8 MtCO2e reductions from the 2030 baseline emissions of 42.7 MtCO2e. According to the Power Generation and Transmission Master Plan (PGTMP) for the period 2015-2035,[11] overall emissions will drop dramatically, by approximately 7.2 MtCO2e, compared to the 2017 NDC Sector Analysis Report, which indicated that the energy sector (excluding transport and industry) accounted for 7.1 percent of total emissions in 2015. This is projected to rise to 29.7 percent of total emissions in 2030. Achieving the 7.5 MtCO2e recommended NDC target for emission reductions in 2030 will require fully implementing the geothermal generation expansion mitigation option (technical potential).

This could generate 14.0 MtCO2e of emission reductions in 2030, thereby exceeding the target. However, if the geothermal generation expansion mitigation option anticipating 2,775MW of additional geothermal capacity (total of 5,510 MW in 2030) cannot be implemented, priorities would have to be balanced carefully and greater breadth could be called for in lieu of maximizing technical potential. Cookstoves will need to be addressed substantively way to

11 MOEP 2016: Long Term Plan 2015 - 2035 Development of a Power Generation and Transmission Master Plan, Kenya.

achieve the recommended emission reduction target in the energy demand sector. Inefficient biomass cookstoves and cooking over fire contribute directly to GHG emissions in the energy sector by emitting methane and nitrous oxide, as well as carbon dioxide emissions from biomass that is harvested unsustainably. At a minimum, biomass cooking needs to improve by 10 percent over the 2010 baseline average efficiency (baseline efficiency is estimated at approximately 18-20 percent, accounting for the existing penetration of improved cookstoves) by 2030 to deliver emission reductions in line with the overall technical potential of energy demand mitigation options.

Kenya's NAP recommends climate-proofing of energy infrastructure partly because energy plays a role in enhancing adaptive capacity and resilience to CC. Communities with access to energy (electricity, in particular, through connection to the grid or through mini-grids) can tap it for income- generating activities to boost their income and livelihoods. This can enhance their capacity to adapt to climate challenges, such as drought-induced crop failures.

In terms of mitigation, the transport sector is a significant source of greenhouse gas (GHG) emissions. It accounted directly for about 13 percent of Kenya's total GHG emissions in 2015 and is projected to rise to 17 percent of total national emissions in 2030. Given massive infrastructure projects, addressing CC in these sectors is highly recommended, should not present significant additional costs to conventional development costs and should not be viewed as negating a country's development agenda. For instance, the planned MRT for Nairobi, a priority mitigation action in the NCCAP, will reduce road congestion and improve air quality. Mitigation actions, such as improving the efficiency of the vehicle fleet, connect with and build on the government's motor vehicle inspection and standardization programme.

According to MTP III, modernization of Kenya's infrastructure has had a positive effect in stimulating growth and opening up areas that were hitherto outside the reach of Kenyan markets. Mobilizing investment funding for large-scale infrastructure projects poses challenges to debt levels. The government is exploring ways to access such funds, including PPP and long-term infrastructure bonds.

The option with the greatest mitigation potential in the transport sector is to develop an extensive mass transit system for greater Nairobi in the form of bus rapid transit (BRT) corridors, complemented by light rail transit (LRT) in high thoroughfare corridors. A mass transit system that achieves an estimated peak hourly ridership of 148,000 passengers in 2030 could reduce emissions by approximately 2.3 MtCO2e annually. Passenger vehicle efficiency improvements can be achieved through many policies, including developing new vehicle fuel efficiency standards, removing low efficiency vehicles from the market and providing subsidies or incentives for higher efficiency vehicles. Higher efficiency vehicles include hybrid and electric vehicles that can significantly reduce emissions per kilometre, provided the national electricity generation mix remains based predominantly on renewable generation. The technical potential to improve passenger vehicle fuel efficiency is immense. The priority climate actions in the energy and transport sectors are shown below.

1. Increase renewable energy for electricity generation;
2. Improve energy efficiency and conservation;
3. Climate-proof energy infrastructure;
4. Develop an affordable, safe and efficient public transport, including a bus rapid transit system in Nairobi;
5. Reduce fuel consumption and fuel overhead costs, including electrification;
6. Encourage low-carbon technologies in the aviation and maritime sectors;
7. Climate-proof transport infrastructure;
8. Reduce fuel consumption and fuel overhead costs, including electrification;
9. Encourage low-carbon technologies in the aviation and maritime sectors; and,
10. Climate-proof transport infrastructure.

> The estimated financial gap for climate priority actions in the energy sector is $7,033 million and in the transport sector, $2,200 million.

2.4 Gender considerations in the climate intervention areas

According to MTP III, during the MTP II period (2013-2017), a total of Ksh 12.31 billion was disbursed through the Women Enterprise Fund (WEF) and the Uwezo Fund to support women, youth and people with disabilities (PWDs) in training on entrepreneurial skills and capacity-building. These funds benefited 1,545,694 people across the 290 constituencies. In addition, the government disbursed Ksh 5.12 billion through the National Government Affirmative Action Fund (NGAAF) to support the affirmative action groups' programmes and projects. Further, 45,812 tenders totalling Ksh 50.0 million were awarded to enterprises owned by youth, women and PWDs.

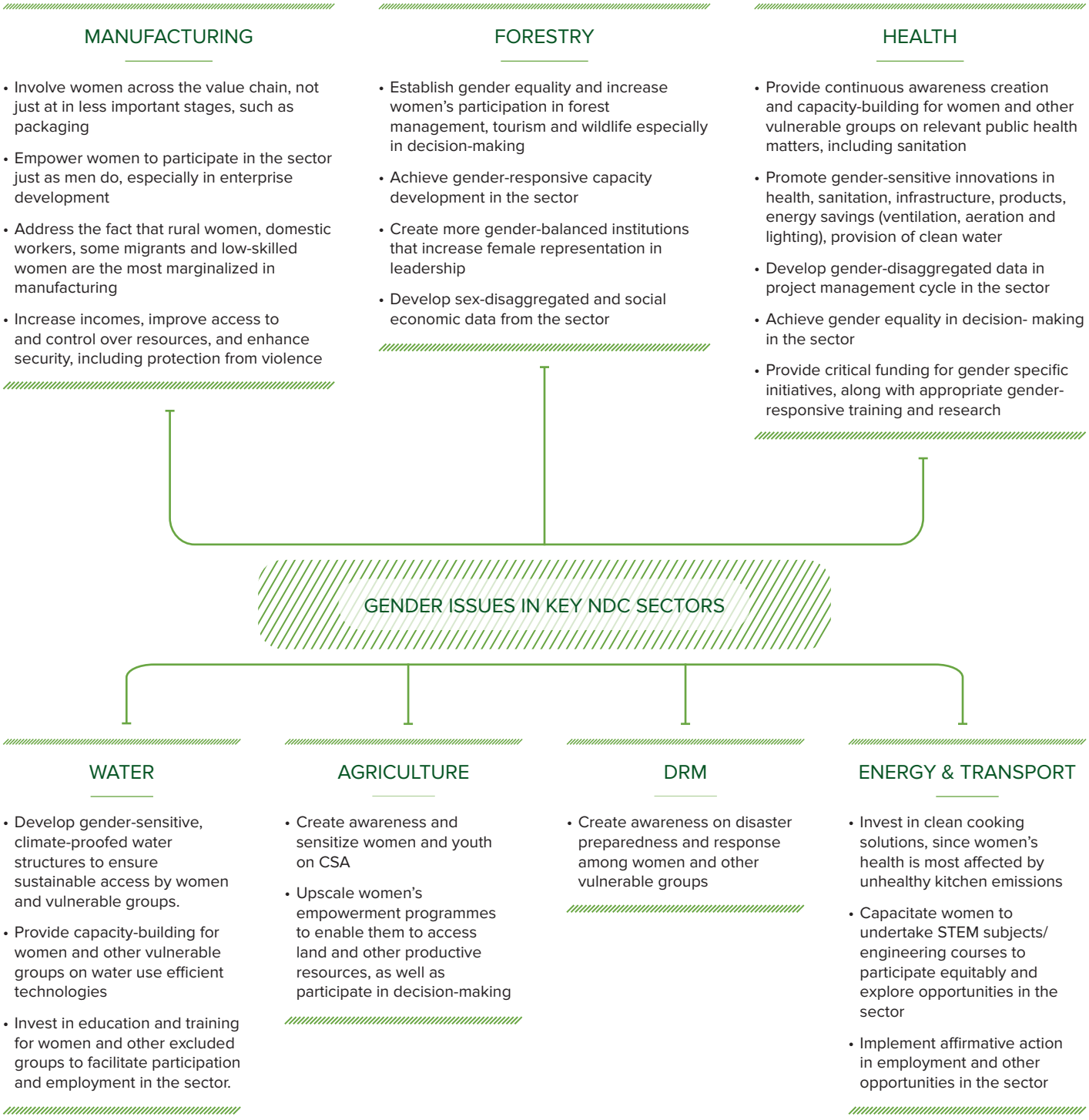
With regards to youth, the National Employment Policy and Strategy for Kenya and the National Youth Empowerment Strategy (NYES) were developed during the same period. Ksh 49.0 million was disbursed through the Youth Enterprise Development Fund, benefiting 497,037 youth entrepreneurs across the country. In addition, 19,532 youth received training on core business skills, life skills and entrepreneurship, while 11,915 youth were placed on attachment in both public and private institutions. The National Youth Service was also upgraded, and enrolment increased to provide skills and training to 21,870 youth per year. Paramilitary training was conducted for 23,165 youth and 23,235 service men and women undertook vocational training.

It is not clear whether the above activities in MTP III are climate-change sensitive, hence the need to ensure that CC is mainstreamed in these subsectors going forward.

We have identified and costed some of the gender-specific issues in this financing strategy that will need to be embedded in the climate intervention areas and climate actions. These include:

1. Mainstreaming climate actions into the Women Enterprise Fund (WEF) and Uwezo Fund by identifying NDC climate actions that can be funded for the benefit of women, youth and PWDs;
2. Mainstreaming climate-related actions into the National Employment Policy and Strategy for Kenya and the National Youth Empowerment Strategy (NYES); and,
3. Capacity-building on gender mainstreaming for gender-responsive climate actions.

Figure 2. 1 Gender-sensitive issues in the NDC climate change intervention areas to be considered for financing



2.5 Funding support requirement projection to 2030

Kenya is exposed to a potential loss of 2.6 percent of GDP annually through 2030 as a result of the impacts of climate events (drought and floods) and continued temperature increases. Climate vulnerability manifests in food price increases during periods of drought. The UN Environment ERISC Phase II report suggested that food prices are a principal channel through which environmental constraints will affect national economies and that Kenya stands to suffer a 4.4 percent loss of GDP if food prices double as a result of drought events.

The price of maize and beans (often consumed together) are the most indicative of any drought situation. The government declared a drought emergency in February 2017 and experienced 21 percent food price inflation between April 2016 and

April 2017 (Dahir, 2017). Maize imports are a critical measure of drought risk impacts, with higher levels of imports associated with extended periods of drought. Maize prices thus prove to be a key indicator of the impact of drought risk on several credit metrics, particularly food inflation and import requirements. If sufficiently large, these may affect external balances. Climate-related pest infestations, such as armyworm, clearly have an impact on food price inflation.

Using the current funding gap as the baseline and taking fluctuating food prices in Kenya as the mean factor determining the cost of climate impacts and the projected inflation rate as given by the Kenya National Bureau of Statistics (KNBS), where food inflation is expected to be 6.6 percent by the end of September 2019[12] (see the trend projection in the graph below[13]) and assuming a 6.6 percent food inflation rate per year to 2030, the incremental costs of climate impact can be estimated using that rate.

The table below shows the projected additional funds needed to fill the financing gap to implement priority climate actions for the period 2019-2030, with a 6.6 percent CPI annual food inflation factored in.

Figure 2. 2 Food inflation in Kenya in the last year (July 2018-July 2019), Y-axis is % inflation

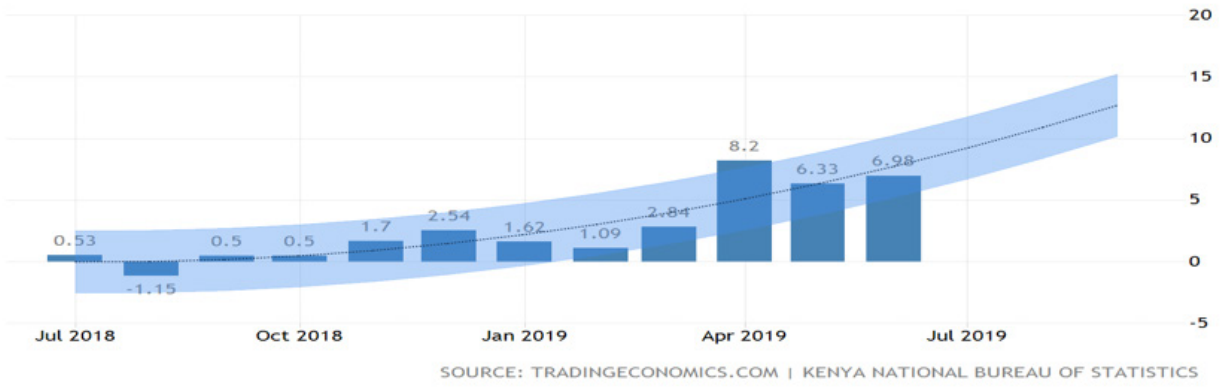


Table 2.5: Projected additional funds needed to address the financing gap for the period 2019-2030, factoring in a 6.6% CPI annual food inflation rate

MTEF SECTOR CC INTERVENTION AREAS/STRATEGIC OBJECTIVES	$ MILLIONS fund/investment gap 2019-2023	$ MILLIONS fund/investment gap 2024-2030
1. **Social protection, Devolution and ASAL/Disaster (Drought and Flood) Risk Management:** Reduce risks resulting from CC droughts, floods, etc.	918	1.342
2. **Agriculture, Livestock and Fisheries/Food and Nutrition Security:** Increase food and nutrition security through enhanced agricultural systems	2.738	4.002
3. **Water, Sanitation and Irrigation/ Water and the Blue Economy:** Enhance resilience of the water sector for economic uses	4.261	6.230
4. **Health and Housing/Health, Sanitation and Human Settlements:** Reduce incidence of vector diseases and strengthen climate-resilient settlement	500	730
5. **Environment and Devolution/Solid Waste Management:** Put in place a solid waste management infrastructure in urban and rural areas	274	401
6. **Forestry and Wildlife:** Increase forest cover to 10% of total land area	616	900
7. **Trade and Industrialization/Manufacturing:** Improve energy and resource efficiency	47	69
8. **Infrastructure/Energy:** Encourage renewable energy development; increase uptake of clean cooking solutions	7,033	10,282
9. **Infrastructure/Transport:** Climate-proof transport infrastructure and develop sustainable transport systems	2,200	3,216
TOTAL ($ MILLION)	**18,586**	**21,396**

12 "Trading Economics global macro models" and analysts' expectations; https://tradingeconomics.com/kenya/producer-prices-change
13 According to KNBS econometric models.

3. Strategic Objectives for Mobilizing Needed Additional Finance

3.1 Goal of the financing strategy

The main goal of the financing strategy is to enhance mobilization of funding to implement the NDC priority actions, supporting the country to achieve its commitment under the PA. There are three main strategic objectives:

1. To enhance mobilization of funding from public finance sources;
2. To enhance mobilization of funding from private sector participation and investment sources; And,
3. To enhance access to innovative financing mechanisms

Table 3.1 Summary of sources to finance NDC actions

SOURCES OF FINANCE	DESCRIPTION	OPPORTUNITIES TO FINANCE NDC CLIMATE PRIORITY AREAS GUIDANCE NOTE SECTION
DOMESTIC PUBLIC FINANCE		
Domestic government responsibility	Public sector financial resources, raised and managed by the government by establishing enabling economic and political environment Operationalize climate funds to be used as financing vehicle to channel funds Mainstream climate priority actions in the short-, medium- and long-term plans	Predictable and consistent implementation of NDC climate actions Enhances national ownership of climate actions Enabling environment to leverage other sources of financing for adaptation and mitigation
INTERNATIONAL PUBLIC FINANCE		
Bilateral Multilateral finances and climate finance source	Public funds provided from developed countries, including: 1. Official Development Assistance 2. Finance instruments include grants, loans (concessional and non-concessional), guarantees, insurance and equity 3. Mechanisms include multilateral funds (such as climate funds and sectoral funds) and multilateral development banks (MDBs) 4. Climate funds such as GCF and GEF; Financing instruments may include grants, loans (concessional and non-concessional), insurance, guarantees and equity	Flexible funding source that presents significant opportunities to fund both mitigation and adaptation of NDC climate priority actions 1. Particularly useful for innovation, as well as enabling activities such as capacity development, policy and strengthening of institutions 2. Climate-focused funds to support the NDC adaptation and mitigation projects 3. Multilateral sources can finance implementation of climate priority actions 4. Sectoral CC units in the ministries can attract climate funds to finance implementation of adaptation and mitigation actions 5. Leverage private sector investments
DOMESTIC AND INTERNATIONAL		
Private sector Investment Green bonds Public private partnerships	Includes enterprises (such as companies and private foundations) and financiers (such as commercial banks, insurance companies and investment funds) Effective partnerships focus on areas where private sector and development interests overlap, producing: a public good; lasting development impact; benefits to private sector/ business; shared risks and rewards; outcomes/benefits to all parties difficult to achieve alone	Financing innovative priority adaptation and mitigation actions Investment in new business opportunities that support both mitigation and adaptation and reduce climate risk For example: Kilimo Salama, an index-based insurance product that covers farmers affected by CC, developed by the Syngenta Foundation for Sustainable Agriculture (SFSA) and working in partnership with Safaricom, UAP Insurance and MEA, a fertilizer company

Source: Adapted from IISD 2017[14]

14 IISD 2017: Financing National Adaptation Plan (NAP) Processes: Contributing to the achievement of nationally determined contribution (NDC) adaptation goal

3.2 Enhancing resource mobilization strategies for climate change adaptation and climate resilience sectors

Mobilizing resources from domestic and international public finance sources offers a key opportunity to systematically allocate adaptation-related finance to subnational actors. Using finance from these sources to fund NDC climate action will enhance national ownership of the process, provide greater flexibility regarding the allocation of financial resources to different sectors and jurisdictions, and can leverage additional public and private investment. The funding gap for the CC adaptation and climate resilient sectors totals $8.691 million (see Table 2.2 above).

The section below outlines strategic actions that the lead organization should take, working with non-state actors, to mobilize funds from public sources (domestic and internal) for climate actions in specific MTEF sectors and CC intervention areas to fill the funding gap identified.

3.2.1 Social protection, Devolution and ASAL: Disaster Risk Management

To close the sector's funding gaps, this strategy recommends strategic actions under each of three strategic objectives. The table below summarizes the strategic actions and the responsible organizations.

Table 3.2 Social protection, Devolution and ASAL: Disaster (Drought and Flood) Risk Management

1. DISASTER (DROUGHT AND FLOOD) RISK MANAGEMENT: REDUCE RISKS RESULTING FROM CLIMATE-RELATED DROUGHTS, FLOODS, ETC. Funding gap=$918 million		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources (domestic and international)	• Operationalize CEF through subsidiary legislations and counties to allocate 2% of all source revenue annually in line with the PFMA • Establish and operationalize National Climate Change Fund (NCCF) and County Climate Change Funds (CCCFs) • Operationalize and annually capitalize the NDEF, both domestic and international sources • Implement the national disaster risk financing strategy with support from domestic, bilateral and multilateral financial resources • Upscale shock-responsive cash transfer programmes with domestic, bilateral and multilateral financial resources • Enhance coordination of disaster preparedness and response by all actors • Build capacities of public DRM actors to access domestic and international climate and DRM financing sources, e.g. GCF, Global Facility for Disaster Reduction and Recovery, World Bank	• County governments • Treasury, MENF, county governments • National Treasury, NDMA • NDMA • NDMA, State Dept for ASAL and interior • CCD, NDA,
2. Enhance private sector investment and participation	• Promote risk transfer mechanisms for disaster-vulnerable sectors, such as agriculture and livestock through public private partnerships • Develop framework for enhanced private sector participation in disaster response. Such framework should provide for accountability and transparency • Promote private sector investment in disaster preparedness and resilience building initiatives, e.g. through corporate social responsibility projects, and integrate climate and disaster risks into corporate risk management schemes	• TNT, respective ministries, IRA, insurance companies • NDMA, NDOC, TNT • KEPSA, KAM, MENF
3. Enhance access to innovative and impact financing	• Explore and pilot risk pooling in disaster response at regional level and among counties • Incentivize private sector and CSO actors' innovations in disaster risk management	• County governments, insurance companies

NOTES:

1. The PFMA Act, 2012 provided for the establishment of CEF and allocation of at most two percent of all sources' county revenues. Some counties have operationalized this provision. All counties should establish this fund to protect communities from adverse natural and climate related disasters.

2. The Climate Change Act provides for the establishment of the National Climate Change Fund (NCCF). The Fund will finance adaptation and mitigation activities, including DRM. Some counties have already established CC funds, which should be linked to the NCCF. These funds need to be fully operationalized and support DRM initiatives through them.

3. The NDEF was established under the PFMA to improve the effectiveness and efficiency of drought risk management system in the country. The Fund will provide for a common basket to facilitate faster, transparent, predictable and accountable funds for drought risk management. The Fund needs annual and predictable capitalization from both domestic and international sources.

4. The government has developed a National Disaster Risk Financing Strategy through the TNT. The goal of the strategy is to increase the ability of the national and county governments to respond effectively to disasters, thereby protecting development goals, fiscal stability and citizens' well-being. The strategy should be implemented fully so that resources can be mobilized for disaster risk management from domestic and international sources.

5. The Hunger Safety Net Programme (HSNP)/Kenya provides an example of a shock-responsive cash transfer programme. This government-led social and economic inclusion project is housed within the Ministry of Devolution and Planning and managed by the National Drought Management Authority (NDMA). The shock-responsive aspect of the programme provides for rapid cash transfers to affected and vulnerable households using GIS based data, such as a vegetation condition index. The programme needs to be expanded beyond the four current counties of Mandera, Wajir, Marsabit and Turkana. The vulnerable counties also require a cash transfer infrastructure, which will require additional resources from bilateral and multilateral partners.

6. Disaster risk management is a complex process and involves many players. It requires an elaborate coordination structure at both the county and national levels. However, flood disaster preparedness and response coordination need to be strengthened.

7. Relevant CC and disaster risk reduction funds exist at the global level, but have not been widely accessible to national institutions. The capacities of DRM players at both the national and county levels need to strengthened so that they understand these funds' procedures and access modalities.

8. Various risk transfer mechanisms, such as KLIP and the area yield crop insurance, exist. They are supported by the government in partnership with the private sector, with technical support from the International Livestock Research Institute and the World Bank. These insurance schemes should expand to all counties that are vulnerable to the impacts of CC.

9. Kenya is rated as the most generous country in Africa based on its willingness to provide support in times of disasters. However, no framework exists to collecting and manage such contributions (cash and in-kind) from the private sector and citizens. A legal framework should be established that facilitates accountability and transparency.

10. Private sector companies have made some investments in water, health and educational programmes that contribute to disaster risk preparedness in the short, medium and long term as part of their corporate social responsibility. These initiatives should be promoted through government/private sector engagements and dialogues. Private sector companies should also mainstream CC and disaster risk management as part of their corporate risk management policies and schemes.

11. Women, children and other vulnerable groups are most affected by climate-induced shocks and disasters. All strategic interventions should thus consider their specific situations, needs and budgetary allocation through the processes.

3.2.2 Agriculture, Livestock and Fisheries: Food and nutrition security

Kenya has emphasized the importance of agriculture through Vision 2030 and the MTP III. It also figures in the Big Four priority agenda for 2018-2022, which emphasizes the importance of 100 percent food and nutrition security for all Kenyans. Strategic actions proposed to fill the funding gap in the Food and Nutrition CC intervention areas complement some of the proposals in the agriculture sector development strategy (ASDS 2010-2020), which is Kenya's overall national policy document for Kenya. The strategic actions also complement the recently developed National Agriculture Investment Plan 2019-2024.

