Climate Action in the Forestry Sector in Kenya: Status Review

On the Road to Implementing Kenya's NDC

October 2021

GNI plus
THE GLOBAL NDC IMPLEMENTATION PARTNERS

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ACKNOWLEDGMENTS

AUTHORS

This report was funded by International Climate Initiative (IKI), and was developed by AECOM under the Global NDC Implementation Partners (GNIplus) project for the Ministry of Environment and Forestry, Government of Kenya. It was authored by Emily Le Cornu and Lilian C. Kipchumba, with contributions from Clara Champalle, Jérôme Maurice and Petrina Rowcroft.

The authors would like to thank and acknowledge the inputs from Steven Smith, Brian Cuthbert, Eoin Harris and Renard Teipelke for their advice and internal review. As well as Gaia Scaduto and Sarah McFadden for the design of the report.

The authors worked in close collaboration with the other partners of GNIplus who also contributed to chapters in this report: Climate Policy Initiative, Pollination, and Ricardo Energy and Environment. As well as a Clarice Wambua from Kieti Advocates who undertook the legal and policy analysis.

We are grateful for guidance received during the stakeholder consultation phase and the external reviews that were undertaken from March to April 2021 that helped shape the end publication; in particular: Alfred Gichu (Ministry of Environment and Forestry), Rose Akombo (Kenya Forest Service), George Tarus (Kenya Forest Service), Diana Kishiki (Kenya Forest Service), Dr Jarome Kagombe (Kenya Forest Research Institute), Vincent Mainga (Kenya Water Towers Agency), Dr James G Kairo (Kenya Marine and Fisheries Research Institute), Dr Kipkorir Sigi (Kenya Marine and Fisheries Research Institute), Christina Ender (Conservation International), Psamson Nzioki (Conservation International), Ricardo Ulate (Conservation International), Fabiano Godoy (Conservation International), Leon Theron (Conservation International), Mario Chaco (Conservation International), Maggie Comstock (Conservation International), Jack Steege (Gatsby Africa), James Mwai (Gatsby Africa), Tom Owino (Climate Care), Jackson Wambua (Kenya Association of Manufacturers), Martin Ochieng (Sasini Tea Company), Hitesh Mediratta (PG Bison, and Chairman of the timber committee at KAM), Suresh Patel (Kanku Kenya Ltd), Nancy Ngao (Sanergy), Boaz Moturi (Dupont), Kevin Juma (The Nature Conservancy), Kiunga Kareko (WWF-Kenya) and Mwangi Kinyanjui (FCPF REDD+ Consultant).

Report citation:

AECOM (2021) Climate Action in the Forestry Sector in Kenya: Status Review

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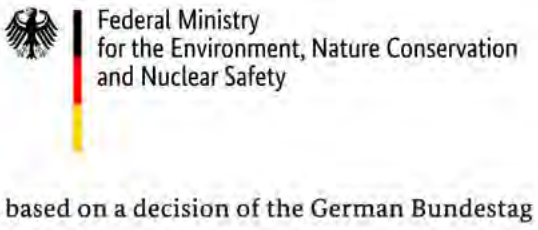

based on a decision of the German Bundestag

EXECUTIVE SUMMARY

Over the past 25 years, Kenya's forests have been depleted annually due to population pressure for settlement and agricultural expansion in gazetted and non-gazetted forests, illegal logging, forest encroachment and unsustainable grazing. Currently, Kenya's forest cover is estimated at 5.9% of the total land area (2018), compared to 8% in 1990. There has been a significant lack of investment in the sector to protect Kenya's ecosystems and in turn support mitigation and adaptation to climate change (MoEF, 2018a) (GOK, 2021).

Forest conservation and management play an important role in maintaining an ecosystem balance and, in turn, contribute to people's livelihoods and overall well-being. The deep relationship between people and forests dates to about 60,000 years ago where Middle Palaeolithic dwellers used forest products as food and sources of energy. In modern times, forest products are a source of raw material for food, construction, medicine, clothing, furniture and other daily livelihood needs (FAO, 2020a). Across the world, the terrestrial biodiversity found in forests ranges from the tropical rainforests to temperate and boreal forests. Globally, they contain more than 60,000 diverse tree species and provide habitats for 80% of amphibian species, 75% of bird species and 68% of mammal species. About 60% of all plants are found in tropical forests, while coastal forests such as mangroves provide breeding grounds for fish species and trap sediments that might otherwise affect seagrass beds, coral reefs and habitats for marine flora and fauna.