Table 3.3 Agriculture, Livestock and Fisheries: Food and Nutrition Security

2. DISASTER (DROUGHT AND FLOOD) RISK MANAGEMENT: REDUCE RISKS RESULTING FROM CLIMATE-RELATED DROUGHTS, FLOODS, ETC. Funding gap=$918 million		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	• Implement government incentives to promote sustainable agricultural productivity along the value chains, such as tax incentives for CSA and price supports to actors in the organic agriculture industry to encourage expansion of organic production or other sustainable agricultural systems[15] (see Note 1 below) • Advocate for increased budget allocation by including priority climate actions in the MTEF, MTP of Vision 2030 and county development plans (CIDPs and ADPs) • Operationalize national and county CC funds • Establish framework to increase bilateral/multilateral support for projects and programmes that enhance implementation of climate priority actions e.g. the Small-Scale Irrigation and Value Addition Project (SIVAP), government support and grant funding from the Global Agriculture and Food Security Program (GAFSP) (see Note 2) • Strengthen MoALF Climate Change Unit's (CCU) capacity to develop bankable proposals for funding from global climate funds, e.g. Global Environment Facility (GEF), Green Climate Fund (GCF), and any other relevant fund • Tap into affirmative funds to support gender-responsiveness – inclusion of women, youth and people with disabilities (vulnerable groups) in sustainable agricultural productivity	• MoALF • MoALF &TNT • MoALF; TNT and Planning (TNT&P)
2. Enhance access to private sector investment	• Improve loan conditions: Restructure agriculture finance institutions to provide lower interest and longer grace periods that can support farmers producing grain and nutritious crops. (see Note 4) • Encourage PPP for increased productivity, e.g. to develop irrigation infrastructure for increased productivity • Investment incentives: Create awareness of areas where the private sector can participate and invest in CSA value chains	• TNT, MoALF and private sector • MoALF
3. Enhance access to innovative and impact financing	• Blended finance: Develop and encourage practical innovative solutions that boost agricultural productivity and incomes while safeguarding the environment • Impact investment: Proactively encourage private sector to invest in projects with measurable impacts and achieve transformative change in agriculture productivity • nnovation investment: Provide financing to achieve climate resiliency in the agricultural systems, e.g. KCEP-CRAL	• MoALF and private sector • MOALF and INGO/NSA

NOTES:

1. The Kenya Climate Smart Agriculture Project (KCSAP) is a Government of Kenya (GoK) project, supported by the World Bank, under the State Department for Crops Development in the Ministry of Agriculture, Livestock, Fisheries and Irrigation (MoALF). The project development objective (PDO) is "To increase agricultural productivity and build resilience to CC risks in targeted smallholder farming and pastoral communities in Kenya." The project is being implemented in 24 counties in Kenya's medium to high rainfall, semi-arid and arid areas and focuses on: i) improving water/soil management in smallholder mixed crop-livestock and in crop forest (agro-

15 Kenya Climate Smart Agriculture Strategy 2017-2026

forestry) production systems; ii) promoting sustainable, community- driven rangeland management in ASALs, specifically in pastoral/extensive livestock production systems; iii) supporting the generation and dissemination of improved agricultural and building sustainable seed systems; and, (iv) enhancing farmers'/herders' access to quality agro-weather, climate, advisory, and market information services for improved decision-making.[16]

2. The GOK funds SIVAP with grants from the Global Agriculture and Food Security Program (GAFSP) and a loan from the World Bank. Project costs are structured as follows:

GOK contribution	$ 7.2 million (10 percent)
AfDB loan	$39.456 million (56 percent)
GAFSP grant	$24 million (34 percent).
Total	**$70.684 million**

The purpose of the project is to contribute to poverty reduction by ensuring increased agricultural productivity, incomes and food security among beneficiaries in 11 counties.

3. The Agricultural Finance Corporation (AFC), a wholly-owned government development finance institution (DFI), was incorporated in 1969 as a full-fledged financial institution under the Agricultural Finance Corporation Act, Cap 323 of the laws of Kenya. Its primary purpose is to provide credit facilities exclusively to develop agriculture. Its agricultural credit product policy and structure mirror those of commercial banks. Faced with the overwhelming need for credit, this corporation has fallen short of discharging its mandate effectively. The agricultural loan products it offers include cash crop loans designed for cash crop production and improvement. It covers cash crops. Eligibility requires tangible security, approved crop varieties and availability of processing facilities within reasonable distances. The requirements of this loan exclude many farmers, especially small-scale ones.[17]

4. Although most Kenyans are employed in agriculture or agribusiness, only about 4 percent of commercial bank lending is allocated to agribusiness. The government needs to encourage banks and DFI to offer additional sources of funding to small-scale farmers, such as the Jamii Bora Agribusiness and Kilimo Biashara loan products, which are intended specifically for smallholder farmers.[18]

5. The Alliance for a Green Revolution in Africa works with development finance institutions to provide low-interest loans to projects that can have measurable impacts and create meaningful, transformative change in the agriculture sector.

6. The Kenya Cereal Enhancement Programme–Climate-Resilient Agricultural Livelihoods Window (KCEP-CRAL) works directly with smallholder farmers in the ASALs to help reduce rural poverty and food insecurity by developing their economic potential, while improving their natural resources management capacity and resilience to CC in an increasingly fragile ecosystem. The main outcomes include improving smallholders' livelihoods and food security on a sustainable basis and empowering targeted counties/communities sustainable natural resource management (NRM), thereby increasing their resilience to CC.[19]

7. Despite women's and children's significant contribution to agriculture, they are particularly vulnerable to CC impacts and face a number of constraints, particularly related to limited access to, control of and decision-making regarding productive resources. All interventions in the strategy must thus be gender-responsive and increase the resilience of women, youth and vulnerable groups in farming systems to achieve improved food security and livelihoods.

16 kenya-climate-smart-agriculture-project-kcsap-competitive-grants-system-cgs
17 Ngare et al 2015: Modelling Risk of Financing Agribusiness in Kenya. KBA Discussion Paper
18 Kenya Bankers Association 2015: Modelling Risk of Financing Agribusiness in Kenya. Ngare et. al.,KBA Discussion Pape
19 **http://www.kcepcral.go.ke/**

3.2.3 Water, Sanitation and Irrigation: Water and the Blue Economy

Water and the blue economy is a vast climate intervention area, but has received the least government funding. Strategic actions proposed in the table below are not exhaustive but provide a starting point for mobilizing finance in this sector.

Table 3.4 Water, Sanitation and Irrigation: Water and the Blue Economy

3. WATER AND THE BLUE ECONOMY: ENHANCE RESILIENCE OF THE WATER SECTOR FOR ECONOMIC USES Funding gap=$4.261 million		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public sources	• Strengthen coordination and intergovernmental relations between national and county levels to support domestic finance flows • Operationalize the financing provisions enshrined in Kenya's water relevant regulations and policies (national and county) • Increase revenues from water abstractions; e.g. borehole fees charged by Water Resources Authority (WRA) • Operationalize relevant policies and regulations to support private sector investment in water, e.g. Nairobi Water Fund, Eldoret Water Fund • Strengthen framework for accessing capital from multilateral and bilateral funds • Build capacity of CC units at the ministry and county levels to develop bankable proposals to mobilize resources from applicable climate funds • Strengthen national monitoring, reporting and verification (MRV) of financial flows in the sector	• TNT&P, CoG and Ministry of Water and Irrigation (MoWI) • MoWI and TNT&P • WASREB • MoWI, TNT and County • MoWI and TNT • MoWI • TNT&P and MoWI
2. Enhance private sector investment	• Create awareness of private sector investment opportunities, e.g. the Kenya Pooled Water Fund (KPWF)	• KPWF, private sector and MoWI
3. Enhance access to innovative and impact financing	• Issue green bonds to enhance water supply and distribution • Impact and social financing, e.g. The Nature Conservancy and Nairobi Water Fund • Charity events to mobilize resources, e.g. marathons (Ndakaini) • Use smart meters to conserve and ensure distribution to more people at a lower cost	• MoWI and Water vendors

NOTES:

1. As at 2017, water coverage stood at 55 percent in areas covered by water service providers in Kenya, with sewerage at 16 percent[20]. The investment required to achieve 100 percent water and sewerage coverage is Ksh 1.7650 million, with a financing gap of Ksh 1.172 million, equivalent to Ksh 100 billion annually.[21]

2. The Water Services Regulatory Board (WASREB) is a regulatory state corporation established by law. Its main objective is to protect the interests and rights of consumers in the provision of water services, while ensuring that other stakeholders' interests are also safeguarded. WASREB sets standards and enforces regulations that guide the sector in ensuring that consumers are protected and have access to efficient, affordable and sustainable services. These standards and regulations also provide for the financial sustainability of water service providers (WSPs) by allowing the financing of operations, capital cost recovery and a return on capital that sustains services through ongoing investments.[22]

3. The government budget available for the water supply subsector covers around 44 percent of the required investment cost. With the budget for the irrigation subsector covering 73 percent of required investment costs, the government and DFIs can ensure blended finance that will reduce the cost of loans in order to incentivize more private sector participation. It should be noted that the current government water sector budget is only

20 WASREB Impact Report 10, 2018.
21 WASREB Lender's Manual for Commercial Financing of the Water and Sanitation Sector of Kenya Report, 2015.
22 **https://wasreb.go.ke/about-wasreb/**

0.2-0.3 percent of GDP. The average government water sector expenditure in other African countries against GDP is 0.7 percent, which shows that GOK still has space to increase budget support.[23]

4. The Kenya Pooled Water Fund (KPWF) is a non-profit company established to provide water utilities, known as WSPs, with access to capital market financing for their water and sanitation infrastructure needs. KPWF seeks to assist Kenya's water sector partially close the funding gap by financing WSPs' infrastructure to increase water access, improve sewerage coverage and reduce water losses. KPWF intends to issue a bond to domestic pension funds and other institutional investors; its proceeds will be on-lent to WSPs. In the longer term, bond financing will reduce the annual cost of financing (by comparison with short-term commercial bank lending), allowing for lower tariff increases to service debt. KPWF is an opportunity for GOK, development partners and international finance institutions to achieve multiple leverage of their sectors' financial contributions (including grants, concessional loans and guarantees).[24]

5. Women, children and persons with disabilities are highly vulnerable to climate change-related impacts associated with the water sector. Gender disparities should be addressed by building sustainable water resource management frameworks and implementing gender mainstreaming activities across the strategy's water interventions.

3.2.4 Health and Environment: Health and Human Settlement

The health sector in Kenya relies on several sources of funding: public (government), private firms, households, donors (including faith-based organizations and NGOs) and health insurance schemes. NDC financing for strategic actions as shown in the table below provides an opportunity to further mobilize resources for health services that consider climate impacts in human settlements.

Table 3.5 Health and Environment: Health and Human Settlement

4. HEALTH AND HUMAN SETTLEMENTS: REDUCE INCIDENCE OF VECTOR DISEASES AND STRENGTHEN CLIMATE-RESILIENT SETTLEMENT Funding gap=$500 million		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	• Budget support - prioritize relevant actions, e.g. Constituency Development Fund (CDF) can be used to build sanitation systems, especially in schools, leveraging the fact that health and housing are part of the Big Four Agenda • Build institutional and individual capacity and environmental and social safeguard frameworks to accelerate funding from bilateral and multilateral donors • Scale-up donor/government co-funding by harmonizing project execution approaches by strengthening state departments' and county governments' project implementation • Enhance health in all policy approaches through collaboration and partnerships between the national and county governments in financing health, sanitation, environment and human settlement programmes	• MOH, CoG and Counties • MOH and CoG • MOH, COG and Planning
2. Enhance private sector investment	• Incentivize private sector to participate in primary health and preventive care through waivers on permits for qualified private health providers in remote rural areas/counties • Need for innovative insurance schemes to reduce individual out-of-pocket spending, which is still unacceptably high, especially in rural areas	• MOH Counties and private sector

23 2013: GOK National Water Master Plan
24 **https://kpwf.co.ke.**

3. Enhance access to innovative and impact financing	• Guarantee funding by DFIs: Can stimulate small and growing sanitation businesses that do not qualify for commercial loans from banks or micro-finance institutions. Loans are issued through commercial banks, but payments are collected via monthly deposits through Mpesa (Muchangi et al., 2018) • Public private partnership scheme created output- based financing reforms, to be used to incentivize prioritization of prevention services and ensure greater access to those who need them. These may include bonuses for health workers who work in hard-to-reach areas or areas with low service coverage to improve coverage there.[25]	• DFIs, Counties and private sector

NOTE:

Health Act No. 21 of 2017 gives the Cabinet Secretary, in conjunction with the county governor, authority to waive permits for qualified private health providers working in remote hardship areas.

In all the actions above, ensure that funding for gender-specific initiatives is ring-fenced to promote appropriate gender-responsive behaviour, attitudes, training and research.

3.2.5 Environment and Devolution: Solid Waste Management

Solid waste management involves many elements, from pre-collection to collection, transportation, storage, treatment, recycling and/or disposal. All require proper funding to ensure that both the community and the environment are cared for properly. Because this is a devolved function, the strategic actions shown in the table below require coordination between NEMA, the Council of Governors and individual counties.

Table 3.6 Environment and Devolution: Solid Waste Management

5. SOLID WASTE MANAGEMENT: PUT SOLID WASTE MANAGEMENT INFRASTRUCTURE IN URBAN AND RURAL AREAS (Funding gap=$274 million)		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	• Budget support and allocation: Include relevant priority climate actions in subsequent budget frameworks MTEF AND MTPs of Vision 2030 • Counties to develop gender-responsive frameworks for fees and levies targeting solid waste (generating products and services): Polluter pays principle, e.g. for water bills, provide a percentage for sewage fees, solid waste provided in the rental fees • Build technical capacity of solid waste management stakeholders at the county so they can adequately prioritize in planning and budgeting framework. • Explore counties' inclusion of an environmental governance parameter (solid waste management) in the CRA's equitable share allocation formula • Counties to develop costed solid waste management strategies to facilitate funds mobilization • Put in place a solid waste management trust fund with funding from public and non-public sources • Institute fines and penalties on solid waste management as funding sources	• Ministry of Environment and Forestry • CoG • NEMA/CoG • MEF (CRA) • CoG • NEMA/CoG • Counties • NEMA
2. Enhance private sector investment	• GOK Incentives to private sector: i) tax exemption for sustainable waste management equipment and materials, including equipment for recycling, composting, transporting and waste compacting; and ii) tax incentives to assist investors to expand or replicate investments in waste recycling and enhance circular economy; • Explore opportunities in emerging carbon market (ITMO) (See note 2)	• TNT, MEF and private sector
3. Enhance access to innovative and impact financing	• Institute take-back scheme targeting PET, cans and glass bottles (see Note 3)	• NEMA

25 Domestic resource mobilization for sustainable financing for health in Africa. Regional Working Paper prepared by the WHO Regional Office for Africa

NOTES:

1. The Sustainable Waste Management Bill, 2019, Article 21, directs county governments to allocate all waste collection and tipping fees or other charges levied on waste received at a waste facility to improve waste management activities and services. Article 22 (1) introduces incentives for imported sustainable waste management equipment and materials, including equipment for recycling, composting, transporting and waste compacting, and incentives to expand investment in material recovery and recycling facilities. These incentives cover: (a) importers of sustainable waste management equipment, air pollution control equipment, recycling and composting equipment; (b) investors to expand investment in waste recycling and enhance circular economy; and (c) operators of certain classes of waste management equipment, including equipment for recycling and composting. Subsection 3 prescribes incentives and establishes regulations for preferential use of recovered or recycled materials over newly manufactured materials with no recycled content, such as government procurement policy on stationery from registered producers utilizing a minimum percentage of recovered or recycled feedstock.
2. Article 6.2 of the PA encourages the use of internationally transferred mitigation outcomes (ITMOs), a market-based approach to reducing the cost of achieving emission reductions in return for greater climate actions with given resources towards achievement of NDCs. ITMOs are linked to mitigation outcomes and, in most cases, are results-based.
3. Polyethylene terephthalate (PET) is a plastic resin used to make bottles for beverages, food, and other household and consumer products.

3.3 Enhancing strategies for resource mobilization for mitigation and low-carbon development sectors

The private sector (both local and international) is already involved in climate mitigation projects in the forestry, energy, transport and ICT sectors. However, challenges remain, such as weak transport infrastructure and logistics systems; high energy costs; and a weak and interrupted power supply, which can cripple business, especially manufacturers. In the long run, incentivizing the private sector to invest in climate priority actions will provide solutions to some of these challenges. These intervention areas have huge adaptation and resilience co-benefits. The section below outlines strategies to enhance private sector investment to fill the funding gap in the four MTEF sectors and respective intervention area.

Table 3.7 Funding gaps in the low-carbon and mitigation sectors

MTEF SECTORS	CLIMATE CHANGE INTERVENTION AREAS / STRATEGIC OBJECTIVES	TOTAL IN $ MILLIONS
1. Forest; Tourism and Wildlife	**Forestry, wildlife and tourism:** Increase forest cover to 10% of total land area; increase resilience of the wildlife and tourism sector	616
2. Trade and Industrialization	**Manufacturing:** Improve energy and resource efficiency in manufacturing sector	47
3. Infrastructure - Energy	**Energy:** Encourage renewable energy development; increase uptake of clean cooking solutions	7,033
4. Infrastructure - Transport	**Transport:** Climate-proof transport infrastructure and develop sustainable transport systems	2,200
TOTAL ($ MILLIONS)		**9,934**

3.3.1 Forestry, Wildlife and Tourism intervention area: Forestry, wildlife and tourism

Historically, funding to increase forest cover in Kenya has come primarily from government budgets and revenue from the sale of forest products and services. However, private sector investment is playing a crucial role, spurred by factors including international climate funds. The mitigation potential of this sector makes it attractive to both the international and local private sectors. The strategic actions shown below are not exhaustive, but provide pointers for further mobilization of resources to fill NDC financing gaps.

Table 3.8 Forestry, Wildlife and Tourism intervention area: Forestry, wildlife and tourism

INCREASE FOREST COVER TO 10 PERCENT OF TOTAL LAND AREA; INCREASE RESILIENCE OF THE WILDLIFE AND TOURISM SECTOR (Funding gap=$616 million)		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	Budget support and allocation - to increase budget support and allocation (national and county): Include relevant priority climate actions in subsequent MTEF, MTP of Vision 2030 Government revenues from user fees/harvesting or use licenses which take various forms, including: Operationalize the NCCF and the CCCFs • Advocate for increased budgetary allocations for the forest sector • •Allocate additional resources for tree planting activities • Fast-track implementation of the national tree planting strategy/programme Operationalize: • financing provisions enshrined in Kenya's forestry regulations and policies (national and county) • relevant policies and regulations to support private sector investment in forests • relevant funds, including forest fund Diversify revenue streams, e.g. ecotourism, ecosystem service payments • Build capacity of KFS management to access capital from multilateral and bilateral funds; build capacity of climate focal point to develop bankable proposals • Strengthen national MRV of financial flows in the sector	• Ministry of Environment and Forest • MEF and KFS • TNT and MEF • MEF and KFS
2. Enhance private sector participation and investment	• Strengthen access to carbon market/bond instrument (see Note 3) • Public private partnerships with saw millers, tea companies, etc. (see Note 4) • Fast-track formulation and implementation of REDD strategy and investment plan – possibility to tap into the GCF • Create awareness of private sector investment opportunities within the private sector • Operationalize relevant policies and regulations to support private sector investment in forest sector	
3. Enhance access to innovative and impact financing	• Strengthen and expand partnerships to support tree planting through 'adopt a forest' strategy 2022 (see Note 5) • Future green bond to support afforestation investments, smallholders' forest management and reforestation targeting institutional investors, such as pension funds • 'Adopt a forest" concept, e.g. KRA, Israel, Cabinet, Kenya Army, Equity, Safaricom, KDF, South Korea (see Note 6) • Impact financing, e.g. Komaza (see Note 7) • Social financing. e.g. one-acre fund giving farmers seedlings • Promote 'plant your age' messages as part of celebrating birthdays • 'Adopt a tree' as a public health intervention, which is also supportive of health sector	• KFS, private farmers and individual households

NOTES:

1. The primary objective of the Forest Conservation Management Act (FCMA) No. 34 of 2016 is to give effect to Article 69 of the Constitution, which includes the State's obligation to increase Kenya's forest cover to at least 10 percent of its land mass, thus enhancing CC mitigation. Article 54 mandates the Cabinet Secretary in charge of forestry to propose tax and other fiscal incentives to increase investments in forest land use and forest resource utilization to promote forest conservation and management and to prevent or abate forest degradation. The tax and fiscal incentives may include: (a) customs and excise waivers in respect of imported capital goods or tax rebates to forest industries and other establishments investing in plants, equipment and machinery for improved resource utilization and to use other energy resources as substitutes for hydrocarbons; (b) exemption from payment of all or part of the land rates and such other charges as may be levied in respect of the land on which a private forest is established; and, (c) income and other tax deductions to landowners in exchange for the establishment of a forest conservation easement.

2. The World Bank's Forest Carbon Partnership Facility (FCPF) was established in 2008 to support developing countries in preparing for REDD+ implementation. UNDP was selected as the delivery partner to implement the FCPF project in Kenya, with a total budget of $3.88 million.

3. The International Finance Corporation, part of the Word Bank Group, issued the first ever 'forest bond,' allowing buyers of the $152 million five-year bond to receive their coupons in cash, carbon credits or a combination of the two. The IFC will purchase the carbon credits from a Reducing Emissions from Deforestation and Forest Degradation (REDD+) project - a forest nestled between two national parks in eastern Kenya - which is expected to offset 1.4 million tonnes of carbon dioxide emissions each year for the next 30 years.[26]

4. Factories managed by the Kenya Tea Development Agency (KTDA) switched from fossil fuel-based furnace boilers and now use 100 percent biomass boilers. Working with the Kenya Forest Service, KTDA has begun acquiring land and developing trees for wood fuel. There is an annual tree planting initiative of about 3 million indigenous trees for catchment protection. The projected budget costs total $150 million.

5. Following a Presidential directive to all parastatals and state departments to put aside at least 10 percent of their CSR budget towards tree planting in an effort to achieve the targeted 10 percent forest cover by 2022, the Kenya Forest Service (KFS) is seeking mutually beneficial tree planting partnerships with state corporations. This Presidential directive was reiterated in writing to all ministries by Joseph Kinyua, the Head of Public Service, via Letter No OP/CAB/26/1/3A. The target is 350 million plantable tree seedlings per year so as to attain the 10 percent tree cover by 2022. Currently, KFS can produce only 175 million tree seedlings in its nurseries countrywide, which explains the need to partner and double that number.[27]

6. In its partnership, the Kenya Revenue Authority (KRA) will seek to increase revenue collection through areas of commercial tree growing in Kenya. The Agricultural Development Corporation (ADC) has committed 180,000 acres of its land to KFS for forestry development. The National Oil Corporation of Kenya (NOCK) is to partner with KFS and community forest associations (CFAs) to establish tree nurseries, restore ecotourism sites in forests across the country and promote the use of affordable liquefied petroleum gas (LPG) as an alternative source of clean energy, as opposed to charcoal and firewood. Through the School of Environment Studies, Kenyatta University will work with KFS to establish tree nurseries that will be supervised by KFS extension officers, together with the schools' dynamic environmental club. The Teachers Service Commission, through its nationwide workforce, will consider how it can mobilize teachers and public schools to ensure that students are also involved in this national course.

7. Komaza works to unlock the potential of small-scale farmers to solve Africa's wood supply crisis. Collectively, small farmers possess limitless land and labour resources to plant billions of trees. Komaza provides farmers with support across the forestry value chain, from seedlings to sawmills.

26 **https://www.euromoney.com/article/b12kqd1hqfwm85/forest-bond-boosts-conservation-finance**
27 **http://www.kenyaforestservice.org/**

3.3.2 Trade and Industrialization: Manufacturing

Manufacturing is one of the Big Four Agenda items that the Government has prioritized for investment and implementation. The strategic actions proposed below are important pointers in mobilizing resources for improving energy and resource efficiency in the manufacturing sector to provide more jobs and grow the economy. **Table 3.9 Trade and Industrialization: Manufacturing**

MANUFACTURING: IMPROVE ENERGY AND RESOURCE EFFICIENCY IN MANUFACTURING SECTOR (Funding gap= $47 million)		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	• Budget support and allocation: Include relevant priority climate actions in subsequent MTEF AND MTPs of Vision 2030 • Energy Act 2019 enhanced energy and resource efficiency regulations and institutions supportive of private sector investments in renewable energy, energy and resource efficiency • Increase funding to KAM/manufacturers for capacity-building on energy efficiency and energy audits (from domestic and external sources) • Support involvement of women, youth and persons with disabilities in manufacturing of climate-related products through affirmative action funds • Develop the capacity of manufacturing actors to access financing from global CC finance sources such as GCF and GEF • Strengthen private sector proposal development to access funds from the NCCF and the CCCFs • Develop policies that promote manufacturers' access to affordable finance to implement clean energy and energy efficiency projects	• MOTI • MOE, MOTI and KAM • MOTI, KAM and Donors • KAM • KAM
2. Enhance private sector investment	• Encourage CC integration in corporate planning and private sector projects • Strengthen the KIE to offer financial support (loans) to small and medium manufacturers to implement energy efficiency projects • Raise awareness of clean energy and energy efficiency projects	• KAM/KEPSA • KIE

NOTES:

1. In 2006, the Kenya Association of Manufacturers (KAM), in conjunction with the Ministry of Energy, established the Centre for Energy Efficiency and Conservation (CEEC). It provides professional technical services to develop, design and implement energy efficiency projects to suit the needs of commercial, institutional and industrial consumers. The main aim is to reduce cost and enhance competitiveness and profitability in a clean and healthy environment.
2. The Danida support is to ensure: i) enhanced private sector investment in developing energy and resource efficiency policies, legislation and institutions supportive of private sector investments in renewable energy, energy and resource efficiency; ii) enhanced technical capacity and awareness creation on renewable energy, energy and resource efficiency; and, iii) improved private sector awareness of UN Global Compact ethical and sustainable business practices.

3.3.3 Energy Sector: Renewable energy development

The strategic actions proposed below are innovative financing options that involve both the public and private sector in efforts to assist in maintaining energy investment programmes, while minimizing the accrual of new government debt.

Table 3.10 Energy Sector: Renewable energy development

ENERGY: ENCOURAGE RENEWABLE ENERGY DEVELOPMENT; INCREASE UPTAKE OF CLEAN COOKING SOLUTIONS (Funding gap=$7.033 million)		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	• Budget support and allocation: Include relevant priority climate actions in subsequent national and county planning frameworks, such as MTEF, MTP of Vision 2030, CIDP and ADP • Increase national and county budget allocation for clean energy projects • Implement fiscal policies that encourage innovation and use of clean energy, as those provided in the Energy Act 2019 • Operationalize the financial provisions under different legislation, such as the Energy Act, 2019 (including the Rural Electrification Programme Fund) and NCCF and CCCFs • Enhance efforts such as capacity development, proposal development and strategic partnerships to mobilize resources from external sources • Operationalize the gender policy in the energy sector • Mobilize resources from external sources to support clean cooking solutions targeted to women • Develop the capacity of renewable energy actors to access financing from global CC finance sources such as GCF and GEF	• MOE • MOE, CoG and counties • MOE/TNT&P • MOE and SAGAs • MOE and SAGAs • MOE and State Department of Gender Affairs
2. Enhance private sector investment	• Implement PPPs in green energy projects such as geothermal, clean cook stoves • Establish a risk facility fund to de-risk early investment in clean energy, to be established through tripartite partnership of government, DFIs and private sector • Promote development of loan programmes through microfinancing institutions to assist in the upfront costs of clean cooking solutions • MOE still seeking inclusion of the private sector in the utilization of the geothermal potential, which is estimated at 10,000 megawatts, under the PPP arrangement to operationalize feed in tariffs and off-grid plants (see Note 3)	• DFI • MOE and SAGAs • MOE, TNT&P and DFI • MOE
3. Enhance access to innovative and impact financing	• Promote results-based financing for innovative mini-grid projects development, e.g. Kenergy Renewables, a developer of renewable power generation assets was awarded a 20-year contract to generate 40 megawatts annually to serve 50,000 households in Laikipia County[28] • Promote development of carbon markets in the renewable energy sector • Promote access to Challenge Fund	• MOE and private sector

NOTES:

1. The Energy Act 2019: The Energy Act, 2019 provides for a feed-in tariff (FiT) system to catalyse electricity generation. The Renewable Energy Feed-in-Tariff System has been anchored in the new act to provide additional legislative support for the Feed-In Tariffs Policy on Wind, Biomass, Small-Hydro, Geothermal, Biogas and Solar Resource Generated Electricity (FiT policy) developed by the Ministry of Energy in 2008. The FiT policy is intended to encourage energy generation from renewable sources and its supply through localized distribution networks. It is also intended to encourage the uptake of and innovation in renewable energy technology and, in sum, to help reduce greenhouse gas emissions and Kenya's reliance on non-renewable energy sources. The FiT policy and the tariff structures will require subsidiary legislation to adopt or update the current FiT policy. Net metering was included in the new Act, as proposed in the bill. The Act now provides the legislative backing necessary to allow consumers to return any excess capacity to the grid. A licensed distributor or retailer must make a net metering service available to the consumer upon request.

2. GOK seeks to close the access gap by providing electricity services to remote, low-density and traditionally underserved areas of the country. The World Bank-funded Kenya Off-Grid Solar Access Project (KOSAP) are Results Based Financing (RBF) and Debt Facilities under the KOSAP. The project will use solar and clean cooking technology to drive electrification for households, enterprises, community facilities and water pumps. The facilities will target 14 of Kenya's 47 counties that have been defined as "marginalized areas" by the Commission on Revenue Allocation (CRA). The 14 KOSAP Service Territories collectively represent 72 percent of the country's total land area and 20 percent of the country's population.

3. Kenya is still seeking the private sector's inclusion in the utilization of geothermal potential, which is estimated

28 https://www.kenergyrenewables.com/

at 10,000 megawatts, under a PPP arrangement. The UN Industrial Development Organisation (UNIDO) granted Kenya 2.8 million euros to develop geothermal capacity to provide affordable, stable, clean energy and reduce the thermal component in the energy mix.

4. Sosian Geothermal Power Plants Ltd was awarded a tender by Geothermal Development Corporation (GDC) through competitive bidding to install and operate a 1x35MW geothermal modular power plant in Menengai Geothermal Field in Nakuru County for 25 years on a build-own-operate (BOO) basis. The project's purpose is to increase Kenya's power generation capacity to enhance socioeconomic development and diversify power supply sources by developing the country's huge geothermal potential.[29]

5. The Africa Enterprise Challenge Fund (AECF) is a $250 million challenge fund that awards grants and repayable grants to private sector companies that include renewable energy and adaptations to combat CC. SIDA-AECF-REACT (renewable energy adaptation and climate technology) is a $42 million fund to be funded by the Swedish International Development Authority (SIDA) to support renewable energy in Sub-Saharan Africa (SSA). The project will run for five years and be implemented in Kenya, among other countries, Funding takes the form of repayable grants (at zero percent interest) of between $250 and $1.5 million.

6. In 2018, Kenya awarded Kenergy Renewables a 20-year contract to purchase 40 megawatts annually from this private electricity production company. The power plant, estimated to cost $60-70 million, will be located in Laikipia, in northern Kenya, and will serve some 50,000 households. This represents another important step in the march towards universal access to electricity in Kenya.[30]

3.3.4 Transport Infrastructure: Transport

As part of efforts to improve connectivity and strengthen the country's logistics network, Kenya is increasing its investment in transport infrastructure, through both direct budgetary allocations and by partnering with the private sector. The strategic actions shown will contribute significantly to mobilizing resources to climate-proof road infrastructure and contribute to low-carbon development.

Table 3.11 Transport Infrastructure: Transport

ENERGY: ENCOURAGE RENEWABLE ENERGY DEVELOPMENT; INCREASE UPTAKE OF CLEAN COOKING SOLUTIONS (Funding gap=$7.033 million)		
STRATEGIC OBJECTIVES	**STRATEGIC ACTIONS**	**RESPONSIBILITY**
1. Enhance mobilization of funding from public finance sources	• Budget support and allocation: Include relevant priority climate actions in subsequent MTEF AND MTP of Vision 2030 • Enhance internal and external funding for clean (non-motorized) transport infrastructure • Diversify revenue sources to support climate-proofed infrastructure projects • Develop transport actors' capacity to access financing from global CC finance sources such as GCF and GEF • Enhance funding for emergency response to restore infrastructure destroyed by climate extreme events	• State Department of Transport and Infrastructure
2. Enhance private sector investment	• Create an enabling policy environment for private sector investment in green transport systems such as electric/hybrid vehicles • Promote PPPs in development of low-emission transport infrastructure • Results-based financing for successful projects such as clean vehicle fleets, mass transport and light rail	
3. Enhance access to innovative and impact financing	• Additional funds through lease of land and other property along the road corridor, renting the roadside for advertising and placement of utilities (see Note 2)	

29 https://www.afdb.org/en/documents/kenya-sosian-geothermal-power-plants-ltd-menengai-geothermal-power-development-1x-35mw-project-nakuru-county-kenya-e
30 https://www.afdb.org/en/news-and-events/kenya-goes-all-out-for-renewable-energy-18559

NOTES:

1. The Roads Annuity Programme: Pursuant to the Public Finance Management (Road Annuity Fund) Regulations, 2015, TNT established the Road Annuity Fund. Its purpose is to enable the national government to make annuity payments to private contractors to develop and maintain roads. It is funded primarily by money allocated by Parliament and from fuel taxes. The Fund has been revamped by an IFC loan of $1.5 billion to enable local contractors to access funds at affordable interest rates.[31] The programme is implemented by the Ministry of Transport and Infrastructure through the roads authorities (Kenya National Highways Authority (KeNHA), Kenya Rural Roads Authority (KeRRA) and Kenya Urban Roads Authority (KURA)).

2. The KenHA Strategic Plan will be financed by both internal and external sources, including the Exchequer; credits and grants from development partners; the Road Maintenance Levy Fund and Transit Tolls; public private partnerships; and internally-generated funds. Additional revenue will be raised by leasing land and other property along the road corridor, renting the roadside for advertising, and placing utilities. The Authority will mobilize Ksh 62 billion through PPPs to finance toll roads and an additional Ksh 58.3 billion through the Annuity Fund.

3.4 Summary of international climate funds

The global commitment under the UNFCCC is to mobilize $100 billion per year by 2020 from a wide variety of sources to address the adaptation and mitigation needs of developing countries. Estimating total climate finance available annually is challenging due to different approaches used to track finance among development finance institutes and for domestic budgets and private investment. Nonetheless, funding for developing countries to address CC (both mitigation and adaptation) is increasing and a number of global financing mechanisms are available. These include:

- Multilateral public funds supported by donor country pledges;
- Bilateral public finance administered largely through existing development agencies;
- Private finance (e.g., foundation, financial institutions, commercial companies); and,
- Regional and national funds resourced through international finance, domestic budget allocation, and/or the domestic private sector.

In 2016, an estimated $383 billion in total public and private international financing was dedicated to CC (Buchner et al. 2017). The majority of this financing went toward mitigation (particularly renewable energy), followed by public sources for adaptation (primarily water and sanitation, agriculture, and land use). Climate finance to developing countries was offered largely through grants and concessional loans, but the use of guarantees and equity investment is increasing, particularly as funds seek to enable private investment.

3.4.1 Enhancing access to the Green Climate Fund

As of July 2019, GCF had approved six projects for Kenya and many other African countries, totalling $761.5 million of approved GCF funding. Kenya receives a fraction of this amount since the funds are meant for several African countries and are channelled through international accredited entities. This makes it difficult to determine Kenya's precise share until after execution. Enhanced access to the GCF will require:

- improving planning and programming;
- strengthening coordination among the three distinct modalities of accessing GCF resources - direct access, enhanced direct access and -international access - by prioritizing pipeline development;
- strengthening proactive and strategic approaches to proposal development, ensuring broad stakeholder consultation;
- enhancing accessibility and predictability; and,

31 James Anyanzwa, 'Kenya looks to IFC for road construction funding' (The East African), h**ttps://www.theeastafrican.co.ke/business/Kenya-looks-to-IFC-for-road-construction-funding-/**

- maximizing engagement between sectors and the private sector. Strengthening institutional arrangements between the NDA, NIEs and Executing Entities (EE).

Although Kenya has established accredited national implementing entities, the country has not received any GCF funding through direct access. The Kenya GCF Handbook outlines five strategies that the country can use to align itself with the GCF and thus maximize access to climate finance by operationalizing the following five segments adopted from GCF:[32]

- Prioritize pipeline development;
- Strengthen proactive and strategic approach to programming;
- Enhance accessibility and predictability;
- Maximize engagement of the private sector; and,
- Strengthen institutional capabilities.

The National Climate Finance Policy, 2016 (NCFP) was formulated to provide a roadmap to maximize financial opportunities and strengthen institutional and financial mechanisms to ensure that resources are directed efficiently towards national climate and development priorities. This policy underscores the potential role that climate finance can play in supporting priority activities and investment strategies in key economic sectors (TNT, 2016). This is the backdrop against which the NCFP outlines Kenya's priority sectors vis-a-vis key interventions to benefit from climate funds. The priority sectors identified in the policy and respective interventions have been categorized into six priority programmatic areas and interventions, which are characteristically thematic and require multi-stakeholder input to transition Kenya to a low-carbon and resilient economy. The areas identified are:

a. Clean technology and renewable energy development;
b. Agriculture, forestry and other land use (AFOLU);
c. Energy–transport–trade- industry nexus;
d. Agriculture–water–ecosystem-based adaptation (EbA) nexus;
e. Disaster risk management and ending drought emergencies; and,
f. Research and innovation.

Further details on these thematic areas are annexed.

Table 3.12: Summary of climate change funds

CLIMATE CHANGE FUND	OBJECTIVE	MODE OF SUPPORT	DESCRIPTION
The Green Climate Fund (GCF)	Mitigation and adaptation	Grants, concessional loans, capital contribution	The GCF aims to promote climate-resilient development by providing support to developing countries to prevent emissions and pollution and to adapt to the impacts of CC. At $10.3 billion, the GCF is the largest CC fund; it anticipates disbursing $900 million in 2018.
The Global Environmental Fund (GEF)	Adaptation and mitigation	Grants	Since it was established in 1992, the GEF has provided over $18.1 billion in grants and mobilized an additional $94.2 billion in co-financing for more than 4,500 projects in 170 countries. Today, the GEF is an international partnership of 183 countries, international institutions, civil society organizations and the private sector that addresses global environmental issues. GEF has supported GHG emission reduction for 940 CC mitigation projects expected to contribute 8.4 billion tonnes of direct and indirect GHG emission reductions over time and adaptation to CC projects targeting vulnerability reduction for more than 11 million people in 130 countries.
Africa Climate Change Fund (ACCF)	Mitigation and adaptation	Grants	The ACCF supports regional member countries' transition to more climate-resilient, low-carbon development. It also helps countries access greater amounts of climate finance and use the funds received more efficiently and effectively. Total contributions to the ACCF since its inception in 2014 amount to about $13.8 million.

32 GOK 2017: Kenya GCF Handbook: A Simplified and Practical Guide to GCF Procedures Contextualized to Kenya

3.5 Private sector investment in NDC implementation

3.5.1 Private sector investment opportunities

It is important that the national and county government provide policy guidelines that will incentivize the private sector to play a bigger role in implementing both adaptation and mitigation actions. The private sector faces many barriers. They include:

- policy and regulatory;
- access to climate finance and local market;
- affordability and technology;
- knowledge and education;
- other barriers and risks.

In the strategic actions, we have emphasized the need to implement and enforce some of the proactive regulations and guidelines in the Energy Act 2019, the Forest Management and Conservation Act 2017 and the Public Finance Management (Climate Change Fund) Regulations, 2018, and to operationalize the various funds embedded in these Acts. Almost all sectors have well-formulated policies and regulations to enable and incentivize private sector participation. In terms of the ease of doing business, the Government should continue to improve the private sector's ability to engage more strategically. In addition to addressing capacity gaps, incentives are needed to bring the private sector on board.

Apart from policy and regulatory barriers, challenges remain in transport infrastructure and logistics systems (including customs, goods clearance and weighbridge processes), which are persistently weak for a regional trade and transport hub. High energy costs and a weak and interrupted power supply can cripple business, especially manufacturers. 'The ease of doing business in 2019' shows improvement but it is still a concern. Infrastructure, including road congestion and governance issues, still worries investors. This infrastructure deficit, particularly as it relates to energy and transportation infrastructure, increases the cost of doing business and reduces the country's appeal to private investors and its competitiveness.

Additionally, private sector financing decisions are driven mostly by business cases that assess the expected risks versus potential benefits of a particular investment. While climate mitigation presents a mostly positive business case, climate change adaptation actions are difficult due to uncertainties regarding future climate change impacts; the context-specific nature of climate adaptation actions, which makes it difficult to quantify the benefits arising from adaptation actions; and the lack of cost-benefit analyses. To ensure continued and incremental private sector participation, Government should:

- Continue its infrastructure investment programme in energy, telecoms, roads, ports, rail, airports and associated mass transit services (goods and passenger), but ensure that CC is mainstreamed in them;
- Accelerate implementation of infrastructure plans by activating PPPs, ideally starting with small/medium-sized projects to build experience and confidence. Proactively improve understanding within Government of the benefits of PPPs and develop a clear understanding of their complexity, long-term nature and cost and risk implications;
- Fast-track a final policy to promote and regulate competition in the electricity market. The recently enacted Energy Act 2019 addresses this issue comprehensively and needs implementing regulations; and,
- Review and reform procurement policies and regulations for government infrastructure projects to identify and remove bottlenecks.

Ensuring private sector participation in implementing CC priority actions requires understanding their contexts and motivations. Some in the investment sector seek profits, while others deal with manufacturing or the service industry. These same types of private actors may be active in different sectors and at different levels, ranging from national to international. The considerable diversity among private sector actors means that CC impacts them

differently, as they have different levels of exposure and vulnerability to CC. Similarly, they can contribute differently to implementing either mitigation or adaptation actions. The section below explains the different ways in which the private sector may be motivated and incentivized to participate in implementing CC actions.

3.6 Implementation of the NDC Financing Strategy

3.6.1 Status of lead institutions' capacity to implement priority actions

Given the enormity of CC, the number of government ministries and sectors involved in the NDC implementation is very small, totalling only about 10. The technical, functional and coordination roles of CC units or state departments dealing with resource mobilization for priority climate actions should be strengthened. Both individuals and departments need to be capacitated in budget planning, execution and reporting. NDC policies and actions should be matched more closely to budget line descriptions to minimize additional analytical work to support NDC monitoring and reporting. This can be facilitated by implementing climate budget codes in the budgetary planning system. The CC units should focus more attention on strengthening inclusion of NDC actions within MTEF planning processes, ensuring well-costed and economically sound programmes. Better and improved communication between the sectors implementing NDC actions, national planning departments and the Treasury will be needed. If the NDCs are to be achieved, CC programming needs to become more integrated within the national public finance regime. According to a Climate and Development Knowledge Network (CDKN) budgeting report,[33] such efforts offer potential gains for two reasons: i) they strengthen national accountability over CC public spending; and ii) they contribute to improved international reporting to the UNFCCC on the commitments made to realize the goals of the Paris Agreement.

This section reviews the capacity of the eight NDC sectors' CC units with a view to recommending how they can be enhanced to support implementation of the priority mitigation and adaptation actions by ensuring funding and inclusion of priority actions in the MTP and budgeting planning processes to ensure continual future funding. Operationalization of the CCA 2016 provides a good starting point to reconfigure and reconstitute the CCU with effective budget support, reporting and communication lines. Part IV, Article 15, subsection 5 states that each state department, national government, county and public entity shall have the following duties:

a. Integrate the CC action plan into sectoral strategies, action plans and other implementation projections for the assigned legislative and policy functions;

b. Report on sectoral greenhouse gas emissions for the national inventory;

c. Designate a unit with adequate staff and financial resources and appoint a senior officer as head of the unit to coordinate the mainstreaming of the CC action plan and other CC statutory functions and mandates into sectoral strategies for implementation;

d. Regularly monitor and review the performance of the integrated CC functions through sectoral mandates;

e. Put in place and implement mechanisms for sustainability in performance of sectoral mandates; and,

f. Report annually to the Council on the status and progress of performance and implementation of all assigned CC duties and functions.

The status of the CC focal points/units involved in NDC implementation has been annexed.

33 Bird, N 2017: Budgeting for NDC actions initial lessons from four climate-vulnerable countries, ODI and CDKN

3.6.2 Stakeholder recommendations to strengthen implementing organizations

i. **Strengthen climate finance coordination:** Coordination of climate finance activities needs to be strengthened, particularly between CCD and TNT, in line with Climate Change Act 2016 and draft Public Finance Management (Climate Change Fund) Regulations, 2018, once operationalized. Since TNT has the mandate of managing financing, the MEF's CCD must be kept abreast of climate financial flows from DFIs and other sources meant for NDC implementation

ii. **Strengthen KM and MRV of actions and finance:** Knowledge is a critical input into any planning and implementation process and is a requisite for decision-making, resource mobilization, national budgeting and capacity-building. Both KM and MRV in the area of financing activities should be strengthened across all the organizations involved in implementing the financing strategy to ensure that current information is disseminated on strategy implementation progress.

iii. **Conduct capacity development:** Effective and efficient implementation of the financing strategy requires capacity-building at the institutional and individual levels on CC in general; development of bankable projects; enhancing extension services at the county level; resource mobilization; private sector investment opportunities; accessing global climate funds; and the link between CC and development.

iv. **Create a specific budget line for proposal development:** Proposal development is very resource-intensive and often requires expert input and stakeholder consultations to validate the problem statement and research to justify climate impacts. Most CC units lack such financing. This particularly hampers the development of GCF proposals and feasibility studies. The unit needs funds to effectively implement the priority actions listed in the NDC. Currently, few CC units receive funds that specifically support CC projects.

v. **Improve tracking, coding and reporting:** The strategy recommends implementing climate budget codes in the budgetary planning system to allow tracing of funds allocated to priority climate actions that will be integrated in future budgetary planning processes. This will ensure that CCUs match their NDC strategy actions to budget line descriptions, ensuring seamless monitoring and reporting. This can be facilitated if climate budget codes are implemented in the budgetary planning system.

vi. **Develop a guidance framework to operationalize the CCUs:** CCA 2016 provided a framework to establish CCUs in all the ministries. The ministry in charge of CC must develop a framework to operationalize the CCU for effective implementation of the NDC financing strategy.

vii. **Coordinate at the county level:** Climate change structures at the county level need to be strengthened. This requires further investment to address critical capacity organizational and individual capacity to support the units to enhance their effectiveness in climate finance mobilization, monitoring and accounting.

viii. **Build capacity in public private partnerships:** The CCUs' capacity in the area of PPPs in implementing the NDC financing strategy should be strengthened.

ix. **Strengthen gender mainstreaming:** All actors need to strengthen their capacities in terms of mainstreaming gender into climate actions to facilitate implementation of the gender-responsive NDC and financing strategy.