As discussed in this Status Review, the forestry sector in Kenya plays an important role in contributing to direct and indirect socio-economic and ecological benefits to the people. Direct benefits are derived from wood, such as a source for firewood, building materials, as well as other; and non-wood products such as honey, paper, fruits, nuts, medicinal, and herbs. Indirect benefits include climate regulation (emission reductions and carbon sequestration), habitat protection, air pollution control and hydrological functions. Research undertaken by the Kenya Forest Service (KFS) shows that four-fifths of the urban households in the country rely on charcoal for cooking and that the forestry sector employs over 50,000 people directly with a further 300,000 people employed indirectly. The sector contributes more than 7 billion Kenya Shillings to the economy (KFS, 2013a). However, despite the ecological and socio-economic importance of forests, deforestation and forest degradation continue to take place and thus contributing to ongoing loss of biodiversity.

The Government of Kenya has set goals and declared its ambition to protect the country's forests. For instance, the Constitution of Kenya, 2010, requires the state to work to achieve and maintain a tree cover of at least 10% of the land area in Kenya. Various efforts have been put in place by the Ministry of Environment and Forestry to achieve this, such as its contribution to the African Forest and Landscape and Restoration Initiative (AFR 100), by targeting to plant 5.1 million hectares (ha) of trees in deforested and degraded forests by 2030. Kenya is a signatory to the Paris Agreement and has committed to a greenhouse gas (GHG) emissions abatement target of 32% by 2030 relative to the Business as Usual (BAU) scenario of 143 $MtCO_2eq$ (GOK, 2020). Kenya's Nationally Determined Contribution (NDC) sets out the country's adaptation and mitigation actions that will contribute to the

attainment of the long-term goals set in the Paris Agreement. Additionally, Kenya developed the National Climate Change Action Plan (NCCAP) 2013-2017 and the recent NCCAP 2018-2022, where the forestry sector is among the climate change priority areas. In the current NCCAP, the forestry sector has a target of reducing GHG emission of 10.4 $MtCO_2e$ by 2023 through forest restoration, afforestation, reforestation and reduction of deforestation (GOK, 2018a), with a technical maximum abatement potential of 40.2 $MtCO_2e$ per year by 2030 (MoEF, 2019a). Kenya is also developing its REDD+ readiness elements with support from Forest Carbon Partnership Facility (FCPF).

This Status Review report aims to provide stakeholders in the forestry sector from both public and private sectors, researchers and civil society organisations with detailed information of the forestry situation in the country. Chapters 1-4 set out background information on forestry in Kenya by highlighting the drivers of deforestation, rationale for climate action in the sector, government actions, as well as agencies and policies applicable to the conservation and management of forest resources. They also provide information on the forestry projects and initiatives being implemented in different locations in Kenya and the institutions and organisations involved in their implementation. The projects and initiatives are categorised into afforestation, reforestation and restoration, forest conservation and sustainability, avoided/reduced deforestation and degradation, governance, policy and strategy support, capacity building, sustainable livelihood improvement and enhancing private sector engagements in the sector. Chapter 5 proceeds to provide information on the climate finance landscape in Kenya and highlights climate finance flow and private sector investments in the country. Chapter 6 provides information on monitoring and evaluation (M&E) in the sector and discusses the reporting requirements under the UNFCCC. The report concludes in chapter 7 by highlighting the challenges, barriers and threats facing the forestry sector. It also suggests opportunity areas categorised into finance, legal and technical for further development by a variety of stakeholders.