3.7 Implementation of the Financing Strategy

3.7.1 Implementation, monitoring and evaluation matrix

Table 3.13: Implementation, monitoring and evaluation of strategic options of the financing strategy

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
1. SOCIAL PROTECTION, DEVOLUTION AND ASAL: DISASTER (DROUGHT AND FLOOD) RISK MANAGEMENT (Funding gap=$918 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Operationalize county emergency funds through subsidiary legislation and counties to allocate 2% of all source revenue annually in line with the PFMA • Establish and operationalize the NCCF and CCCFs • Operationalize and annually capitalize the NDEF, from both domestic and international sources • Implement the national disaster risk financing strategy with support from domestic, bilateral and multilateral financial resources • Upscale shock responsive cash transfer programmes with domestic, bilateral and multilateral financial resources • Enhance coordination of disaster preparedness and response by all actors • Build capacities of public DRM actors to access domestic and international climate and DRM financing sources e.g. GCF, Global Facility for Disaster Reduction and Recovery, World Bank	• Amount of money appropriated by Parliament to the funds • Amount of money appropriated to the climate funds • No. of projects funded at the national and county levels • Amount of money	• TNT • NDMA • CCD, NDMA and NT	50% of the total gap	Short Short Medium	2021 2021 2024
Enhance private sector investment and participation	• Promote risk transfer mechanisms for disaster vulnerable sectors, such as agriculture and livestock, through public private partnerships • Develop framework for enhanced private sector participation in disaster response. Such framework should provide for accountability and transparency • Promote private sector investment in disaster preparedness and resilience- building initiatives, e.g. through corporate social responsibility projects, and integrate climate and disaster risks into corporate risk management schemes	Number of private insurance participating in the KLIP and KNAIP Amount of money insured	NDMA, MoALF and NT	30%	Medium	2024
Enhance access to innovative and impact financing	• Explore and pilot risk pooling in disaster response at regional level and among counties • Incentivize private sector and CSO actors' innovations in disaster risk management	No. of vulnerable farmers and small businesses receiving loans from Vision Fund as part of ARDIS policy	NDMA, MOALFI and private sector farmers	20%	Short and medium	2024

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
2. AGRICULTURE, LIVESTOCK AND FISHERIES: FOOD AND NUTRITION SECURITY (Funding gap=$2.738 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Government incentives to promote sustainable agricultural productivity along the value chains: including tax incentives for CSA and price supports to actors in the organic agriculture industry to encourage expansion of organic production or other sustainable agricultural system[34] (see Note 1 below); • Advocate for increased budget allocation by including priority climate actions in the MTEF, MTP of Vision 2030 and county development plans (CIDPs and ADPs) • Operationalize national and county CC funds • Establish framework to increase bilateral/multilateral support for projects and programmes that enhance implementation of climate priority actions, e.g., SIVAP, government support and grant funding from the Global Agriculture and Food Security Program (GAFSP) (see Note 2) • Strengthen MoALF Climate Change Unit's (CCU) capacity to develop bankable proposals for funding from global climate funds, e.g. Global Environment Facility (GEF), Green Climate Fund (GCF), and any other relevant fund • Tap into affirmative funds to support gender responsiveness – inclusion of women, youth and people with disabilities (vulnerable groups) in sustainable agricultural productivity	• Number of farmers practising climate smart agriculture that benefit from incentives. • Number of climate priority actions included in budget planning documents • Amount of money from climate funds • Amount of money from bilateral and multilateral organizations • No. of proposals submitted to the various funds and the total amounts • Amount of money fundraised from affirmative funds	MOALF and TNT MOALF and TNT MOALF MOALF and NT MOALF, NT and CCD Counties and MOALF	40% of the gap	Short and medium Medium	2022/24 2022/24
Enhance private sector investment and participation	• Improved loan conditions: Restructure agriculture finance institutions to provide lower interest rates and longer grace periods that can support farmers producing grain and nutritious crops (see Note 4) • Encourage PPPs for increased productivity, e.g. PPP to develop irrigation infrastructure for increased productivity • Investment incentives: Create awareness on areas where private sector can participate and invest on CSA value chains	• No. of subsistence crop farmers receiving loans from financial institutions • No. of projects and the amount of money funded under PPP	Individual farmers and farming companies Farming companies Private sector	20% of the gap	Medium	2024
Innovative and impact financing	• Blended finance: Develop and encourage practical innovative solutions that boost agricultural productivity and incomes while safeguarding the environment • Impact investment: Proactively encourage private sector to invest in projects that have measurable impact, and achieve transformative change in agriculture productivity • Innovation investment: Provide financing to achieve climate resiliency in agricultural systems, e.g. KCEP-CRAL	• No. and amount of money farmers receiving from KCSAP. • No. of large scale and small-scale farmers benefitting from impact investment • No. of farmers benefiting from KCEP-CRAL	MOALF with individual farmers and farming companies MOALF with individual farmers and farming companies	20% of the gap	Medium	2024

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STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
3. WATER, SANITATION AND IRRIGATION: WATER AND THE BLUE ECONOMY (funding gap=$4.261 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Strengthen coordination and intergovernmental relations between national and county levels to support domestic finance flows • Operationalize the financing provisions enshrined in Kenya's water relevant regulations and policies (national and county) • Increase revenues from water abstractions, e.g. borehole fees charged by WRA • Operationalize relevant policies and regulations to support private sector investment in water, e.g. Nairobi Water Fund, Eldoret Water Fund • Strengthen framework for accessing capital from multilateral and bilateral funds • Build capacity of CC units at the ministry and county levels to develop bankable proposals to mobilize resources from applicable climate funds • Strengthen national MRV of financial flows in the sector	• Amount of money flowing from the national to the county • No. of regulations operationalized and amount of money made available annually • Amount of revenue from abstraction • No. of private sector investors due to relevant regulations • Number of bankable proposals submitted to bilateral/ multilateral organizations and climate funds • No. of MRV reports developed	MOWSI, TNT and counties MOWSI, TNT and counties	40%	Medium Medium	2024 2024
Enhance private sector investment and participation	• Create awareness of private sector investment opportunities, e.g. the Kenya Pooled Water Fund (KPWF)	• No. of water service providers that received financial support from KPWF	WSP and other water vendors	30%	Medium to long	2024-2030
Innovative and impact financing	• Issue green bonds to enhance water supply and distribution • Impact and social financing, e.g. The Nature Conservancy and Nairobi Water Fund • Charity events to mobilize resources, e.g. marathons (Ndakaini) • Use of smart metering to conserve and ensure distribution to more people at a lower cost	• No. of green bonds issued. • Amount of money realized from impact investment opportunities	MWS and I and counties	30%	Medium to long	2024-2030

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
4. HEALTH AND ENVIRONMENT : HEALTH AND HUMAN SETTLEMENT (funding gap=$500 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Budget support - prioritization of relevant actions, e.g. Constituency Development Fund (CDF) can be used to build sanitation systems, especially in schools, leveraging the fact that health and housing are part of the Big Four Agenda • Build institutional and individual capacity and environmental and social safeguard frameworks to accelerate funding from bilateral and multilateral donors. • Scale up donor- government co-funding by harmonizing project execution approaches by strengthening state departments' and county governments' project implementation • Enhance health in all policy approaches through collaboration and partnerships between national and county governments in financing health, sanitation, environment and human settlement programmes	• Amount of money from exchequer to the counties for sanitation • Amount of money received from donors • No. of proposals submitted to the various funds • No. of proposals funded and total amounts • No. of people / households benefitting from primary healthcare	MoH and counties MoH and counties MOH, CoG and counties	50%	Short Medium	2022 2024
Enhance private sector investment and participation	• Incentivize private sector to participate in primary health and preventive care through waivers on permits for qualified private health providers in remote rural areas/ counties • Need for innovative insurance schemes to reduce individual out-of-pocket spending, which is still unacceptably high especially in rural areas	• Number of PPPs and the amounts involved.	Businesses and private medical institutions	30%	Medium	2024
Innovative and impact financing	• Guarantee funding by DFIs: Can stimulate small and growing sanitation businesses who do not qualify for a commercial loan from banks or micro-finance institutions. The loan is issued through commercial banks, but payments are collected via monthly deposits through Mpesa (Muchangi et al., 2018) • Public private partnership scheme put in place, 'Output-based financing reforms' to be used to incentivize prioritization of prevention services and ensure greater access to those who need them. These may include use of bonuses for health workers who work in hard-to-reach areas or areas with low service coverage to improve service coverage there	• No. of sanitation businesses that are operational and total amounts of funds				

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
5. ENVIRONMENT AND DEVOLUTION: SOLID WASTE MANAGEMENT (funding gap=$274 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Budget support and allocation: Include relevant priority climate actions in subsequent budget frameworks MTEF AND MTPs of Vision 2030 • Counties to develop gender-responsive frameworks for fees and levies targeting solid waste (generating products and services): Polluter pays principle, e.g. for water bills, provide a percentage for sewage fees, solid waste provided in the rental fees • Build technical capacity of solid waste management stakeholders at the county level so they can so they can adequately prioritize in planning and budgeting framework • Explore counties' inclusion of an environmental governance parameter (solid waste management) in the CRA's equitable share allocation formula • Counties to develop costed solid waste management strategies to facilitate funds mobilization • Putting in place a solid waste management trust fund with funding from public and non-public source • Institute fines and penalties on solid waste management as funding sources	• Amount of money appropriated by Parliament to climate actions included in MTEF 2020/21 and MTP IV • No. of proposals submitted • No. of proposals funded • Amount of money obtained from NCCF and CCCF	MEF and counties	30%	Short	2022
Enhance private sector investment and participation	• GOK Incentives to private sector: i) tax exemption for sustainable waste management equipment and materials, including equipment for recycling, composting, transporting and waste-compacting; and ii) tax incentives to assist investors to expand or replicate investments in waste recycling and enhance circular economy • Explore opportunities in emerging carbon market (ITMO) (see Note 2)	• Solid waste circular NAMA operationalized	MEF and Nairobi County	40%	Medium	2024
Enhance access to innovative and impact financing	• Institute take-back scheme targeting PET, cans and glass bottles (see Note 3)	• No. of youth cooperatives funded • Amount of money disbursed for waste collection initiatives	Businesses and county government	30%	Medium to long	2024-2030

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
6. FORESTRY, WILDLIFE AND TOURISM INTERVENTION AREA: FORESTRY, WILDLIFE AND TOURISM (funding gap=$616 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	Budget support and allocation - to increase budget support and allocation (national and county): Include relevant priority climate actions in subsequent MTEF, MTP of Vision 2030 Government revenues from user fees/ harvesting or use licenses which take various forms including: Operationalize the NCCF and the NCCFs • Advocate for increased budgetary allocations for the forest sector • Allocate additional resources for tree planting activities • Fast track implementation of the National tree planting strategy/ programme Operationalize: • Financing provisions enshrined in Kenya's forestry regulations and policies (national and county) • Relevant policies and regulations to support private sector investment in forests • Relevant funds including forest fund Diversify revenue streams; e.g. ecotourism, ecosystem service payments • Build capacity of KFS management to access capital from multilateral and bilateral funds • Build capacity of climate focal point to develop bankable proposals • Strengthen national MRV of financial flows in the sector	• Amount of money appropriated by parliament to climate actions included in MTEF 2020/21 and MTP IV • Amount of revenues from user fees and licenses. • No. of proposals submitted • No. of proposals funded • Amount of money obtained from NCCF and CCCF • Amount of additional funds received from the exchequer. • No. of private sector participating in forestry and the amount of money invested • Capitalized forest funds • No. of bankable proposals developed and sent to potential funders • No. of bankable proposals submitted to climate funds	MEF, KFS and TNT TNT, CCD and MEF KFS, CCD and MEF	30%	Short Medium	2022 2024
Enhance private sector investment and participation	• Strengthen access to carbon market /bond instrument: (see Note 3) • Public private partnerships with saw millers, tea companies, etc. (see Note 4) • Fast-track formulation and implementation of REDD strategy and investment plan – possibility to tap into the GCF • Create awareness of private sector investment opportunities within the private sector • Operationalize relevant policies and regulations to support private sector investment in forest sector	• Amount of money invested in creating new forest as a result of carbon instruments, PPP and REDD+	KFS and business	40%	Medium	2024

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
Enhance access to innovative and impact financing	• Strengthen and expand partnerships to support tree planting through 'adopt a forest' strategy 2022 (see Note 5) • Future green bond to support afforestation investments, smallholders' forest management and reforestation targeting institutional investors, such as pension funds • 'Adopt a forest' concept, e.g. KRA, Israel, Cabinet, Kenya Army, Equity, Safaricom, KDF, South Korea (see Note 6) • Impact financing, e.g. Komaza (see Note 7) • Social financing, E.g. one-acre fund giving farmers seedlings • Promote 'plant your age' messages as part of celebrating birthdays • 'Adopt a tree' as a public health intervention, which is also supportive of health sector	• No. of forest acres managed by government companies • Proceeds invested in new forest • No. of hectares of forest adopted by private companies	KFS and businesses Farmers Businesses	30%	Medium to long	2024
7. TRADE AND INDUSTRIALIZATION: MANUFACTURING (funding gap=$47 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Budget support and allocation: Include relevant priority climate actions in subsequent MTEF AND MTPs of Vision 2030 • Energy Act 2019 has enhanced Energy and Resource Efficiency regulations and institutions supportive of private sector investments in renewable energy, energy and resource efficiency. • Increase funding to KAM/ manufacturers for capacity-building on energy efficiency and energy audits (from domestic and external sources) • Support involvement of women, youth and persons with disabilities in manufacturing climate-related products through affirmative action funds • Develop the capacity of manufacturing actors to access financing from global CC finance sources such as GCF and GEF • Strengthen private sector proposal development to access funds from the NCCF and the CCCFs • Develop policies that promote access to affordable finance by manufacturers to implement clean energy and energy efficiency projects	• Amount of money appropriated by Parliament to climate actions included in MTEF 2020/21 and MTP IV • No. of companies benefitting from energy efficiency and conservation measures • No. of women funded and amount capitalized • No. of proposals submitted • No. of proposals funded • Amount of money obtained from NCCF and CCCF	MoT&I, TNT	20%	Continuous	2020-2030
Enhance private sector investment and participation	• Encourage CC integration in corporate planning and private sector projects • Strengthen the KIE to offer financial support (loans) to small and medium manufacturers to implement energy efficiency projects • Raise awareness of clean energy and energy efficiency projects	• No. of companies participating in energy audits • No. of trained technicians running energy efficiency consultancies		80%	Continuous	2020-30

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
8. ENERGY SECTOR: RENEWABLE ENERGY DEVELOPMENT (Funding gap=$7,033)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Budget support and allocation: Include relevant priority climate actions in subsequent national and county planning frameworks such as MTEF, MTP of Vision 2030, CIDP and ADP • Increase national and county budget allocation for clean energy projects • Implement fiscal policies that encourage innovation and use of clean energy as those provided in the Energy Act 2019 • Operationalize the financial provisions under different legislations such as the Energy Act, 2019 (including the Rural Electrification Programme Fund), and NCCF and CCCFs • Enhance efforts such as capacity development, proposal development and strategic partnerships to mobilize resources from external sources • Operationalize the gender policy in the energy sector • Mobilize resources from external sources to support clean cooking solutions targeted to women • Develop the capacity of renewable energy actors to access financing from global CC finance sources such as GCF and GEF	• Amount of money appropriated by Parliament to climate actions included in MTEF 2020/21 and MTP IV • Amount of revenues from user fees and licenses. • No. of staff capacitated • No. of women benefitting from operationalized gender policy • No. of proposals submitted • No. of proposals funded and amount of money obtained from NCCF and CCCF	MOE and TNT	30%	Short Medium	2022 2024
Enhance private sector investment and participation	• Implement PPPs in green energy projects such as geothermal, clean cook stoves • Establish a risk facility fund to de-risk early investment in clean energy, to be established through tripartite partnership of government, DFIs and private sector • Promote development of loan programmes through microfinancing institutions to assist in the upfront costs of clean cooking solutions • MOE still seeking the inclusion of the private sector in the utilization of the geothermal potential, which is estimated at 10,000 megawatts, under the PPP arrangement to operationalize feed in tariffs and off-grid plants (see Note 3)	• No. of renewable energy projects funded • No. of households with clean cooking solutions. • No. of companies benefitting from risk facilities. • Households benefitting from clean cooking solutions • No. of private sector and how much MW	Businesses and the regulator	40%	Short	2022
Enhance access to innovative and impact financing	• Promote results-based financing for innovative mini-grid projects development, e.g. Kenergy Renewables, a developer of renewable power generation assets, was awarded a 20-year contract to generate 40 megawatts annually to serve 50,000[35] households in Laikipia County • Promote development of carbon markets in the renewable energy sector • Promote access to Challenge Fund	• No. of companies participated and accessed the results-based financing • Renewable energy projects commissioned • No. of projects benefitting from carbon and challenge funds	Businesses. the regulator and Kenya Power	30%	Short to medium	2020-2024

35 https://www.kenergyrenewables.com/

STRATEGIC OBJECTIVE	STRATEGIC ACTIONS	KPIS	RESPONSIBILITY	ESTIMATED COSTS	TIMELINE (short/medium/long-term)	TARGET
9. TRANSPORT INFRASTRUCTURE: TRANSPORT (Funding gap=$2.2 million)						
Enhance mobilization of funding from public finance (domestic and international) sources	• Budget support and allocation: Include relevant priority climate actions in subsequent MTEF AND MTP of Vision 2030 • Enhance internal and external funding for clean (non-motorized) transport infrastructure • Diversify revenue sources to support climate-proofed infrastructure projects • Develop transport actors' capacity to access financing from global CC finance sources such as GCF and GEF • Enhance funding for emergency response to restore infrastructure destroyed by climate extreme events	• Amount of money appropriated by parliament to climate actions included in MTEF 2020/21 and MTP IV • Amount of revenue collected from the RMLF • No. of proposals submitted • No. of proposals funded • Amount of money obtained from NCCF and CCCF	MoT&I Kenya Roads Board (KRB) KenHA and KURA	50%	Medium Medium Medium to long	2024 2024 2024-2030
Enhance private sector investment and participation	• Create an enabling policy environment for private sector investment in green transport systems such as electric/hybrid vehicles • Promote PPPs in development of low emission transport infrastructure • Results-based financing for successful projects such as clean vehicle fleets, mass transport and light rail	• No. of road infrastructure under PPP	Private companies with KRB KenHA and KURA	30%	Medium to long	2024-2030
Enhance access to innovative and impact financing	• Additional funds through lease of land and other property along the road corridor, renting the roadside for advertising and placement of utilities (see Note 2)		Private companies with KRB KenHA and KURA	20%	Medium to long	2024-2030

3.8 Monitoring and Review

A number of key steps are required to implement this financing strategy and deliver it successfully. Implementing these steps depends on the CCD's coordination of the MEF and TNT to ensure action by multiple stakeholders and is, therefore, subject to several execution risks. The key to mitigating these risks will be to work with the budgetary planning department in all sectors to define the steps by which to include climate actions and budget lines into annual budgetary processes. Successful delivery of the implementation framework will require actions by CCD and the lead implementing organizations, as well as the involvement of the Council of Governors and counties and their actions to ensure private sector involvement. Once operational, this financing strategy shall be reviewed after every five years to determine whether:

- it is operating as designed and is consistent with NDC;
- amendments are needed based on changes with financing organizations; and,
- whether it is aligned with new policies, new legislative requirements and new government planning documents, such as MTP IV and MTEFs.

3.9 Conclusions

Given that the Government has adopted zero-based budgeting (ZBB), whereby all expenses must be justified for each new financial period, each sector has the opportunity to design and include climate priority initiatives for funding each financial year. While national and county governments will also be involved in implementing the strategy, it is important that they also provide policy guidelines and regulations that will incentivize the private sector to play a larger role in implementing both adaptation and mitigation actions. In addition to implementing and enforcing the current policies, both national and county governments will need to put in place new policies, regulations and guidelines to generally improve the ease of doing business for private sector; that is, to engage more strategically. In addition to capacity gaps, incentive measures are needed to bring the private sector on board. These include the need to involve the sector in attracting international climate finance by putting in place financial and economic instruments and cooperative approaches/market-based instruments that distribute benefits and risks equitably. This involves building the private sector's capacity to mobilize climate finance from bilateral and multilateral sources for both adaptation and mitigation sectors. Lead implementing organizations also need to be encouraged to mobilize funds from other funding sources, such as innovation and challenge funds, impact investors, partnerships with non-state actors and social and development impact funds. In this regard and in line with Climate Change Act 2016 and draft Public Finance Management (Climate Change Fund) Regulations, 2018, once operationalized, coordination of climate finance activities between CCD and TNT must be strengthened. As stated earlier, as TNT's mandate is to manage financing, the MEF's CCD must be kept abreast of climate financial flows from DFIs and other sources meant for NDC implementation.

4. Annexes

4.1 References

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Climate Change Act 2016

Adaptation Technical Analysis Report (ATAR) 2018-2022

Mitigation Technical Analysis Report (MTAR)

Medium Term Expenditure Framework 2019/20-2021/22

Mid-Term Plan II and III

National Policy on Climate Change May 2016

Disaster Risk Financial Instruments in Kenya, April 2018

County Intergrated Development Plan

Finance for Reducing Disaster Risk, UNDP, March 2015

Kenya Strategic Investment Framework for Sustainable Land Management 2017-2022

4.2 Guide to Accessing Climate Funds

4.2.1 The Green Climate Fund (GCF)

ABOUT

The GCF is a direct access, multilateral fund established in 2010 within the framework of the UNFCCC to support the shift to low-emission and climate-resilient development by investing in adaptation and mitigation projects in the developing world.

The Fund became fully operational in 2015 and has set a goal of mobilizing $100 billion per year by 2020 from public, private and philanthropic sources, including cities. The GCF is the world's largest fund dedicated to fighting CC. The initial resource mobilization period lasts from 2015–2018 and the Fund accepts pledges on an ongoing basis. Once 60 percent of contributions have been approved toward projects and programmes, the GCF will rely on a systematic process to replenish resources.

FOCUS AREAS

The GFC aims for a 50:50 balance between mitigation and adaptation investments; 50 percent of the adaptation allocation is aimed at LDCs, Small Island Developing States (SIDs), and African States. The focus areas for mitigation include low-emission transport, low-emission energy access, and power generation at all scales; reduced emissions from buildings, cities, industries and appliances; and sustainable land and forest management (including REDD+ implementation) for mitigation. The focus areas for adaptation include increased resilience of health, food, and water systems; infrastructure; ecosystems; and enhanced livelihoods of vulnerable people.

HOW TO ACCESS THE FUND

The GCF publishes a call for proposals on the Fund's website and also accepts concept notes and funding proposals on a rolling basis. To access funding, public and private entities may submit funding proposals through GCF's Accredited Entities (AE), or go through a six-month accreditation process.

Organizations already accredited by the GEF, the AF, and Directorate-General for International Cooperation and Development (DG DEVCO) are eligible for a three-month, fast-track accreditation.

After accreditation, an AE can submit concept notes and project and programme proposals for funding in close consultation with National Designated Authorities (NDAs).

FOCUS

Mitigation, adaptation

ELIGIBILITY

All developing countries that are party to the UNFCCC

METHOD OF SUPPORT

Grants, concessional loans, subordinated debt, equity, guarantees

HOW TO ACCESS

For proposals under $10 million and with minimal social and environmental risks, the GCF has a new Simplified Approval Process

FUND WEBSITE

www.greenclimate.fund

POTENTIAL FUNDING OPPORTUNITY

- Development and implementation of NAPs and HNAPs
- Preventive and adaptive actions, such as setting up extreme weather early warning systems and improving water infrastructure, which can reduce the severity of climate impacts on health
- Carbon measurement and reduction within the health sector
- Renewable energy systems for the health sector
- Green building/net-zero health care facilities
- Training and regulatory/framework reforms

The NDA acts as the main point of contact between a country and the Fund and seeks to ensure activities align with strategic national objectives and priorities, while AEs oversee, supervise, manage, and monitor their GCF-approved projects and programmes. To be considered for funding, a proposal must be accompanied by a formal letter of no-objection to the Secretariat from the NDA.

APPROVAL PROCESS

As a voluntary but recommended step, AEs may submit a concept note to present a summary of a proposed project/program. In consultation with the NDA, the Secretariat provides feedback and recommendations to the AE and clarifies if the concept is endorsed, not endorsed with possibility of resubmission, or rejected. Full proposals

submitted to the Secretariat are evaluated against the GCF's investment criteria: impact potential, paradigm shift potential, sustainable development potential, responsible to recipients' needs, country ownership, efficiency, and effectiveness.

Once the proposal passes the initial review stage, the proposal is reviewed by the Fund's Independent Technical Advisory Panel (ITAP). At this point, the proposal may require additional clarification from the AE.

After the ITAP assessment and the Secretariat's review, the proposal is submitted to the GFC Board for consideration no later than three months before the Board meeting where the funding proposal will be considered.

The Board makes one of the following decisions through consensus: approve funding, approve funding with the conditions and recommendations made to the funding proposal, or reject the funding proposal. Following the approval of funding, a Funded Activity Agreement (FAA) between the AE and GCF is negotiated and signed.

4.2.2 The Adaptation Fund (AF)

ABOUT

The AF is a multilateral fund established in 2001 under the Kyoto Protocol of the UNFCCC. Officially launched in 2007, the AF finances concrete adaptation projects and programmes in developing countries through direct access. The Fund is financed in part by government and private donors, as well as a 2 percent share of the proceeds of Certified Emission Reductions (CER), the tradable emission credits issued under the Protocol's Clean Development Mechanism (CDM). The World Bank acts as the trustee for the AF and the Global environment Facility (GEF) provides secretariat services on an interim basis.

FOCUS AREAS

No prescribed sectors or approaches are in place, but projects/programmes must align with national priorities and have visible and tangible results on the ground aimed at addressing the adverse impacts of and risks posed by CC. To date, the AF has supported adaptation in the following sectors: food and water security, coastal management, agriculture, disaster risk reduction, rural development, and forests.

HOW TO ACCESS THE FUND

Organizations seeking financial resources must apply to be an AE with the AF or submit proposals directly through a national, regional, or multilateral implementing entity accredited by the AF. Once an organization has received accreditation, it can submit project proposals for approval by the AF Board. A proposal must follow a specified template, be written in English, and be submitted at least nine weeks prior to the Fund's Board meeting, which occurs three times per year

FOCUS

Projects/programmes aligned with national priorities with tangible results

ELIGIBILITY

All developing countries (LDCs and SIDs) that are a party to the Kyoto Protocol

METHOD OF SUPPORT

Grants

HOW TO ACCESS

Applications must go through an accredited entity

FUND WEBSITE

www.adaptation-fund.org

POTENTIAL FUNDING OPPORTUNITY

» No projects to date focus specifically on climate and health adaptation, however cross-cutting programming that integrates health with disaster risk reduction and early warning systems for food security or disease surveillance remains a priority target.

APPROVAL PROCESS

Regular adaptation project and programme proposals undergo either a one-step or a two-step approval process. A small project, i.e., one requiring a contribution from the AF of less

than $1 million, requires a one-step approval process where the implementing entity directly submits a fully developed project proposal to the AF Board for approval. For projects larger than $1 million, a two-step process is necessary; the implementing entity must first submit a brief project concept, which is either endorsed, not endorsed, or rejected by the Board. If endorsed, the implementing entity submits a fully developed project or programme document to be similarly approved, not approved, or rejected by the Board.

4.2.3 The Least Developed Countries Fund (LDCF)

ABOUT

The LDCF is a multilateral fund established in 2001 under the UNFCCC and operationalized in 2002. It aims to address the special needs of the world's 49 LDCs as they adapt to the effects of CC; its priority is supporting the preparation and implementation of NAPAs. Developed country parties and other parties in a position to do so voluntarily contribute to the fund, which is administered by the GEF with the World Bank as the trustee.

FOCUS AREAS

Any sector identified as a priority area under the NAPA is relevant for the LDCF. The main sectors that have been funded include: agriculture (29 percent), natural resource management (17 percent), water resource management (14 percent), coastal zone management (13 percent), climate information services (12 percent), disaster risk management (9 percent), infrastructure (5 percent), health (5 percent), and cross-cutting programmes (1 percent).

HOW TO ACCESS THE FUND

The LDCF accepts applications on a rolling basis for projects that prepare and implement NAPAs. Project proponents must secure the endorsement of the national GEF Operational Focal Point prior to requesting assistance. Proposal applications are accepted by the GEF Secretariat through one of its 18 implementing agencies.

APPROVAL PROCESS

Projects over $2 million are referred to as Full-sized Projects (FSPs); those $2 million or less are referred to as Medium-sized Projects (MSPs). MSPs follow a more streamlined project cycle compared to FSPs. For FSPs, submission to the GEF under the LDCF starts with a Project Identification Form (PIF), followed by a CEO Endorsement Form. MSPs may start with the CEO Endorsement Form. Once the GEF CEO endorses the project, the funding is released to the implementing agency.

FOCUS

NAPA priority sectors

ELIGIBILITY

48 LDCs, of which 34 are in Africa: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Togo, Tanzania, Uganda, and Zambia.

METHOD OF SUPPORT

Grants

HOW TO ACCESS

Proposal applications must go through one of the GEF's 18 implementing agencies

FUND WEBSITE

www.thegef.org/topics/least-developed-countries fund-ldcf

POTENTIAL FUNDING OPPORTUNITY

» Revise, develop, and/or implement the NAP for building health resilience to climate change.

4.2.4 Africa Climate Change Fund (ACCF)

ABOUT

The ACCF is a bilateral, multi-donor trust fund created by the African Development Bank (AfDB) in April 2014 to support regional member countries' transition to more climate-resilient, low-carbon development, and to help countries access greater amounts of climate finance and use funds more efficiently and effectively.

To date, the ACCF has approved eight small grant projects totalling $3.3 million. The approved projects are supporting six countries (Mali, Kenya, Swaziland, Cabo Verde, Zanzibar (Tanzania), and Côte d'Ivoire) to strengthen their capacities to access international climate finance; two multinational projects were also approved.

FOCUS AREAS

The scope of the ACCF is sufficiently wide to permit a broad range of activities, including: preparation for accessing climate funding; integration of CC and green growth into strategic documents and/or projects; preparation and funding of adaptation and mitigation projects; climate change-related knowledge management and information sharing; capacity-building; preparation of climate change-resilient and low-carbon strategies and policies; green growth analysis work; and advocacy and awareness-raising.

HOW TO ACCESS THE FUND

Funding opportunities are available through a public call for proposals. Calls for proposals were held in 2014 and 2017, both with a one-month application window. Eligible beneficiaries must submit a concept note following a template.

FOCUS

Mitigation, Adaptation

ELIGIBILITY

Grant recipients may include African governments, nongovernmental organizations (NGOs), research institutions, and regional institutions (jointly referred to as external recipients)

METHOD OF SUPPORT

Grants

HOW TO ACCESS

Funding opportunities are available through a public call for proposals

FUND WEBSITE

www.afdb.org/en/topics-andsectors/initiatives-partnerships/Africa-climate-change-fund/

POTENTIAL FUNDING OPPORTUNITY

- Capacity-building in climate change and green growth for African countries and stakeholders at national and regional levels.
- Leveraging of funds to access larger amounts of climate finance and more effective use of funds provided.

HOW TO ACCESS THE FUND

Funding opportunities are available through a public call for proposals. Calls for proposals were held in 2014 and 2017, both with a one-month application window. Eligible beneficiaries must submit a concept note following a template.

APPROVAL PROCESS

Applicants submit a concept note in response to a public call for proposals. The ACCF conducts an initial screening of all concept notes received by the deadline against established criteria.

Shortlisted proponents are invited to present a full project proposal and are given approximately one month to prepare a full proposal. Proposals are reviewed by two AfDB experts.

4.3 Kenya's priority climate financing programmatic areas

Table 4.1 Programmatic area 1: Clean technology and renewable energy development

CLEAN TECHNOLOGY AND RENEWABLE ENERGY DEVELOPMENT		
PROGRAMME ELEMENTS	**GCF STRATEGIC IMPACT AREAS**	**KEY PARTNERS**
1. Expansion of renewable energy, such as geothermal, solar, wind and biomass electricity generation	Low-emission energy access and power generation (M)	Ministry of Energy, Ministry of Devolution and National Planning, county governments, community, private sector, CSOs
2. Energy efficiency in public buildings	Energy efficient buildings, cities and industries (M)	Ministry of Transport, Infrastructure, Housing and Urban Development, Ministry of Energy, county governments, community, private sector, CSOs
3. Energy efficient household products, including solar lighting and improved charcoal and gas cookstoves	Low-emission energy access and power generation (M)	Ministry of Energy, county governments, Ministry of Devolution and National Planning, community, private sector, CSOs
4. Climate-proofing energy infrastructure, which refers to integrating CC risks and opportunities in infrastructure design, operation and management	Low-emission energy access and power generation (M) Resilient infrastructure and built environment to CC threats (A)	Ministry of Transport, Infrastructure, Housing and Urban Development, Ministry of Energy, county governments, Ministry of Devolution and National Planning, community, private sector, CSOs
5. Exploration of the allocation of royalties from the extractives sector to a fund to support climate-resilient and low-carbon actions	Low-emission energy access and power generation (M) Infrastructure and built environment resilient to CC threats (A)	National Treasury, Ministry of Industry, Trade and Cooperatives, county governments, Ministry of Devolution and National Planning, Ministry of Energy, community, private sector, CSOs

Source: Modified from the Kenya Climate Finance Policy (National Treasury, 2017)

*A = Adaptation; M = Mitigation

Table 4.2 Programmatic area 2: Agriculture, forestry and other land use (AFOLU)

AGRICULTURE FORESTRY AND OTHER LAND USE (AFOLU)		
PROGRAMME ELEMENTS	**GCF STRATEGIC IMPACT AREAS**	**KEY PARTNERS**
1. Reduction of deforestation and forest degradation	• Sustainable land use and forest management (M) • Resilient ecosystems (A) • Increased health and well-being and food and water security (A)	MoALF, MoWI, Ministry of Environment (KFS, KEFRI etc), County Governments, community, private sector, CSOs
2. Conservation and sustainable management of forest areas		
3. Conservation and protection of water towers		
4. Increased afforestation and reforestation activities, such as restoration of dry and arid land forests and reforestation of degraded forests		
5. Development of sustainable fuel wood plantations	• Low-emission energy access and power generation (M) • Sustainable land use and forest management (M) • Increased health and well-being (A) • Enhanced livelihoods of the most vulnerable people, communities, and regions (A)	MoALF, MoWI, Ministry of Environment (KFS, KEFRI etc), Ministry of Energy, county governments, community, private sector, CSOs

Source: Modified from the Kenya Climate Finance Policy (National Treasury, 2017)

*A = Adaptation; M = Mitigation

Table 4.3 Programmatic area 3: Energy–transport–trade and industry nexus

ENERGY–TRANSPORT–TRADE AND INDUSTRY NEXUS		
PROGRAMME ELEMENTS	**GCF STRATEGIC IMPACT AREAS**	**KEY PARTNERS**
1. Promote adoption of low-emitting clean energy sources such as biofuels, liquefied petroleum gas or liquefied natural gas	Low-emission energy access and power generation (M)	Ministry of Transport, Infrastructure, Housing and Urban Development, Ministry of Energy, county governments, Ministry of Devolution and National Planning, community, private sector, CSOs
2. Promote fuel switching, e.g., from a fossil fuel-driven railway to clean electricity	• Low-emission transport (M) • Energy efficient buildings, cities and industries (M)	
3. Mass rapid transit system for Nairobi, such as bus rapid transit with light rail transit corridors		
4. Improvements in heavy duty and passenger vehicle efficiency through improved fuel economy, motor vehicle labelling and feebate systems		
5. Climate-proofing of transport infrastructure	Low-emission transport (M)	
6. Climate-proofing transport infrastructure, including storage facilities	• Resilient built environment to CC threats (A) • Enhanced livelihoods of the most vulnerable people, communities, and regions • Low-emission transport (M) • Resilient infrastructure and built environment to CC threats (A)	Ministry of Industry, Trade and Cooperatives, county governments, Ministry of Tourism, community, private sector, CSOs Ministry of Transport, Infrastructure, Housing and Urban Development, Ministry of Energy, county governments, community, private sector, CSOs
7. Promotion of clean technologies, such as replacing clinker in the cement mix with alternative materials to reduce emissions		
8. Energy efficiency in industry	Low emission (M)	Ministry of Industry, Trade and Cooperatives, county governments, community, private sector, CSOs
9. Industrial-scale cogeneration using biogas produced from agricultural residues to generate electricity and heat	• Low-emission energy access and power generation (M) • Low-emission transport (M) • Energy efficient buildings, cities and industries (M)	Ministry of Industry, Trade and Cooperatives, Ministry of Energy, county governments, community, private sector, CSOs
10. Industrial-scale cogeneration using biogas produced from agricultural residues to generate electricity and heat	Low-emission energy access and power generation (M)	Ministry of Industry, Trade and Cooperatives, Ministry of Energy, Ministry of Devolution and National Planning, county governments, community, private sector, CSOs
11. Development of green industrial zones, such as a geothermal industrial zone		
12. Climate-proofing of industrial facilities	• Low-emission energy access and power generation (M) • Energy efficient buildings, cities and industries (M)	
13. Promotion of Kenya as a low-carbon footprint destination through a programme to green the sector; for example, energy efficiency through actions such as solar water heating and lighting and efficient passenger transport	• Low-emission energy access and power generation (M) • Low-emission transport (M) • Energy efficient buildings, cities and industries (M)	Ministry of Transport, Infrastructure, Housing and Urban Development, Ministry of Energy, county governments, community, private sector, CSOs
14. Research to understand the vulnerabilities of wildlife populations and the potential impacts of tourism	Resilient ecosystems (A)	Ministry of Environment (KWS, KFS etc); county governments, Ministry of Tourism, community, private sector, CSOs

Source: Modified from the Kenya Climate Finance Policy (National Treasury, 2017)

*A = Adaptation; M = Mitigation

Table 4.4 Programmatic area 4: Agriculture–water– ecosystem-based adaptation nexus

AGRICULTURE–WATER– ECOSYSTEM-BASED ADAPTATION (EBA) NEXUS		
PROGRAMME ELEMENTS	**GCF STRATEGIC IMPACT AREAS**	**KEY PARTNERS**
1. Mainstream CC into agricultural extension systems	• Enhanced livelihoods of the most vulnerable people, communities, and regions (A) • Resilient ecosystems (A)	MoALF, MoWI, county governments, NDMA, community, private sector, CSOs
2. Establishment and maintenance of climate-change related information pools or centres for crops, livestock and fisheries		
3. Promotion of CSA	• Enhanced livelihoods of the most vulnerable people, communities, and regions (A) • Increased health and well-being and food and water security (A) • Resilient ecosystems (A) • Sustainable land use and forest management (M)	
4. Price stabilization schemes for livestock and crop farmers	• Enhanced livelihoods of the most vulnerable people, communities, and regions (A) • Increased health and well-being, and food security (A)	MoALF, county governments, community, private sector, Central Bank of Kenya (CBK), Ministry of Devolution and National Planning
5. Post-harvest management of crop, livestock and fisheries products	• Increased health and well-being and food and water security (A) • Resilient infrastructure (A) • Sustainable land use (M)	MoALF, MoWI, county governments, community, private sector, CSOs
6. Protection and conservation of fish critical habitats and breeding grounds, and re-stocking as required.	• Resilient ecosystems • Sustainable land use and forest management (M)	
7. Integration of CC information in water modelling and forecasting	• Resilient infrastructure and built environment to CC threats (A) • Resilient ecosystems (A)	MoWI, Ministry of Environment (Kenya Water Towers, KFS etc); county governments, community, private sector, CSOs
8. Promotion of energy efficient technologies in water supply projects	• Increased water security (A)	MoWI, county governments, community, private sector, CSOs
9. Conservation of water towers	Sustainable land use and forest management (M) Resilient ecosystems (A)	
10. Improved water management and water conservation, including rainwater harvesting, recycling and reuse of water, water conservation awareness campaigns, technology for water conservation in water services and supply, and improved watershed management		
11. Climate information services • Strengthening hydro-meteorological information delivery services incl. EWS. • Preparation of downscaled CC projections and impact scenarios for policy development and further impact analyses at the sector level	• Enhanced livelihoods of the most vulnerable people, communities, and regions • Increased health and well-being and food and water security • Resilient infrastructure and built environment to CC threats	Meteorological department in conjunction with all government ministries, departments and agencies, legislators, community, private sector, CSOs

Source: Modified from the Kenya Climate Finance Policy (National Treasury, 2017)

*A = Adaptation; M = Mitigation

Table 4.5 Programmatic area 5: Disaster risk management and ending drought emergencies

DISASTER RISK MANAGEMENT AND ENDING DROUGHT EMERGENCIES		
PROGRAMME ELEMENTS	**GCF STRATEGIC IMPACT AREAS**	**KEY PARTNERS**
1. Monitoring systems – Quality, credible early warning and food security monitoring systems that make effective use of advances in meteorological monitoring information technology	• Enhanced livelihoods of the most vulnerable people, communities, and regions (A) • Increased health and well-being and food and water security (A) • Resilient infrastructure and built environment to CC threats (A) • Resilient ecosystems (A)	NDMA, MoWI, Ministry of Environment (Kenya Water Towers, KFS etc); county governments, community, private sector, CSOs
2. Multi-year food and cash mechanisms – Based on early warning and food security data		
3. Water management – Effective and environmentally appropriate systems of water harvesting, management and irrigation, and emergency water supply		
4. Climate-proofing infrastructure – Infrastructure development (water and sewerage, transport, electricity) with improved climate-resilient standards		
5. Livelihoods diversification – Investment in community-based livestock systems, crop farming (both irrigated and rain-fed), dryland forestry and forest products, fisheries and other alternative livelihoods		

Source: Modified from the Kenya Climate Finance Policy (National Treasury, 2017)

*A = Adaptation; M = Mitigation

Table 4.6 Programmatic area 6: Research and innovation

RESEARCH AND INNOVATION		
PROGRAMME ELEMENTS	**GCF STRATEGIC IMPACT AREAS**	**KEY PARTNERS**
1. Incentives for the private sector and institutions of higher learning to undertake research and innovation to develop affordable and locally appropriate adaptation and mitigation technologies	• Enhanced livelihoods of the most vulnerable people, communities, and regions (A) • Increased health and well-being and food and water security (A) • Resilient ecosystems (A) • Resilient infrastructure and built environment to CC threats • Energy efficient buildings, cities and industries (M) • Low-emission energy access and power generation (M) • Low-emission transport (M)	Ministry of Education, Ministry of Information and Technology; Ministry of Environment (Kenya Water Towers, KFS etc); MoWI, county governments, community, private sector, CSOs
2. Establishment of mechanisms to encourage and facilitate locally appropriate CC technology development		
3. Linking government, private sector, academic and civil society organizations with global CC innovation institutions		

Source: Modified from the Kenya Climate Finance Policy (National Treasury, 2017)

*A = Adaptation; M = Mitigation

4.4 Cost analysis of climate actions in disaster risk management and funding gap

MTP III stated that Disaster Risk Management (DRM) was not effectively mainstreamed into the development agenda during MTP II. Government and World Bank assessments indicate that the disasters have adversely impacted key sectors of Kenya's economy. DRM has now been prioritized in MTP III (2018–2022) as a standalone thematic Working Group with its own Sector Working Plan. It has also been mainstreamed in the CIDPs.

Table 4.7 Costed DRM budget 2018-2022 (Source: MTP III)

DISASTER RISK MANAGEMENT (DRM) PROGRAMMES	STRATEGIC OBJECTIVE: TO REDUCE DISASTER RISKS AND VULNERABILITY AND ENHANCE RESILIENCE (2018- 2022)						
OUTPUT/OUTCOME	SOURCE OF FUNDS	TOTAL (in million Ksh)	2018/19	2019/20	2020/21	2021/22	2022/23
DRM centres of excellence established	GOK/DPs	2,000	1,000	250	250	250	250
Multihazard early warning system and preparedness programme developed	GOK/DPs	1,000	500	125	125	125	125
DRM information database, hazard risk mapping undertaken	GOK/DPs	380	180	50	50	50	50
Capacity-building and civic education on DRM undertaken	GOK/DPs	1,150	330	205	205	205	205
DRM frameworks developed and finalized. National DR Financing strategy developed	GOK/DPs	250	50	50	50	50	50
DRM monitoring and evaluation report	GOK/DPs	100	20	20	20	20	20
TOTAL		**4,880**	**2,080**	**700**	**700**	**700**	**700**

MTP III's budget of Ksh 4,880 million is earmarked for implementation of an integrated DRM system for the period 2018-2022/23, focussing on preventing or reducing the risk of disasters, mitigating the severity of disasters and enhancing preparedness, rapid and effective response to disasters, and post-disaster recovery. Additionally, the DRM financing strategy and monitoring and evaluation framework is under development and aims at strengthening the Government's ability to manage future and residual risks by creating financing instruments that enhance preparedness and, ultimately, reduce the impacts of disasters on the economy and the Kenyan people. It complements the Government's broader disaster risk management, social protection and agricultural risk management agendas, as well as the TNT's overall fiscal risk management framework. Its goal is to increase the ability of the national and county governments to respond effectively to disasters, thereby protecting development goals, fiscal stability and well-being of its citizens. In addition to residual risk management, the DRM financing strategy has put in place post-disaster financing strategies to enable effective and timely action in the event of a disaster, as part of a more comprehensive approach to disaster risk management. The DRM financing strategy has four priorities:

1. Ensure a coordinated approach to disaster risk financing across national and county government institutions managing various disaster risk financing instruments;
2. Improve sovereign financing capacity by strengthening and expanding the national and county government's portfolio of disaster risk financing instruments;
3. Support key programmes to protect the most vulnerable populations from the impacts of disasters and contribute to building resilience; and
4. Enhance the disaster response capacity of national MDAs, as well as county governments.

These four strategic priorities support Kenya's international commitments and domestic need to reduce disaster risks and build resilience as part of the SFDRR, the PA and the SDGs. GoK is a signatory to global, regional and national instruments and conventions, including the SFDRR, 2015-2030 and the AfRSDRR, as part of the African Union's Agenda 2063.

The problem addressed is how to curb the incidence, frequency and magnitude of drought disasters, which have increased, thus exacerbating the vulnerability of many populations around the country and eroding economic growth. The strategic objective was designed in response to this: To reduce the vulnerability of communities to drought-related disasters, through improved institutional resilience (preparedness and response) at all levels (national, county and community).

TNT allocates funding to the MDAs responsible for disaster risk management through the existing risk financing instruments administered by relevant sectors. In addition, TNT administers the Contingencies Fund for disasters and emergencies. After that Fund is exhausted following a severe disaster, it relies on budget reallocations. Such reallocations are limited in terms of handling disasters, partly because their magnitude cannot be predicted and partly because it is difficult to obtain enough funds to address disaster issues through reallocations, as the PFMA 2012 regulates the reallocation of appropriated funds strictly. As such, the Government relies on contributions from international donors. For instance, 98 percent of humanitarian funds provided in the period 2002-2012 resulted from humanitarian appeals. The donor funding gap for disaster response totalled, on average, $136 million per year for the years that humanitarian appeals were launched, or 37 percent. Humanitarian assistance tends to be subject to delays, can be unpredictable and may be cost-inefficient. In certain cases, such as prolonged drought spells and El Niños, the existing disaster risk financing mechanisms may be overwhelmed by the magnitude of the intervention measures, hence requiring external support. Regional and international disaster risk financing instruments are available based on prior agreements. Therefore, GoK may consider exploring the option of incorporating these additional instruments into Kenya's disaster risk financing portfolio.

Existing disaster risk financing instruments: The existing disaster risk financing instruments, listed below, can provide liquidity to the government in the event of a disaster, therefore ensuring availability of adequate financial resources to fund a timely and effective response:

i. The Contingencies Fund (CF), established by the Constitution of Kenya 2010 and operationalized through the PFMA, 2012, may be used for urgent and unforeseen needs for which there is no specific legislative authority, including for natural and man-made disasters.

ii. County Emergency Funds (CEFs) are financing instruments established under the PFMA, 2012 to facilitate response to disasters at the county level. Each county assembly defines regulations for the administration of these funds and operational guidelines are entrusted to regulations approved by Parliament and the law relating to disaster risk management.

iii. The National Drought Emergency Fund (NDEF), established by the National Drought Management Authority Act of 2016, aims to improve the effectiveness of Kenya's drought risk management system. The Fund may be financed through annual appropriations by the National Assembly and may include contributions from the private sector, donors, and global CC and disaster risk financing facilities.

iv. Until 2017, the GoK purchased drought insurance coverage through the African Risk Capacity (ARC), a pan-African-owned index insurance pool providing drought risk coverage.

v. The World Bank's Development Policy Loan with a Cat DDO is a pre-approved credit line that can be accessed when a national disaster is declared following a natural hazard event, provided that the country has a satisfactory disaster risk management framework in place, as well as an adequate macroeconomic policy framework, at the time of signing.

In addition, the Government has developed a number of programmes to provide direct support to poor and vulnerable people affected by disaster shocks in various sectors. These include:

i. The Kenya Livestock Insurance Program (KLIP): a livestock insurance programme for vulnerable households that is facilitated and funded by the GoK. It is a PPP between the Government and a consortium of seven insurance companies. The programme monitors forage conditions using satellite technology, triggering pay-outs when vegetation falls below critical levels

ii. The Kenya Agricultural Insurance and Risk Management Program (KAIRMP): a crop insurance programme for vulnerable households subsidized by the national government to cushion crop farmers against climate-related risks within the agricultural sector. It is an area yield index insurance (AYII) policy that provides multiple-peril-loss-of-yield protection to maize and wheat farmers, based on an area yield index.

iii. The scalable component of the Hunger Safety Net Program (HSNP) provides cash transfers to households in the four target counties in the event of weather shocks. In addition to the 100,000 recipients who receive regular cash transfers as part of HSNP, the scalable component provides additional cash.

The table below estimates the amount needed to implement the DRM priority actions in the NCCAP for the years 2018- 2022. The budget totals Ksh 94.649 billion.

Table 4.8 Budgeted DRM cost in NCCAP 2018-2022

STRATEGIC OBJECTIVE NO. 1.
REDUCE RISKS TO COMMUNITIES AND INFRASTRUCTURE RESULTING FROM CLIMATE-RELATED DISASTERS SUCH AS DROUGHT AND FLOODS

PRIORITY ACTIONS	TIME FRAMES	SOURCE OF FUNDS	TOTAL	INDICATIVE BUDGET (KSH MILLION)				
				2018/19	2019/20	2020/21	2021/22	2022/23
1. Increase the number of households and entities benefiting from devolved adaptive services, including HSNP and CCCFs	2018 - 2022	GOK/ DPs	80,089	14,160	14,794	16,285	16,650	18,200
2. Improve the ability of people to cope with drought	2018 - 2022	GOK/ DPs	10,310	2,054	2.058	2,062	2.066	2,070
3. Improve the ability of people to cope with floods	2018 - 2022	GOK/ DPs	1,000	500	125	125	125	125
4. Improve coordination and delivery of disaster management response	2018 - 2022	GOK/ DPs	3,250	650	650	650	650	650
SUB-TOTAL: DISASTER RISK MANAGEMENT			**94,649**	**17,364**	**17,627**	**19,122**	**19,491**	**21,045**

DRM FINANCING GAP

Analysis of the current approach to disaster risk financing shows that while Kenya has a growing portfolio of DRF instruments, gaps remain in the financing of recurrent, localized, non-drought events such as floods. Droughts constitute the most important hazard in Kenya in terms of economic and humanitarian impacts, but a gap exists in the management of DRR strategies, as well as other hazards that the country is predisposed to. In line with the SFDRR, 2015-2030 and international best practices, the portfolio of instruments should cover different needs (national or localized disasters), and types of hazards (including droughts and floods). The review of financing instruments and post-disaster support programmes presented below provides some useful insights into Kenya's overall approach to disaster response, level of preparedness and financing gap:

1. The annual allocation under the Contingencies Fund is capped at Ksh 10 billion annually, but the Government has allocated only half that amount since FY 2013.

2. The Public Finance Management Act(PFM), 2012 does not require county governments to establish CEFs. To date, only 19 counties have established such funds but they cannot spend more than 2 percent of the total audited revenue for the previous year for CEFs.

3. The NDEF, which is limited to addressing drought hazards in all 23 drought-prone counties, does not receive funds annually from TNT.

4. Given donor interest in HSNP scalability and drought response in the ASALs, the NDEF could be envisaged as a focal point to crowd in additional donor resources. Ensuring that a proportion of funds in the NDEF are earmarked to finance HSNP scalability and that insurance premiums are listed as an eligible expenditure in the NDEF should support this effort.

5. The GoK applied for a Development Policy Loan with a Cat DDO, which is a contingent financing line that provides immediate liquidity to countries to address shocks related to natural disasters and/or health-related events. Following a declaration of a state of emergency according to the country's legal framework, TNT could request to drawdown all or part of the Cat DDO's amount. Funds are disbursed as budget support to TNT.

6. The KLIP is currently available in six arid counties (Wajir, Turkana, Marsabit, Mandera, Isiolo and Tana), with the goal of eventually reaching all 14 arid counties. KLIP is fully subsidized by the GoK through the State Department of Livestock (SDL). To date, GoK has paid premiums totalling Ksh 219 million. Over the past three years, SDL has received an annual budget allocation to fund KLIP, but funding will have to be scaled up significantly to meet the programme's growth objectives. To provide more certainty to the programme's longevity and to incentivize investments in distribution channels, private sector partners have requested that GoK commit resources to support KLIP for a three-year period.

7. In counties where the Kenya Agricultural and Insurance Management Programme is available, cover is either (i) voluntary through the pool co-insurers' sales agent networks or (ii) bundled with credit, as per the Acre-Africa, One Ace Fund crop credit insurance program. In 2017, the product was marketed in 10 crop-producing counties. Premiums are partially subsidized by State Department of Agriculture (SDA) and the Global Index Insurance Facility (GIIF). SDA receives an annual budget allocation to cover partial premium subsidy support (50 percent premium subsidy), as well as the operating costs of SDA's Project Management Unit and the costs of data acquisition and Crop Cutting Experiments (yield-based loss assessment).

8. 8A $250 million World Bank credit is currently under preparation to support a Kenya Social and Economic Inclusion Project (KSEIP). It will include a component focused on expanding shock-responsive safety nets. These resources could be used to develop a comprehensive financing strategy for HSNP scalability and ensure a more rapid flow of funds in the event of disaster. In the medium term, resources from the World Bank operation will also be used to expand coverage of HSNP beyond the four current counties. This expansion will require a careful evaluation of needs and the establishment of underlying systems to operationalize the program.

MTP III shows that Ksh 4.880 million has been budgeted to ensure an enabling environment for DRR management, capacity-building, and monitoring and evaluation. In addition, the Government is mandated to set aside Ksh 10 million annually for a contingency fund. On the other hand, NCCAP 2018-2022 has budgeted Ksh 94.649 million for the following four programmes:

1. Increase the number of households and entities benefiting from devolved adaptive services, including HSNP and CCCFs;
2. Improve the ability of people to cope with drought;
3. Improve the ability of people to cope with floods; and,
4. Improve the coordination and delivery of disaster management response.

> To determine the financing gap in DRM, it is assumed that the Government will make available the Ksh 4.880 million stipulated in MTP III. We also assume that this money is earmarked for implementation of an integrated DRM System focussing on preventing or reducing the risk of disasters, mitigating the severity of disasters, enhancing preparedness, rapid and effective response to disasters and post-disaster recovery, factors that enhance climate resilience. The Government is also required to contribute an additional Ksh 50 million as a contingency fund over five years (Ksh 10 million annually). Thus, the financing gap is the amount budgeted in NCCAP 2018-2023, or Ksh 94.649 million.

4.5 Cost analysis of climate actions in nutrition and food security and funding gap

The 19th Kenya Economic Update, Unbundling the Slack in Private Investment, states that agriculture is a major growth driver for the Kenyan economy and the dominant source of employment. From 2013-2017, the report notes that the agriculture sector contributed 21.9 percent of GDP, on average, with at least 56 percent of the total labour force employed in agriculture in 2017. Agriculture is also responsible for most of the country's exports, accounting for up to 65 percent of merchandise exports in 2017. As such, the sector is central to the Government's Big Four development agenda, where agriculture aims to attain 100 percent food and nutritional security for all Kenyans by 2022 (World-Bank, 2018), Food and Nutrition is also part of the Agriculture Rural and Urban Development (ARUD) Sector, which is composed of seven subsectors. Kenya Vision 2030 has identified the ARUD sector as one of the six key economic sectors expected to drive the economy to a projected 10 percent economic growth annually over the years so that the country can achieve its long-term development objectives. The overall goal of this sector is to attain national food and nutrition security. Given its importance, it is expected to play a significant role in ensuring food and nutrition security as well as driving the manufacturing sector by providing raw materials.

During FY 2015/16, the total sector allocation was Ksh 54,200 million; in FY 2016/17, the allocation was Ksh 62,700 million and Ksh 65,300 million in FY 2017/18. Expenditures for the period were Ksh 44,600 million in FY 2015/16, Ksh 49,900 million in FY2016/17 and Ksh 53,300 million in FY 2017/18. The overall sector absorption rate was 82.3 percent in FY 2015/16, compared to 79.6 percent in FY 2016/17 and 81.6 percent in FY 2017/18.

Table 4.9: Projected expenditures as per NCCAP 2018 - 2022

FINANCIAL YEAR	BUDGET ALLOCATION IN KSH MILLION	EXPENDITURE IN MTP III KSH MILLION	DIFFERENCE/FUNDING GAP IN KSH MILLION
2015/16	54,200	44,600	9,600
2016/17	62,700	49,900	12,800
2017/18	65,300	53,300	12,000
2018/19	46,304		**46,304,000**
2019/20	55,973	109.5*	-53,527,000
2020/21	54,192	124*	-69,808,000
2021/22	49,072	115.3*	-66,228,000
022/23	47,378	116.27*	-68,892,000
TOTAL			**-258,455,000**

To realize the Big Four Agenda, the sector will require Ksh 109.5 billion, Ksh 124 million and Ksh 115.3 million in financial years 2019/20, 2020/21 and 2021/22, respectively. However, MTP III has allocated funding for the same period as follows: 2019/2020 – 55.973 million; 2020/21 – 54.192 million; 2021/22 – 49.072 million; and, 022/23 – 47.387 million (see Table 2.4 above). The difference between allocated funding and projected expenditure is Ksh 258,455,000 million ($2,518,333,829.00). A review of the MTEF ARUD[36] sector report does not reveal whether any climate relevant actions have been budgeted. Therefore, assuming that the allocated funding will not address climate actions, the difference between projected and allocated funding is the climate funding gap, in this case KSH 258.455 million. This figure is the estimated gap in funding for food and nutrition as contained in the ARUD sector as per the MTEF and is based on projected expenditure vis-à-vis the budgeted amount.

This argument is lent credence by the fact that, according to the MTEF, the main challenges facing the ARUD sector include:

i. a changing climatic regime;

ii. competing land uses;

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iii. inadequate human resources capacity;

iv. inadequate funding;

v. low donor fund absorption due to inflexible contract terms;

vi. low absorption of technology;

vii. high cost of production in the sector;

viii. poor market access;

ix. uncontrolled subdivision of land; and,

x. land and environmental degradation.

On the other hand, the MTP III (2018-2022) states that the agriculture and livestock sector is expected to play a significant role in ensuring the attainment of food and nutrition security. The overriding challenge for MTP II was the increased frequency of severe droughts and floods and outbreaks of pests and disease as a result of global CC, which adversely affected the sector. The main lesson learned was the need to put in place a robust response to CC as part of overall planning, with special emphasis on agriculture and livestock. CSA is one of the MTP III programmes that will develop and implement strategies for adaptation and mitigation including early warning, early preparedness and response, and improved CSA technologies and practices and will identify and promote suitable crop insurance products as a means of climate risk transfer. This will be complemented by the Agricultural Insurance Programme; its target is to expand crop insurance to cover 31 counties, while the Livestock Insurance Programme will be expanded to cover 500,000 households in 14 ASAL counties. This will enhance the capacities of pastoral communities and stakeholders to use insurance products to reduce weather-related risks and rebuild livelihood support systems in drought-prone areas. The allocated budgets for climate relevant priority actions in the agriculture and livestock programmes in MTP II are estimated below, as shown in Table 4.10.

Table 4.10: Food and Nutrition climate-relevant programmes/projects budget in MTP III

PROGRAMME/ PROJECT OBJECTIVES	SOURCE OF FUNDS	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
1. Food and Nutrition security program: To improve food and nutrition security for the next 5 years	GoK	56,126	10,836	10,845	11,325	11,810	11,310
2. Livestock production programme to promote milk, beef and eggs for food security and income generation	GoK	15,190	4,390	2,700	2,700	2,700	2,700
3. Agriculture insurance programme to manage risks and losses amongst smallholder agro-pastoralists	GoK	7,678	687	1,600	1,700	1,800	1,900
4. CSA programme to promote adaptive and mitigation and early warning systems	GoK i)	43,673	3,641	11,775	14,130	7,065	7,065
	GoK ii)	1,000	0	250	250	250	250
5. Pastoral Resilience Building programme: i) small irrigation schemes and pasture mgmt. ii) improved livelihoods and NRM	GoK DPs i)	2,300	1,100	300	300	300	300
	GoK DPs ii)	8,828	2,500	2,000	1,878	1,225	1,225
6. CAADP to attain food and nutritional security	GoK DPs	1,900	380	380	380	380	380
7. Policy, legal and nutritional development to provide an enabling environment for agriculture sector growth	GoK DPs	1,900	380	380	380	380	380
GRAND TOTAL FOR 2018 - 2022		**138,595**	**23,914**	**30,230**	**33,043**	**25,910**	**25,510**

The NCCAP II presents food and nutrition as its second climate priority action. The action's strategic objective is to increase food and nutrition security by enhancing productivity and resilience of the agricultural sector in as low-carbon a manner as possible. The CC actions that need to be executed to improve food and nutrition security are categorized below.

- Adaptation: Maintain or increase productivity and enhanced resilience of the agricultural systems through livelihood and crop diversification, increased water harvesting and storage, increased irrigation, sustainable land management, reduction in post-harvest losses, and uptake of insurance;
- Mitigation: Achieve GHG emissions of 2.61 MtCO2e by 2022 through agroforestry, minimum tillage systems, manure management, and efficiency in livestock management.

Specific adaptation intervention areas include:

i. Improve crop productivity through the implementation of CSA interventions;

ii. Increase crop productivity through improved irrigation;

iii. Improve productivity in the livestock sector through the implementation of CSA interventions; and,

iv. Diversify livelihoods to adjust to a changing climate.

Enabling actions include technology and knowledge management.

Table 2.6 captures the priority actions and estimated budgets.

Table 4.11: NCCAP 2018-2022 climate change actions for Food and Nutrition

FOOD AND NUTRITION: PRIORITY ACTIONS	SOURCE OF FUNDS	TOTAL	INDICATIVE BUDGET (KSH MILLION)				
			2018/19	2019/20	2020/21	2021/22	2022/23
Improve crop productivity through the roll out of CSA actions	GOK / DPs	17,920	2,913	3,955	4,526	3,213	3,313
Improve crop productivity by increasing the acreage under irrigation	GOK / DPs	219,420	26,413	42,355	47,826	51,413	51,413
Increase productivity in the livestock sector by implementing CSA actions	GOK / DPs	25,246	6,018	5,660	5,731	3,918	3,919
Enhance productivity in the fisheries sector by implementing CSA actions	GOK / DPs	9,998	1,539	2,481	2,952	1,513	1,513
Diversify livelihoods to adjust to a changing climate	GOK / DPs	9,659	1,469	2,407	2,873	1,457	1,453
TOTAL: FOOD AND NUTRITION		**282,243**	**38,352**	**56,858**	**63,908**	**61,514**	**61,611**

The funding requirement in the MTP III for programmes that will accelerate production and enhance food and nutrition security totals Ksh 138,595 million. Some of the programmes - such as the Agriculture Insurance Programme to manage risks and losses amongst smallholder agro-pastoralists; the CSA programme to promote adaptation and mitigation and early warning systems; and the Pastoral Resilience Building programme to improve small irrigation schemes and pasture management and improve livelihoods and natural resource management - are clearly similar to those prioritized by NCCAP 2018-2022. Assuming that the design of activities in these programmes will lead to climate mitigation and adaptation, the funding gap could be the difference between the MTP III allocated amount and that of the NCCAP 2018-2022 projected amount; that is, Ksh 282,243 million and Ksh 138,595 million, or Ksh 143,648 million. If, however, we assume that the MPT III budget will focus more on the operations of government ministries and agencies, including capacity-building and enabling environment, then we can assume that the NCCAP projected is the maximum amount needed to carry out mitigation and adaptation in the food and nutrition sector. Therefore, the gap is between Ksh 143,648 million to Ksh 282,243 million.

4.6 Cost analysis of climate actions in manufacturing and funding gap

MTP III prioritizes developing the manufacturing sector as one of the Big Four initiatives. Kenya aims to have a robust, diversified and competitive manufacturing sector to transform the country into a middle-income economy by 2030. The goal is to increase manufacturing's contribution to GDP from 9.2 percent in 2016 to 15 percent by 2022; create an additional one million jobs yearly; increase the of foreign direct investment to $2 billion; and improve the ease-of-doing-business ranking from 80 in 2017 to 45 by 2022. In sum, the goal is for manufacturing to play a key role in the country's economic growth and development by facilitating employment creation, attracting investment and creating wealth. These will be done by implementing 12 programmes with a projected budget of Ksh 633,363 million over the five-year period.

The 12 programmes re summarized below:

- **Ease of Doing Business Programme:** The sector will implement targeted business reforms to reduce the cost of doing business to attract foreign and domestic direct investments and increase job creation. It will also seek to improve Kenya's ranking in the World Bank's Ease of Doing Business index from 80 in 2017 to 45 by 2022.
- **Industrial Clusters Programme:** This programme will have two components aimed at increasing investments in the textile and apparel industries.
- **Agro-food Processing Programme:** This programme will involve value addition in agriculture, fisheries and livestock.
- **Special Economic Zones (SEZ) Programme:** The programme will involve resettling 1,500 squatters to pave the way for the development of Dongo Kundu SEZ in Mombasa, acquiring 30,000 acres to develop infrastructure facilities and locating 400 factories in the Naivasha industrial park.
- **Industrial and Small and Medium Enterprises (SMEs) Parks Programme:** To promote industrial dispersion and balanced economic development in the country, the national and county governments, in conjunction with the private sector, will collaborate to identify land, infrastructure development and management of SMEs and industrial parks.
- **Micro, Small and Medium Enterprises (MSMEs) Development Programme:** This will involve instilling entrepreneurial culture and developing skills; developing Micro and Small Enterprises Centres of Excellence (MSE COE); providing worksites; incubation, innovation and technology transfer; providing financing; productivity and promoting quality improvement of MSMEs products; registering intellectual property rights; and branding and market access to MSMEs products.
- **Manufacture of Electrical Products and Electronics Programme:** This will involve manufacturing tools and accessories, tablets, laptops and other electronic equipment to support the Digital Learning Programme (DLP). The sector will also create measures to attract at least two investors to operationalize electronic assemblies.
- **Automotive Parts, Motorcycles, Components and Auto-parts Programme:** The programme will involve production of automotive parts and components to lay the foundation for a globally competitive steel production industry and support establishment of an automotive industry in Kenya. The sector will also establish a motor-free trade zone in Mombasa and manufacture automotive and Standard Gauge Railway (SGR) components.
- **Iron and Steel Programme:** The project will support import substitution worth Ksh 26,000 million. The project will be implemented through the Numerical Machining Complex (NMC), which has been identified as a focal point to promote development of the iron and steel industry.
- **Accreditation and Standards Infrastructure Programme:** The programme will involve setting up 135 Conformity Assessment Bodies (CABs) by 2022, aimed at improving product compliance with market standards.
- **Research, Technology and Innovation Programme:** This will involve investing in research, innovation and knowledge management to facilitate capability accumulation and technological upgrading. Kenya's innovation system has recently emerged with a number of hubs, innovation centres and start-ups, which will be complemented by the public research institutions in conducting industrial research, technology development and transfer, improving product design, and promoting product innovation. It will also involve transforming KIRDI into a world class research institution.
- Other programmes and projects include skills development and transforming KITI to a Centre of Excellence and oil, gas and mineral processing.

Table 4.12: MTP III 2018-2022

PROGRAMME/ PROJECT AND OBJECTIVES AND SOURCES OF FUNDS (GOK, WB, PPP, DPS)	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
Ease of Doing Business: GoK/WB	1,870	50	470	450	450	450
Industrial clusters: to improve cotton, fibre production, competitiveness and revenues; become a regional leather products GoK/PPP	21,366	4,187	4,692	4,792	3,830	3,865
	12,948	3,268	6,920	1250	750	760
Agro-food processing: to promote value addition to agricultural products Special Economic Zones (SEZ): To promote investments; competitiveness GoK/PPP	12,803	882	3,846	2,855	2,660	2,560
	22,424	4,230	7,050	7,400	2,430	1,314
SMEs parks/industrial parks: to promote balanced economic development GoK/PPP	141,485	28,297	28,297	28,297	28,297	28,297
Development of MSMEs: to improve yield, sustainability and competitiveness GoK, DPs	113,553.3	25,241	22,665	22,285	21,917.3	21,445
Manufacture of industrial and agro-processing equipment: machinery, tools and equipment GoK/PPP	51,080	10,025	11,055	10,000	10,000	10,000
Manufacture of electrical products and electronics: computer parts, electronics and IT-related components PPP	2,565	515	825	525	200	500
Automotive parts: to promote the manufacture of automotive components and auto parts; iron and steel production locally GoK	2,565	515	825	525	200	500
	139,224	500	16,100	75,400	37,724	9,500
Accreditation and standards infrastructure: to strengthen the accreditation and standards infrastructure GoK/DPs	600	50	300	150	50	50
Research, technology and innovation PPP Programme	9,470	2,430	1,990	2,210	1,910	930
Skills development and transformation of KITI to a centre of excellence	3,265	775	1,025	715	450	300
Oil, gas and mineral processing: develop local content and value addition policy GoK, DPs	110	40	25	25	10	10
TOTAL	**633,363**	**100,625**	**125,415**	**176,514**	**130,753**	**100,056**

Source: MTP III 2018-2022

A review of the programmes' objectives, output, outcome performance indicators and budgets provides no indication that CC mitigation and adaptation are integrated in the above programme. It can therefore be assumed that the Ksh 633,363 million is for the business-as-usual scenario. The NCCAP 2018-2022 has focused on mainstreaming CC in manufacturing with the strategic objective of promoting energy and resource efficiency in the sector. The problem addressed involves scarce resources, including water, electricity, and other inputs in manufacturing processes, which arises due to CC and, inefficient energy use. Other factors include the use of unsustainable wood and charcoal in cement production, which increases GHG emissions. The climate actions are expected to improve efficiency in water use and industrial symbiosis (climate adaptation) and reduce GHG emissions by 0.45 MtCO2e by 2022 (climate mitigation) through the production of sustainable briquettes and charcoal, industrial energy efficiency, and industrial symbiosis. This sector is dominated by mitigation actions. They are to: (i) increase energy efficiency; (ii) improve water use and resource efficiency; (iii) optimize manufacturing and production processes; and (iv) promote industrial symbiosis in industrial zones (mitigation and adaptation). Enabling actions include building capacity changing policy and developing regulations.

The table below shows the amount slated for each priority action in NCCAP 2018-2022:

Table 4.13: Amount slated for each priority action in NCCAP 2018-2022

STRATEGIC OBJECTIVE IMPROVE ENERGY AND RESOURCE EFFICIENCY IN MANUFACTURING SECTOR								
PRIORITY ACTIONS 2018 - 2022	SOURCE OF FUNDS	TOTAL	INDICATIVE BUDGET (KSH MILLION)					
			2018/19	2019/20	2020/21	2021/22	2022/23	2025-30
Increase energy efficiency	GOK / DPs	250	Total	50	50	50	50	
Improve water use and resource efficiency	GOK / DPs	50	10	10	10	10	10	
Optimize manufacturing and production processes	GOK / DPs	50	10	20	10	10	0	
Promote industrial symbiosis in industrial zones	GOK / DPs	4,500	900	900	900	900	900	
TOTAL		**4,850**	**970**	**970**	**970**	**970**	**960**	

Source: NCCAP 2018-2022

Although the NCCAP document indicates that the Government will provide some funding for the manufacturing climate actions, there is no evidence in the MTP III or the MTEF that it has allocated that amount. Thus, this clearly suggests that a financing gap of Ksh 4,850 million exists. Given that manufacturing is primarily the preserve of the private sector, a public private partnership will be required to mobilize this amount of money.

4.7 Cost analysis of climate actions in water and the blue economy and funding gap

Kenya has a vision of achieving 100 percent coverage of safe water supply by 2030 and 100 percent access to basic sanitation services by 2030. To achieve these targets, Kenya will require $12.9 billion for water supply, $4.8 billion for sewerage, $601 million for basic sanitation, and $57 million for basic hygiene (all annually). The financing gap is estimated as $7.3 billion for water and $4.5 billion for sewerage. The government budget available for water supply covers around 44 percent of the required investment cost, but the government budget available for sewerage is about 6.5 percent (NWSS, 2015). As stated in MTP III, the water and blue economy goal is to "sustainably manage and develop the Blue Economy resources for enhanced socioeconomic benefits to Kenyans."

Kenya is endowed with rich coastal and maritime resources, which have huge potential for development of the Blue Economy that have not been developed to full capacity. The blue economy refers to sustainable use of aquatic and marine spaces, including oceans, seas, coasts, lakes, rivers, and underground water. It encompasses a range of productive sectors, including fisheries, aquaculture, tourism, transport, shipbuilding, energy, bio prospecting and underwater mining and related activities. The development and exploitation of the blue economy could contribute to achieving the Big Four initiatives, thanks to its enormous forward and backward linkages with other productive sectors in wealth and employment creation, particularly food security, the service sector and manufacturing.

MTP III outlines 14 blue economy flagship programmes and projects with projected costs totalling of Ksh. 145,528.5 billion for the period 2018 to 2022 include:

1. Development of Blue Economy Programme: This programme will involve development of a Blue Economy Master Plan; capacity-building for the Blue Economy; promotion of Kenya as a centre for Agro-based Blue Economy; development of Blue Book; development and management of Blue Economy database; creating awareness among youth of the Blue Economy; strengthening of Beach Management Units (BMUs).
2. Fisheries and Maritime Infrastructure Development Programme: The programme will involve building fish ports in Mombasa, Kilifi, Lamu and Shimoni that are expected to create 12,000 jobs and add Ksh 20,000 million to the GDP; constructing a small commercial port in Takaungu; constructing fish markets in Kisumu, Mombasa, Lamu, Malindi, Nairobi, Kilifi and Shimoni; and building jetties in Mombasa, Kilifi and Malindi and a jetty for RV.
3. Exploitation of Living Resources under Blue Economy Programme: The programme will entail development of coastal fishing facilities; establishment of a National Fishing Fleet for the Exclusive Economic Zone (EEZ); development of capacity for artisanal fishers; development of value addition programmes for seaweed and up-scaling seaweed farming; and development of Lake Victoria Fisheries; development of Lake Turkana Fisheries Management Plan.
4. Aquaculture Business Development Programme: This is aimed at improving production, productivity and food security and nutrition of smallholder farmers. It will support the aquaculture value chain with a series of strategic public private producer partnerships within a robust modern public sector framework and deepen and broaden smallholder farmers groups' business plans.
5. Kenya Marine Fisheries and Socio-Economic Development (KEMFSED) Programme: Under this programme, a functional fishery information system will be developed; fisheries management plans for priority fisheries operationalized; and Shimoni Maricultural Research Centre established.
6. Aquaculture Technology and Development and Innovation Transfer Programme: This will involve development and transfer of aquaculture technology and innovations to stakeholders; development of a training facility at Sagana; enhancement of trout production technology in Kiganjo; and development of market outlets for farmed fish.
7. Monitoring, Control and Surveillance Programme: The programme will enhance monitoring, control and surveillance in the EEZ. It will also involve conducting frame surveys in Lake Victoria, Lake Turkana and marine waters. In addition, quarterly catch assessment surveys will be undertaken in Tana River, Turkwell Dam, marine waters and Lakes Victoria, Turkana, Baringo, Naivasha, Jipe and Chala.
8. Development of Fish Quality Laboratories Programme: The programme will be implemented in two phases. Phase I will entail: construction of sewerage line; installation of electricity and water supply; paving and landscaping; construction of concrete perimeter walls; and burglar-proofing the laboratories.
9. Rehabilitation of Fish Landing Sites in Lake Victoria Programme: The programme will entail rehabilitation of six landing sites around Lake Victoria.
10. Maritime Transport Services Programme
11. Maritime Cluster Enterprises Development Programme
12. Research and Development Programme
13. Marine Risk and Disaster Management Programme
14. Cooperation and Implementation of Regional/International Frameworks and Standards Programme.

A thorough review of the above programmes reveals that CC is not mainstreamed and MTP III is silent on the same.

NCCAP 2018-2022 describes the climate problem in this sector as follows: Access to, and quality of, water is projected to decline because of CC impacts, particularly droughts and reduction of glaciers. Coastal areas are impacted by rise in sea level, storm surges, rise in ocean temperatures, and ocean acidification. To deal with these issues, NCCAP has put in place a strategic objective on priority CC action for water this sector: Enhance the resilience of the Blue Economy and water sector by ensuring adequate access to, and efficient use of, water for agriculture, manufacturing, domestic use, wildlife, and other uses.

The table below shows the priority climate actions and estimated costs:

Table 4.14: Priority climate actions and estimated costs

WATER AND THE BLUE ECONOMY COST ESTIMATES 2018-2022							
ENHANCE THE RESILIENCE OF THE BLUE ECONOMY AND WATER SECTOR			INDICATIVE BUDGET (KSH MILLION)				
PRIORITY ACTIONS 2018 - 2022	SOURCE OF FUNDS	TOTAL	2018/19	2019/20	2020/21	2021/22	2020/23
Increase annual per capita water availability via development of infrastructure	GOK / DPs	43,116	8,163	9,210	9,249	9,015	7,479
Climate-proof water harvesting and water storage infrastructure and improve flood control	GOK / DPs	325,626	83,349	89,443	76,149	50250	26,435
Promote water efficiency (monitor, reduce, re-use, recycle and model)	GOK / DPs	10,140	2,020	2,020	2,100	2,000	2,000
Improve access to good quality water		29,474	2,727	5,080	5,057	3,971	3,638
Improve climate resilience of coastal communities	GOK / DPs	30,988	4,396	6,422	7,394	6,833	5,943
SUB-TOTAL: WATER AND THE BLUE ECONOMY		**439,344**	**100,655**	**112,174**	**99,948**	**72,070**	**45,495**

Source: NCCAP 2018- 2022

> The total cost for climate actions in the water and Blue Economy sector- Ksh 439,344 million - is assumed to be the additional cost to mainstream CC in this sector as it is not included in MTP III costs. Therefore, it may be considered a funding gap.

The climate actions are expected to result in CC adaptation: increased water availability through water harvesting and storage, improved water efficiency, and improved water availability. Specific adaptation actions include:

i. Increasing annual per capita water availability through the development of water infrastructure (megadams, small dams, water pans and untapped aquifers);

ii. Increasing livelihoods systems' climate-proofing, water harvesting, and water storage infrastructure and improve flood control;

iii. Increasing gender-responsive affordable water harvesting-based livelihood resilience programmes;

iv. Promoting water efficiency (monitor, reduce, re-use, recycle and model);

v. Improving access to good quality water; and,

vi. Improving resilience of coastal communities.

The climate-proofing of coastal infrastructure covers both adaptation and mitigation. Developing policies and regulations constitute the enabling actions in this sector.

4.8 Cost analysis of climate actions in forestry, wildlife and tourism and funding gap

The MTP III categorizes Forestry and Wildlife under the Social Pillar, while Tourism is categorized under the Economic Pillar. Additionally, Forestry and Wildlife are placed under the Environment, Water, Sanitation and Regional Development sector, while Tourism is a standalone theme with an estimated budget of Ksh 150,802 million slated for tourism infrastructure development and promotional activities in a bid to increase visitation numbers and rate. Tourism is one of the key sectors that will spur economic growth and contribute 9.2 percent of total employment per annum over the medium term. The sector enables achievement of the Big Four and is aligned to SDGs 8, 14 and 15, as well as Aspirations 1 and 5 of Agenda 2063. To achieve this, the Sector seeks to increase tourist arrivals from 1.3 million in 2016 to 2.5 million visitors in 2022, increase tourism earnings from Ksh 99,700 million in 2016 to Ksh 175,000 million in 2022, and increase domestic tourists' bed-nights from 3.5 million in 2016 to 6.5 million by 2022.

Tourism confronts many challenges. The most relevant include insecurity and travel advisories, outbreaks of pandemic diseases, inadequate bed capacity, uneven distribution of facilities across regions, inadequate funding and weak inter-governmental collaboration. To mitigate these challenges, MTP III encourages the design and development of new, innovative and sustainable tourism products to respond to competition from similar destinations in Africa. Collaboration with national, regional and international agencies/governments on security and safety concerns is also critical to ensure a secure environment for tourism investment, visitor security and sustained tourist flow.

The flagship programmes to benefit from this funding include:

- **Coastal beach tourism:** This will entail improvement of beach products and enhancement of priority beach nodes (popular beach areas) used by visitors.
- **Wildlife (safari) products:** The initiatives include: Maasai Mara Strategy: Develop a detailed tourism development strategy for the Maasai Mara, visitor information and interpretive strategy and policy, strategic visitor centres, explore establishment of an airport in close proximity, enhance interactions and integration of local communities through cultural experiences, and seek attainment of world heritage status for the Maasai Mara; elevating Amboseli National Park status to "must see"; and development and transformation of KWS parks into a signature Africa safari product.
- **Niche products development and diversification:** Business tourism initiative, cultural and heritage tourism and events strategy.
- **Resort cities:** To bolster the viability and sustainability of the LAPSSET Corridor, three resort cities are planned in Lamu (Mokowe), Isiolo and Turkana (Eliye Springs). These are intended to harness and tap into the rich tourism potential by creating a new tourism corridor based on group tours using the mass transportation network offered by LAPSSET Corridor.
- **Tourism promotion and marketing:** Destination marketing: The sector will continue to intensify promotion and marketing of the destination product offering in a bid to improve tourism earnings and tourist arrivals.
- **Domestic tourism:** This will be undertaken in collaboration with county governments to ensure that every part of the country optimally benefits from the locally available tourist attraction potential.
- **Standards for tourism facilities and services:** This will entail developing minimum standards for hotels and restaurants, review of the EAC hotel classification criteria, providing incentives and tax breaks and enforcing standards for hospitality and tourism training institutions.

The table below presents the budget for tourism programmes in MTP III.

Table 4.15: Tourism programmes budget in MTP III

C4: TOURISM							
PROGRAMME	**SOURCES OF FUNDS**	**TOTAL** (Ksh millions)	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Coastal beach tourism	GoK	4,040	600	750.00	800.00	920.00	970.00
Wildlife (safari) product	GoK	6,089	1,886	1,060.00	1,203.00	989.00	951.00
Niche products, development and diversification	GoK, UNESCO, CGs	19,607	3,473	3,718.00	2,640.00	5,408.00	4,368.00
Development of Isiolo, Turkana and Lamu resort cities	GoK	1,917	400	506.00	78.00	744.00	189.00
	GoK/DPs/PPP	6,174	1,584	1,293.00	1,297.00	1,000.00	1,000.00
Tourism promotion and marketing	GoK	400	50	70.00	80.00	100.00	100.00
	GoK	882	121	140.60	184.50	195.50	240.50
Tourism training and Capacity-building	GoK	5,163	1,780	1,100.00	1,133.00	500.00	650.00
Tourism facilities improvement	GoK	83,550.00	16,010.00	17,510.00	17,510.00	16,010.00	16,510.00
Infrastructure enabling services	GoK, DPs	22,437.00	4,246.00	5,455.00	4,195.00	2,130.00	6,411.00
Data and information project	GoK	543.00	130.00	115.00	110.00	95.00	93.00
TOTAL		**150,802**	**30,280**	**31,717.60**	**29,230.50**	**28,091.50**	**31,482.50**

The above cost estimates do not factor in CC, yet the sector is very climate-sensitive, with both supply- (tourism operators, destination communities) and demand-side stakeholders (tourists) directly affected by climate and its indirect influence on a wide range of environmental resources (KEPSA, 2014c). The impacts of CC on wildlife, which is one of the major tourist attractions, has placed wildlife in competition with domestic livestock and human beings for pastures, food and water, reducing wildlife numbers. Wildlife-based tourism represents about 70 percent of tourism revenue in Kenya (KEPSA, 2014c). However, CC is impacting wildlife species and natural ecosystems, livelihoods and communities that depend on them (Chidumayo et al., 2011; Stein et al., 2014; AWF, 2015; Fynn et al., 2016).

The main strategic objective in forestry is to "increase forest cover to 10 percent of total land area by 2030." Forest services are crucial to sustainable development and human well-being, but CC is exacerbating forest degradation and land use change. Adaptation actions to address these impacts include changing forestry practices and planting tree species that are less vulnerable to droughts and fires. Actions to address adaptation priorities in the forest sector and achieve the Big Four Agenda and the SDG targets include increasing forest cover per county by June 2023; enhancing forest landscape restoration initiatives, with forest cover benefits; promoting afforestation/ reforestation potential in the counties; encouraging sustainable timber production on privately-owned land; and promoting non-wood forest products (Strategic Action Area 4).

The MTP III forestry budget is presented below.

Table 4.16: Forest programmes budget in MTP III

C4: FOREST							
PROGRAMME/ OBJECTIVES	**SOURCES OF FUNDS**	**TOTAL** (Ksh millions)	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Forest conservation and management: Increase forest cover to 8% in 2022	GOK/DPs	41,511	7,311	7,996	8,534	8,720	8,950
Forest research and development: Develop forest research technologies for sustainable management of forest and NRM	GOK/DPs	3,432	569	683	700	730	750
TOTAL		**44,943**	**7,880**	**8,679**	**9,234**	**9,450**	**9,700**

In terms of the wildlife subsector, MTP III states that the main challenges are CC, which has caused human-wildlife conflicts, primarily over water and pasture. It also states that the lessons learnt include the essential role of capacity-building and public participation in project cycle management, which are critical for successful project and programme implementation. It also calls for a collaborative framework between the national and county governments as essential for sustainable environmental Management. The adoption of advanced techniques is essential to map and access large ground water resources.

The estimated costs for wildlife programmes in MTP III total Ksh 100,466 million ($976 million), as shown below:

Table 4.17: Wildlife programmes in MTP III

C4: WILDLIFE								
PROGRAMME	OBJECTIVES	SOURCES OF FUNDS	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
Wildlife conservation	To protect and conserve wildlife	GOK	31,654	7,277	7,109.00	7,339.00	4,964.00	4,965.00
Policy, legal and institutional framework	Strengthen policy, legal and institutional frameworks for natural resource management	GOK/DPs	53,812	346	401.00	404.00	26,330.00	26,331.00
	To establish wildlife compensation insurance scheme	GOK	5,000				2,500.00	2,500.00
	To establish the Wildlife Research and Training Institute	GOK	10,000				5,000.00	5,000.00
TOTAL			**100,466**	**7,623**	**7,510.00**	**7,743.00**	**38,794.00**	**38,796.00**

NCCAP 2018-2022 Climate actions and estimated budgets under the forestry, tourism and wildlife sectors are presented in Table 4.18 below.

Table 4.18: Forest, Wildlife and Tourism Climate priority actions (Source: NCCAP 2018-2022)

PRIORITY ACTIONS 2018 - 2022	TIME FRAMES	SOURCE OF FUNDS	TOTAL	INDICATIVE BUDGET (KSH MILLION)				
				2018/19	2019/20	2020/21	2021/22	2022/23
Afforest and reforest	2018 - 2022	GOK / DPs	41,511	7,311	7,996	8,534	8,720	8,950
degraded and deforested areas in counties	2018 - 2022	GOK / DPs	10,037	1,850	2,250	2,116	1,910	1,660
Implement initiatives to reduce deforestation and forest degradation	2018 - 2022	GOK / DPs	10,037	1,850	2,250	2,117	1,910	1,660
Restore degraded landscapes (ASALs and rangelands)	2018 - 2022	GOK / DPs	30	6	6	6	6	6
Promote sustainable timber production on privately-owned land	2018 - 2022	GOK / DPs	1,875	375	375	375	375	375
SUBTOTAL: FORESTRY, WILDLIFE AND TOURISM			**63,490**	**11,392**	**12,877**	**13,248**	**12,922**	12,651

All the programmes reviewed under the Forest, Tourism and Wildlife sectors show that CC is not mainstreamed. Thus, the NCCAP 2018-2002 priority actions funding totals Ksh 63,490 million, the amount needed for climate resilience and adaptation in this sector.

4.9 Cost analysis of climate actions in health and human settlement and funding gap

The health sector is key to ensuring that the populace is healthy and productive. Sustainable human settlements and sanitation services are essential for human health, which is a pillar of the Government's Big Four Agenda. The sector will pay special attention to the Big Four initiatives, with particular focus on achieving universal health coverage by implementing programmes that increase health insurance coverage, increase access to quality healthcare services and offer financial protection to people when accessing healthcare. This will continue the transformative agenda in line with the aspirations of the Kenya Vision 2030 and the Constitution, which guarantee the highest attainable standard of health to all citizens. It is also consistent with the Kenya Health Policy 2014-2030, which supports implementation of various MTP III priorities in the health sector to address prevention, diagnosis and treatment leading to universal health care. The Government will also facilitate implementation of programmes and projects that will lead to the attainment of SDG 3 (Ensure healthy lives and promote well-being for all at all ages) and aspirations of Africa's Agenda 2063.

Some of the emerging issues and challenges stated in MTP III include the emergence of drug-resistant strains of TB and other diseases such as Ebola, bird flu, dengue fever and chikungunya. Others include low health insurance coverage in the country and the high cost of health services; the continued high level of health programmes' donor dependency; inadequate infrastructure and skewed distribution of available infrastructure, with a strong bias toward urban areas, and the continued use of obsolete equipment. Climate change and climate variability are not identified as a challenge in MTP III.

MTP III Flagship Health Programmes and Projects for 2018-2022, with a cost estimate of Ksh 432,551 million, include:

1. Social Health Protection Programme: The Government will expand social health protection by implementing schemes to cover harmonized benefit packages to targeted populations. Key projects to be implemented include: Health Insurance project for Elderly People and Persons with Severe Disabilities; Health Insurance Subsidy Programme (HISP) for orphans and the poor, to cover about 1.5 million persons by 2022; Linda Mama Project to cover 1.36 million mothers and babies by 2022; elimination of user fees in public primary health care facilities; informal sector health insurance coverage to cover 12 million informal sector workers by 2022; and formal sector medical insurance (medical insurance cover for civil servants retirees), to cover 4.2 million workers by 2022.
2. Medical Tourism Programme: The main objective of this programme is to market Kenya as a hub for specialized healthcare, support training and retain specialized health expertise, create employment in specialized health care, and make healthcare a vibrant socioeconomic subsector in Kenya.
3. Health Infrastructure Programme: The Government will develop nine key health infrastructure components.
4. Community Health High Impact Interventions Programme: The Government, in partnership with stakeholders, will implement high impact health interventions in line with the existing community health strategy.
5. Digital Health Programme: To expedite the development of the healthcare industry, the Government will digitize services and adopt technologies such as e-health, m-health, telemedicine and space technologies by leveraging on the improved ICT infrastructure and mobile penetration rates, which stands at over 80 percent.
6. Human Resource for Health Programme: This is aimed at addressing capacity gaps within specialized and subspecialized areas in the health sector and reduce shortages in the health workforce, especially in ASAL areas. The number of health workers will be increased from 40,500 health workers at the beginning of the plan period to 63,000 by 2022.
7. Quality Care/Patient and Health Worker Safety Programme: This will be implemented at all levels of healthcare to ensure provision of quality services and safety of the environment in which services are provided.

Unlike the NCCAP 2018-2022, MTP III combines Sanitation with Environment and Water. MTP states that access to sewerage is estimated to be 25 percent in urban areas by 2017. National sanitation coverage, which includes sewerage and onsite sanitation, is estimated at 68 percent. Climate change, inadequate water conservation

strategies, and the growth of peri-urban and satellite towns have led to increased demand for water and sanitation services. MTP III has two main programmes:

- Sewerage: Its strategic objective is to increase access to safe water and sanitation in priority areas under the Big Four.
- Urban storm water infrastructure: This will involve construction of Narok Storm Water Drainage Phase II and of Kerugoya-Kutus storm water drainage. It will also entail construction of vehicular bridges and footbridges crossing the storm water drainage; installation of security lighting at the crossing points for vehicular and pedestrian; and preliminary treatment of stormwater in case of discharge into sensitive water masses.

Table 4.19: Sanitation programmes and budgets in MTP III

PROGRAMME/ OBJECTIVES	SOURCES OF FUNDS	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
Sewerage Programme	GOK / DPs	63,287	8,627	18,544	2,205	20,248	13,663.00
Urban Storm Water	GOK	12,300	300	300	4000	4000	4000
GRAND TOTAL		**75,587**	**8,927**	**18,844**	**6,205**	**24,248**	**17,663**

Climate change affects human health in Kenya by changing the severity or frequency of health threats that are already affected by climate or weather factors and by creating unanticipated health threats in places where they have not previously occurred. The risk of malaria and other vector-borne diseases are projected to increase in the future due to changing climate conditions (Dekens et al., 2013). Approximately 13 to 20 million Kenyans are at risk from malaria, with the percentage of those at risk potentially increasing because CC facilitates the movement of malaria transmission up the highlands. Rising temperatures would likely lead to greater incidences of malaria at higher altitudes of the Kenyan highlands. Other health risks include upper respiratory tract infections (URTIs), and indirectly, effects on non-communicable diseases, such as cancer and diabetes.

NCCAP 2018-2022 proposes an integrated approach to climate actions that addresses sustainable human settlements and health and sanitation services. The CC strategic actions in the health sector include climate-sensitive disease control and research to understand shifts in disease transmission and promoting climate-resilient and sustainable health infrastructure and technologies, such as adopting the design of green health building infrastructure. Other actions include scaling-up financial investments to reduce the number of deaths related to household and institutional air pollution linked to biomass stoves and introducing appropriate measures for surveillance and monitoring of climate change-related diseases and a sector-specific adaptation plan. This is key to create an enabling environment for the sector to mainstream CC. Opportunities for adaptation in health include promoting preventive health care and treating diseases at the community level. Opportunities for human safety include early warning systems, public awareness programmes, avoidance and preparedness campaigns.

Table 4.20: Health and Sanitation programmes in NCCAP 2018-2022

HEALTH AND SANITATION PRIORITY ACTIONS	SOURCES OF FUNDS	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
Reduce incidence of malaria and other vector-borne disease	GOK / DPs	9,900	1,200	1,200	1,200	3,200	3,100
Promote recycling to divert collected waste away from disposal sites.	GOK / DPs	20,500	3,100	5,100	5,100	4,100	3,100
Climate-proof landfill sites	GOK / DPs	25	5	5	5	5	5
Control flooding in human settlement	GOK / DPs	20,000	4,000	4,000	4,000	4,000	4,000
Promote green buildings	GOK / DPs	1,085	115	320	225	225	200
SUBTOTAL: HEALTH, SANITATION AND HUMAN SETTLEMENTS		**51,510**	**8,420**	**10,625**	**10, 530**	**11,530**	**10,405**

MTP III flagship health programmes and projects have a cost estimate of Ksh 432,551 million, primarily for normal hospital operations. NCCAP priority actions are not mainstreamed in the NCCAP; thus, the entire Ksh 51,510 million constitutes the financing gap.

4.10 Analysis of climate actions in solid waste management and funding gap

Citing historical data from different sources, the NSWMS provides the following percentages of solid waste collection: Kisumu, 20 percent; Nakuru, 45 percent; Eldoret, 55 percent; Thika, 60 percent; Mombasa, 65 percent; and Nairobi, 80 percent. About 61 percent of waste is residential and non-hazardous, with the rest being industrial and hospital/pharmaceutical waste, which is hazardous. Waste management is a devolved function that is regulated at the national level by the Environmental Management and Co-ordination (Waste Management) Regulations 2006. The regulations stipulate measures and standards that counties are to comply with in managing waste. Several counties now use appropriate waste transportation trucks to comply with the regulations, as stated by the NSWMS. The Kenya Environmental Sanitation and Hygiene Policy 2016-2030 complements the solid waste management strategy. The Ministry of Health policy focused on strategies to ensure universal access to improved sanitation and a clean and healthy environment. In Kenya, the waste sector was estimated to account for about 3 percent of total national GHG emissions in 2015. This is insignificant compared to other sectors, such as agriculture, land use, land use change and forestry (LULUCF) and energy. Building resilience to the impacts of CC on waste disposal systems and facilities is more important. Improperly managed solid waste can accumulate in areas otherwise intended for water runoff and flood control. Such conditions make cities and towns vulnerable to floods and contaminated water even from moderate rainfall, let alone the intense and heavy rains expected with CC. Areas of uncontrolled and improperly disposed waste can be sources of environmental pollution and health hazards.

Solid waste produces GHG emissions via disposal, treatment, recycling and incineration. The organic waste material in a landfill, such as food residues, paper and biomass, is decomposed by microbes which generate a mixture of methane, carbon dioxide and traces of other gases. The gaseous mixture is referred to as landfill gas. In a wastewater treatment plant, methane is generated as organic matter and the breakdown of human sewage can also lead to significant amounts of indirect nitrous oxide emissions. Waste incineration, like other forms of combustion, generates CO2. Methane and nitrous oxide are more potent greenhouse gases than CO2 with global warming potentials, respectively, 25 and 265–298 times that of CO2 for a 100-year timescale (GoK, January 2017).

Kenya's capital, Nairobi, exemplifies the problems of a dysfunctional waste management system in Kenya's urban systems. It produces around 2,400 tons of waste per day. While 93 percent of Nairobi's waste is potentially reusable, only 5 percent is actually recycled and composted. Moreover, only 33 percent of waste produced is collected for disposal at Nairobi's single official dumpsite, Dandora (JICA, 2010). The rest is tipped on hundreds of illegal dumpsites, left next to houses or burned. Both the official dumpsite and, in particular, the illegal ones, are operated in unsystematic, unplanned and highly unsanitary fashion. As a result, poorly managed and improperly disposed solid waste pollutes the air, water and soil, causing significant health and environmental problems. This is especially true in slums and other low-income areas, where high population density, paired with lack of infrastructure and service provision, only aggravates these problems. More than half of Nairobi's 3.5 million inhabitants live in slums (UNDP, 2016).

The issue of solid waste management is dispersed throughout the MTP III, found under the health, population urbanization and housing sectors as well as the environment, water and sanitation. The main programmes in these sectors are, respectively:

- Solid waste management infrastructure: The main component of this programme includes solid waste separation at source; solid waste treatment plant; collection network infrastructure and capacity improvement; transfer stations development; intermediate treatment; final disposal; and security lighting along the collection network.

- Waste management and pollution control: A national solid waste management strategy was developed in 2015; a plastic bags initiative was implemented via Gazette Notice No. 2334; municipal and industrial effluent standards within the Lake Victoria Basin were harmonized; sewerage treatment plants in Kisumu, Homa Bay, and Bomet towns were constructed; and a system to monitor nutrient and sediment losses from land use and covers in the Nyando Basin was developed.

Table 4.21: Solid waste budgeted programmes in MTP III

C4: WASTE							
PROGRAMME/ OBJECTIVE	SOURCES OF FUNDS	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
Waste management and pollution control	GOK / DPs	4,260	860	850.00	850.00	850.00	850.00
to improve solid waste management in urban and rural areas	GOK	20,000	3,000	5,000.00	5,000.00	4,000.00	3,000.00
TOTAL		**24,260**	**3,860**	**5,850.00**	**5,850.00**	**4,850.00**	**3, 850.00**

Nairobi faces several key challenges in managing solid waste. The public sector struggles to run an effective and efficient waste management system, while the resources available to Nairobi City County (NCC) are insufficient. Cities in developing countries typically spend 20-50 percent of their budgets on waste management, but NCC spends only $5 million of its $300 million budget on waste management. This represents less than 2 percent of the total (Institute for Social Accountability, 2014). NCC only has around 20 functioning waste collection trucks at any time in this city of 3.5 million inhabitants. That number, combined with contract private companies, allows for waste collection only in the city centre and public markets. Current private sector waste management models do not offer a solution to this problem, either. This is because waste collection companies collect waste only for the purposes of disposal and their services are too expensive for the majority of Nairobi's population. Private sector waste collection companies collect waste from households and businesses for disposal at Nairobi's only official dumpsite, Dandora, or at various illegal dumpsites. As a consequence, very little of the collected waste is recycled.

The collection-for-disposal approach of waste collection companies makes their services too expensive for most Nairobi residents. Failing to recycle collected waste also has immense opportunity costs, as revenues from selling recyclable materials would help to lower collection fees. In addition, disposal at the Dandora dumpsite (or at the illegal dumpsite) is extremely inefficient and time consuming, involving long queuing, difficulties circulating due to lack of roads, and inefficient manual off-loading. Thus, Nairobi's waste companies can make only one collection trip per truck per day. This level of inefficiency results in high collection charges.

As a result, existing private sector companies in Nairobi collect waste only in middle- to high-income areas and do not recycle any organic waste. This leaves two-thirds of residents without proper waste management services.

RECYCLING AND COMPOSTING AS A POTENTIAL SOLUTION

Waste is a resource with considerable economic value. Organic waste, which constitutes 69 percent of Nairobi's waste, can be converted into compost. Industries use recyclable wastes, such as paper, plastic, glass and metal (16 percent of waste) to manufacture new products (JICA, 2010). Large underserved markets exist in Kenya for these waste-to value products.

The compost market has enormous potential in Kenya. The current demand for compost is estimated in excess of 100,000 tons/year and growing (Lachlan Kenya Ltd., December 2011). Less than 10,000 tons/year of compost are currently produced in the country and meanwhile, Kenya imports around 1,500,000 tons/year of chemical fertilizer.

The market for recyclable materials is growing, as many raw materials become more expensive. Kenya has one of the biggest manufacturing sectors in sub-Saharan Africa outside South Africa. However, this demand is largely underserved, as industries face the challenge of sourcing clean inputs. Junk shops and waste pickers recover recyclable waste from mixed waste, which results in high contamination. Recycling industries thus incur high cleaning costs, making the recycling of most materials economically unattractive. Consequently, only 10 percent of potentially recyclable materials are currently recovered for recycling.

Composting and recycling are not only beneficial in themselves. The more waste that is composted and recycled, the less needs to be disposed of, thereby reducing costs for waste collection significantly. Selling recyclable materials to recycling industries generates additional revenues in the waste management value chain. This, in turn, makes it possible to expand waste collection coverage to low-income areas.

Introducing the circular economy approach will make waste management affordable to almost all income earners, as the overwhelming majority (at least 90 percent) of the collected waste will be recycled. It will also reduce disposal costs significantly (less than 10 percent of waste will be residual waste), generate additional revenues from the sale of recyclable materials, generate additional revenues from the sale of compost and generate additional revenues from the payment of tipping fees (for NEEs owning and managing recycling points).

The Ministry of Environment and Forest has proposed a NAMA-based circular economy solid waste management approach for urban areas in Kenya, at a projected cost of $39 million. The model is designed to overcome the existing barriers by offering a circular economy business model with a broad capacity development programme. The NAMA will support sorting centres, composting facilities, compost market development and testing of other organic waste technologies and will promote recycling industries.

> The total cost of the NAMA is estimated to be around $39 million. In the NCCAP 2018-2022 Health and Sanitation Sector, a programme to promote recycling to divert collected waste away from disposal sites has been budgeted at Ksh 24,260 million for five years (2018/19 - 2022/23). The NCCAP has also budgeted Ksh 20,500 million for the same. Therefore, the financing gap is taken as the difference between those two figures (24,260 - 20,500), or 3,760 million ($36.5 million). This amount can be financed through implementation of the NAMA, which has been estimated at a cost of $39 million.

4.11 Cost analysis of climate actions in energy and transport sectors

Energy and transport enable socioeconomic development and contribute significantly to facilitating and accelerating development. According to MTP III, the need to develop infrastructure to enhance exploitation of the Blue Economy as a new frontier for economic growth is an emerging issue. However, the challenges in these sectors include inadequate financing and high capital investment requirements; high construction and maintenance cost; encroachment of land earmarked for infrastructure development; and difficulties in wayleaves/right of way acquisition for infrastructure projects. MTP III does not single out CC as a challenge.

ENERGY SECTOR

According to MTP III, the energy sector has several programmes that will be developed to ramp up power supply in the country. They include:

1. **Increase power generation:** The programme aims at promoting development and use of renewable energy sources to create a reliable, adequate and cost-effective energy supply regime to support industrial development. Key programmes and projects are prioritized for implementation to increase additional electricity installed capacity to 5,221 MW from various sources by 2022.

2. **Nuclear power development programme:** This will involve developing a legislative and regulatory framework; nuclear power plant site identification; continued capacity-building through both national programme and international partnerships; public education and advocacy; and establishing a research and development institute in the energy sector.

3. **Power transmission:** During the plan period, a total of 5,121 km of power transmission lines and 77 high voltage substations will be constructed, in addition to an ultra-modern National System Control Centre. Transmission lines will also be built in off-grid townships to interconnect these regions to the national grid.

4. **Last mile connectivity project:** A total of 5 million new households are targeted for connection to electricity through grid and off-grid solutions and 15,739 public facilities, other than primary schools, will be connected. In addition, a public street lighting project will be completed. To stimulate the 24-hour economy and catalyse the manufacturing sector, the cost of off-peak power to heavy industries will be reduced by 50 percent.

5. **Distribution network expansion and improvement:** The sector's targets is to construct 116 new primary distribution substations with a distribution capacity of 2,809 megavolt-amperes (MVA) and 1,244 Km of associated 66KV and 33 kilovolt (KV) lines, 20 new bulk supply substations and installation of 336.5 megavolt-ampere reactive (MVAr) power compensation equipment in 15 transmission substations.

6. **Improved power supply reliability:** The programme aims at improving power supply reliability by at least 20 percent by 2022. This will be achieved by replacing overhead distribution power lines across major towns and their environs, such as Nairobi, Mombasa, Kisumu, Eldoret, Thika and Nakuru, with underground distribution power lines.

7. **Renewable energy technologies:** The programme will include preparing a renewable energy resources inventory and resource map; formulating a national strategy for coordinating research in renewable energy; and promoting the use of municipal waste for energy production.

Table 4.22: Energy Programmes and budgets. Source: MTP III

C4: ENERGY							
PROGRAMME/ OBJECTIVE	**SOURCES OF FUNDS**	**TOTAL** (Ksh millions)	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Increase power generation - To increase power generation capacity and lower cost of power	JICA/EIB/ PPP/KfW/ Kengen/ IPP	401,426	59,719	120,000	120,000	51,000	51,000
	Kengen/AFD/KfW	17,511	2,990	10,465	1,495	2,561	
	KTDA/IPPs	13,955	5,300	4,890	1,934	1,389	442
	Kengen/REA/China /Exim/IPPs	39,900	0	9,090	23,370	6,840	600
	IPPs	24,450	667	2,002	3,539	10,134	8,108
	IPPs	61,138	6,114	6,114	18,341	18,341	12,228
	Subtotal	**558,380**	**74,790**	**152,561**	**168,679**	**90,265**	**72,378**
Nuclear power development	GoK/IAEA	19,879	2,810	3,503	3,604	4,800	5,100
Power transmission Project/ increase reliability of power and access rate	GoK/China/ EXIM /IDA	675,028	52,279	168,253	166,173	147,753	140,570
Last mile connectivity project/ Increase electricity connectivity	AfDB/ GoK/ KPLC/ EU/ EIBWB	92,551	18,510	18,510	18,510	18,510	18,510
Distribution network expansion and improvement -Increase reliability and connectivity of power and access rate	KPLC/ China /Exim /IDA	29,510	1,773	5,284	11,186	9,317	1,950
Improved power supply reliability	KPLC	111,500	5,200	27,600	31,200	29,500	18,000
Renewable energy technologies/ Promote generation of green energy	GoK	109,588	21,178	17,030	40,660	34,398	655
GRAND TOTAL		**2,154,816**	**251,330**	**545,302**	**608,691**	**424,808**	**329,541**

Based on the table above, the amount earmarked to promote renewable energy technologies is Ksh 109,588 million ($1,062,913,000) and will go towards mitigation as part of the government contribution.

TRANSPORT SECTOR

The Integrated National Transport Policy of 2009 identifies road transport, rail transport, maritime and inland water transport, pipeline transport, air transport and non-motorised and immediate means of transport as the main modes of transport in Kenya. Kenya has experienced high rates of urbanization and development, but transport systems and infrastructure have not kept pace. Transport services are poorly integrated, overburdened and inaccessible to many Kenyans. About half of all trips in Nairobi are accounted for by walkers and bicycle riders (non-motorized transport, NMT). Private cars account for about 15 percent of all trips. Traffic conditions in Nairobi and other major cities are characterized by congested and unsafe roadways that contribute to local air pollution and significant economic losses, as much time and fuel is spent in traffic congestion. The National Transport and Safety Authority (NTSA) estimated the fleet size at the end of 2015 at 2,776,374 vehicles and projected it at 4,141,189 vehicles in 2020. About 46 percent of these will be privately owned cars, a trend that is consistent with the growing economy and rising income levels. Motorcycle registration has increased from 6,350 in 2006 to 166,870 in 2015. These challenges have informed infrastructural and regulatory developments in the sector.

According to MTP III, major transport infrastructure development projects were implemented during the first and second MTPs, including construction of 2,200 km of new roads and rehabilitation/reconstruction of 1,860 km of roads.

Recent developments in railway transport include upgrading Nairobi commuter rail systems, completing Phase 1 (Mombasa to Nairobi) of the Standard Gauge Railway (SGR) Project, and initiating the second phase (Nairobi to Naivasha). Phase 2 of the Nairobi commuter rail system will be upgraded to provide efficient movement of passengers from the SGR terminal in Syokimau to the city centre. This upgrading is part of the Nairobi Metropolitan Mass Transport Master Plan that aims to create a mass rapid transport (MRT) system composed of bus rapid transit and commuter rail, complemented by NMT. The Nairobi County NMT Policy aims for the development and full integration of NMT within the entire Nairobi transport system, in a "county where NMT is the mode of choice for short and medium trips" (pedestrian trips up to 5km; and cycling trips up to 15 km). Other major transport projects that are in the pipeline or various stages of development include the Lamu Port-Southern Sudan-Ethiopia Transport Corridor and its various components/infrastructures and the East African Road Network Project.

The main transport programmes slated for implementation between 2019 to 2023 are shown below:

- **Expansion and modernization of aviation facilities:** The Kenya aviation modernization and expansion programme is aimed at increasing passenger handling capacity to nine million.
- **Improvement of shipping and maritime facilities:** The objective of the programme is to facilitate the trans-shipment of cargo.
- **Expansion of railway transport:** The programme's objective is to increase railway capacity from 5 percent to 50 percent of cargo freight from the port of Mombasa and promote commuter rail services.
- **Expansion of roads programme:** The programme aims at enhancing domestic and regional connectivity, boosting rural productivity and reducing urban congestion. This would be realized through construction/rehabilitation of 10,000 km of roads, composed of 2,500 km of conventional roads and 7,500 km low volume sealed roads.
- **Road maintenance:** A total of 161,456 km of roads are targeted for maintenance under periodic and routine maintenance, composed of 39,995 km for national trunk roads and 121,456 km for county roads.
- **Decongestion of cities and urban areas:** This programme aims at easing congestion, reducing travel time and costs and enhancing connectivity in cities and urban areas. The programme covers construction of 308 km of bypasses, 53.3 km of missing links and 40 km of non-motorized transport facilities. In addition, it will involve improvement of roads in cities and municipalities, and implementation of a mass rapid transit (MRT) improvement programme.
- **Road safety programme:** The programme involves implementing key initiatives that would ensure road safety.
- **Development of the 50-Year Transport Master Plan:** The Government will fast-track the development of a 50-year Transport Master Plan (TMP) as a vision for the country's long-term multimodal transportation system.
- **Development of 20-Year Roads Master Plan:** The Road Master Plan will be developed to guide development and investment in the road sector over the next twenty years.

Table 4.23: Transport

TRANSPORT								
PROGRAMME	OBJECTIVE	SOURCES OF FUNDS	TOTAL (Ksh millions)	2018/19	2019/20	2020/21	2021/22	2022/23
Expansion of roads programme/ To develop a modern and safe oil handling facility	Enhance domestic and regional connectivity	GoK/ DPs	31,950	10,000	3,950	4,800	6,000	7,200
	Increase efficiency in roads transport	GoK	9,400	6,800	2,600	0	0	0
	Increase efficiency in urban transport	GoK/ DPs	62,495	15,225	30,270	11,000	4,000	2,000
	Promote regional integration	GoK/ DPs	35,000	7,000	8,000	8,000	6,000	6,000
	Improve mobility along Northern Economic Corridor	GoK/ DPs	230,000	50,000	45,000	50,000	40,000	45,000
	Increase connectivity in productive areas	GoK/ DPs	344,418	61,268	61,000	61,000	80,650	80,500
Maintenance of roads	Increase connectivity/ Reduce vehicle maintenance costs	GoK/ DPs	572,523	110,423	112,095	116,120	117,515	116,370
Decongestion of cities and urban areas	Increase mobility in cities and urban areas;	GoK/ DPs	114,819	26,907	36,623	19,741	14,273	17,275
Road safety Programme	To improve road safety	GoK	5,111	1,820	2,320	971	0	0
Development of 50-year transport Master Plan	To provide long term multi-modal transportation system	GoK	200	40	40	40	40	40
Maintenance of roads	Guide investment on roads	GoK	350	60	70	80	80	80
Expansion of railway transport	To increase railways capacity; reduce cost of transport	Govt of China	21,000	4,200	4,200	4,200	4,200	4,200
	To ease commuter transport within Nairobi CBD	GoK/WB	26,604	5,204	6,200	5,200	5,000	5,000
	Enhance commuter service within Mombasa	WB	350	150	200	0	0	0
GRAND TOTAL			**1,454,220**	**299,097**	**312,568**	**281,152**	**277,758**	**283,665**

ADDRESSING CLIMATE CHANGE IN THE ENERGY AND TRANSPORT SECTOR

In terms of mitigation, Kenya's NDC "seeks to abate its overall greenhouse gas (GHG) emissions by 30 percent by 2030 relative to the business-as-usual (BAU) scenario." However, this does not necessarily translate into a 30 percent emission reduction target for the energy sector, which is equivalent to 12.8 MtCO2e reductions from baseline emissions in 2030 of 42.7 MtCO2e. According to the Power Generation and Transmission Master Plan (PGTMP) for the period 2015 to 2035,[37] overall emissions will drop by approximately 7.2 MtCO2e compared to the 2017 NDC Analysis Sector report, which indicated that the energy sector (excluding transport and industry) accounted for 7.1 percent of total emissions in 2015. It is projected to rise to 29.7 percent of total emissions in 2030. The 7.5 MtCO2e recommended NDC target for emission reductions in 2030 will be achieved if geothermal generation expansion mitigation option is fully implemented, as it could achieve 14.0 MtCO2e of emission reductions in 2030, exceeding the target. However, if the geothermal generation expansion mitigation option that envisions 2,775 MW of additional

37 MOEP 2016: Long Term Plan 2015 - 2035 Development of a Power Generation and Transmission Master Plan, Kenya

geothermal capacity (total of 5,510 MW in 2030) cannot be implemented, this would require a careful balancing of priorities and may involve greater breadth in lieu of maximizing technical potential. Cookstoves will need to be addressed substantively to achieve the recommended emission reduction target in the energy demand sector. Inefficient biomass cookstoves and over fire cooking contribute directly to GHG emissions in the energy sector through methane and nitrous oxide emissions, as well as carbon dioxide emissions originating from biomass that is harvested unsustainably. At a minimum, biomass cooking needs to improve 10 percent from the 2010 baseline average efficiency (baseline efficiency is estimated to be approximately 18-20 percent, accounting for the existing penetration of improved cookstoves) by 2030 to deliver emission reductions in line with the overall technical potential of energy demand mitigation options.

Kenya's NAP recommends climate-proofing energy infrastructure partly because energy plays a role in enhancing adaptive capacity and resilience to CC. Communities with access to energy (electricity, in particular, through connection to the grid or through mini-grids) can tap it for income-generating activities to boost their income and livelihoods. This can enhance their capacity to adapt to climate challenges, such as drought-induced crop failures.

With regard to mitigation, the transport sector is a significant source of greenhouse gas (GHG) emissions. In Kenya, it accounted directly for about 13 percent of total GHG emissions in 2015 and is projected to rise to 17 percent of total national emissions in 2030. Given the massive infrastructure projects, addressing CC in these sectors is highly recommended and should not present significant additional costs to conventional development costs. This should not be viewed as negating a country's development agenda. For instance, the planned MRT for Nairobi, a priority mitigation action in the NCCAP, will reduce congestion on roads and improve air quality. Mitigation actions such as improving the efficiency of the vehicle fleet link with and build on the Government's motor vehicle inspection and standardization programme.

According to MTP III, the modernization of Kenya's infrastructure has had a positive effect in stimulating growth and opening up areas that were hitherto out of the reach of Kenyan markets. Mobilization of investment funding for large-scale infrastructure projects poses challenges to debt levels and the Government is exploring different ways of accessing such funds, including PPP and long-term infrastructure bonds.

The option with the largest mitigation potential in the transport sector is the development of an extensive mass transit system for greater Nairobi. This involves bus rapid transit (BRT) corridors, complemented by light rail transit (LRT) in high thoroughfare corridors. A mass transit system that achieves an estimated peak hourly ridership of 148,000 passengers in 2030 could reduce emissions by approximately 2.3 MtCO2e annually. Improvements in passenger vehicle efficiency can be achieved through many different policies, including setting new vehicle fuel efficiency standards, removing low efficiency vehicles from the market, and providing subsidies or incentives for higher efficiency vehicles. Higher efficiency vehicles include hybrid and electric vehicles that can reduce emissions per kilometre significantly, provided the national electricity generation mix remains based predominantly on renewable generation. The priority climate actions in the energy and transport sectors are shown below.

Table 4.24: Funds needed to mitigate and climate-proof infrastructure in the energy and transport sector. Source: NCCAP 2018 - 2022

ENERGY AND TRANSPORT PRIORITY ACTIONS	SOURCE OF FUNDS	TOTAL	INDICATIVE BUDGET (KSH MILLION)				
			2018/19	2019/20	2020/21	2021/22	2022/23
Increase renewable energy for electricity generation	GoK/ DPs		88,630	164,199	245,561	145,155	70,322
Improve energy efficiency and conservation	GoK/ DPs	1,250	250	250	250	250	250
Climate-proof energy infrastructure	GoK/ DPs	9,325	2,628	3,004	3,091	417	185
SUBTOTAL: ENERGY		**725,092**	**91,508**	**167,583**	**249,032**	**145,952**	**70,887**

ENERGY AND TRANSPORT PRIORITY ACTIONS	SOURCE OF FUNDS	TOTAL	INDICATIVE BUDGET (KSH MILLION)				
			2018/19	2019/20	2020/21	2021/22	2022/23
Develop an affordable, safe and efficient public transport, including a Bus Rapid Transit System in Nairobi	GoK/ DPs	82,350	17,050	20,200	17,950	14,450	12,700
Reduce fuel consumption and fuel overhead costs, including electrification	GoK/ DPs	960	192	192	192	192	192
Encourage low- carbon technologies in the aviation and maritime sectors	GoK/ DPs	2,170	434	434	434	434	434
Climate-proof transport infrastructure	GoK/ DPs	141,300	20,000	26,500	29,800	32,000	33,000
SUB-TOTAL: TRANSPORT		**226,780**	**37,676**	**47,326**	**48,376**	**47,076**	**46,326**
SUB-TOTAL: ENERGY AND TRANSPORT		**951,872**	**129,304**	**214,408**	**297,408**	**193,038**	**117,213**

The estimated financial gap in the energy sector can be obtained by calculating the difference between Ksh 725,092 million (total amount for energy in NCCAP) and Ksh 109,588 million (Renewable energy technologies/ Promote generation of green energy programme in MTP III). That number is Ksh 615,504 million (equivalent to $1,136,481,139 at a conversion rate of Ksh 103.1 to 1 USD). With regards to transport, it is assumed that the budgeted costs of programmes in MTP III do not include CC actions. Thus, the financing gap totals Ksh 226,780 million. The amount needed in the energy and transport sector totals Ksh 840,284 million.

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