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AFR 100 African Forest and Landscape and Restoration Initiative

ASAP Adaptation for Smallholder Agriculture Programme

AfDB African Development Bank

AFOLU Agriculture, Forestry and Other Land Use

ASAL Arid and Semi-Arid Lands

BAU Business as Usual

BGF Better Globe Forestry

BTR Biennial Transparency Report

BUR Biennial Update Report

CCD Climate Change Directorate

CFA Community Forest Association

CI Conservation International

CIFOR Center for International Forestry Research

CO_2 Carbon dioxide

COP Conference of the Parties

CPA Charcoal Producer Association

CSO Civil Society Organisations

DFID Department for International Development[1]

EAWLS East Africa Wildlife Society

EIA Environmental Impact Assessment

EMCA Environmental Management and Coordination Act

ETF Enhanced Transparency Framework

EU European Union

FAO Food and Agriculture Organisation of the United Nations

FCPF Forest Carbon Partnership Facility

FCMA Forest Conservation and Management Act

FFF Forest and Farm Facility

FF-SPAK Farm Forest Smallholder Producer Association of Kenya

FLR Forest and Landscape Restoration

FMCP Facilitative Multilateral Consideration of Progress

FMNR Farmer-Managed Natural Regeneration

FREL Forest Reference Emission Levels

FRL Forest Reference Level

GBM Green Belt Movement

GDP Gross Domestic Product

GEF Global Environment Facility

GHG Greenhouse gas

GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit

GNI^{plus} The Global NDC Implementation Partners

GOK Government of Kenya

GTI Green Towns Initiative

ha Hectares

ICA International Consultation and Analysis

ICRAF International Council for Research in Agroforestry (World Agroforestry)

IEA International Energy Agency

IFAD International Fund for Agricultural Development

IFC International Finance Corporation

IKI International Climate Initiative

IPCC Intergovernmental Panel on Climate Change

IUCN International Union for Conservation of Nature

JICA Japan International Cooperation Agency

KEFRI Kenya Forest Research Institute

KFS Kenya Forest Service

KFWG Kenya Forest Working Group

KMFRI Kenya Marine and Fisheries Research Institute

1 Note, the UK's Department for International Development merged with Foreign, Commonwealth & Development Office (FCDO) in 2020, with all responsibilities now at the FCDO.

KNBS Kenya National Bureau of Statistics

Ksh Kenyan Shilling

KTDA Kenya Tea Development Agency

KWCA Kenya Wildlife Conservancies Association

KWS Kenya Wildlife Service

KWTA Kenya Water Tower Agency

LECRD Low Emission Climate Resilience Development Project

LPG Liquefied Petroleum Gas

LULUCF Land Use, Land-Use Change, and Forestry

M^3 Metre Cubic

M&E Monitoring and Evaluation

M&MRV Monitoring and Measurement, Reporting & Verification

MENR - Ministry of Environment and Natural Resources

MoEF Ministry of Environment and Forestry

MRV Monitoring, Reporting and Verification

$MtCO_2e$ Metric tons of Carbon Dioxide Equivalent

MTP Medium Term Plan

MWCT Maasai Wilderness Conservation Trust

NAMA Nationally Appropriate Mitigation Action

NC National Communications

NCCAP National Climate Change Action Plan

NCCRS National Climate Change Response Strategy

NDC Nationally Determined Contributions

NEMA National Environmental Management Authority

NFI National Forests Inventories

NFM National Forest Monitoring

NFMS National Forest Monitoring System

NGO Non-Governmental Organisation

NSP National Spatial Plan

PELIS Plantation Establishment and Livelihood Improvement Schemes

PES Payment for Ecosystem Services

REDD Reducing Emissions from Deforestation and Forest Degradation

REDD+ Reducing Emissions from Deforestation and Forest Degradation, and Forest Conservation, Sustainable management of forests, and Enhancement of forest carbon stocks

RWE Roundwood Equivalent

R-PP REDD+ Preparation Plan

SAGAs Semi-Autonomous Agencies

SDG Sustainable Development Goal

SLEEK System for Land-based Emissions Estimation in Kenya

SLM Sustainable Land Management

SMEs Small and Medium Enterprises

TER Technical Expert Review

TIST The International Small Group and Tree Planting Programme

TMA Timber Manufacturers Association

U.K. United Kingdom

UNDP United Nations Development Programme

UNEP United Nations Environment Programme

UNFCCC United Nations Convention on Climate Change

UNFI United Nations Forests Instrument

UNSPF United Nations Strategic Plan for Forests

USAID United States Agency for International Development

VAT Value Added Tax

VCM Voluntary Carbon Markets

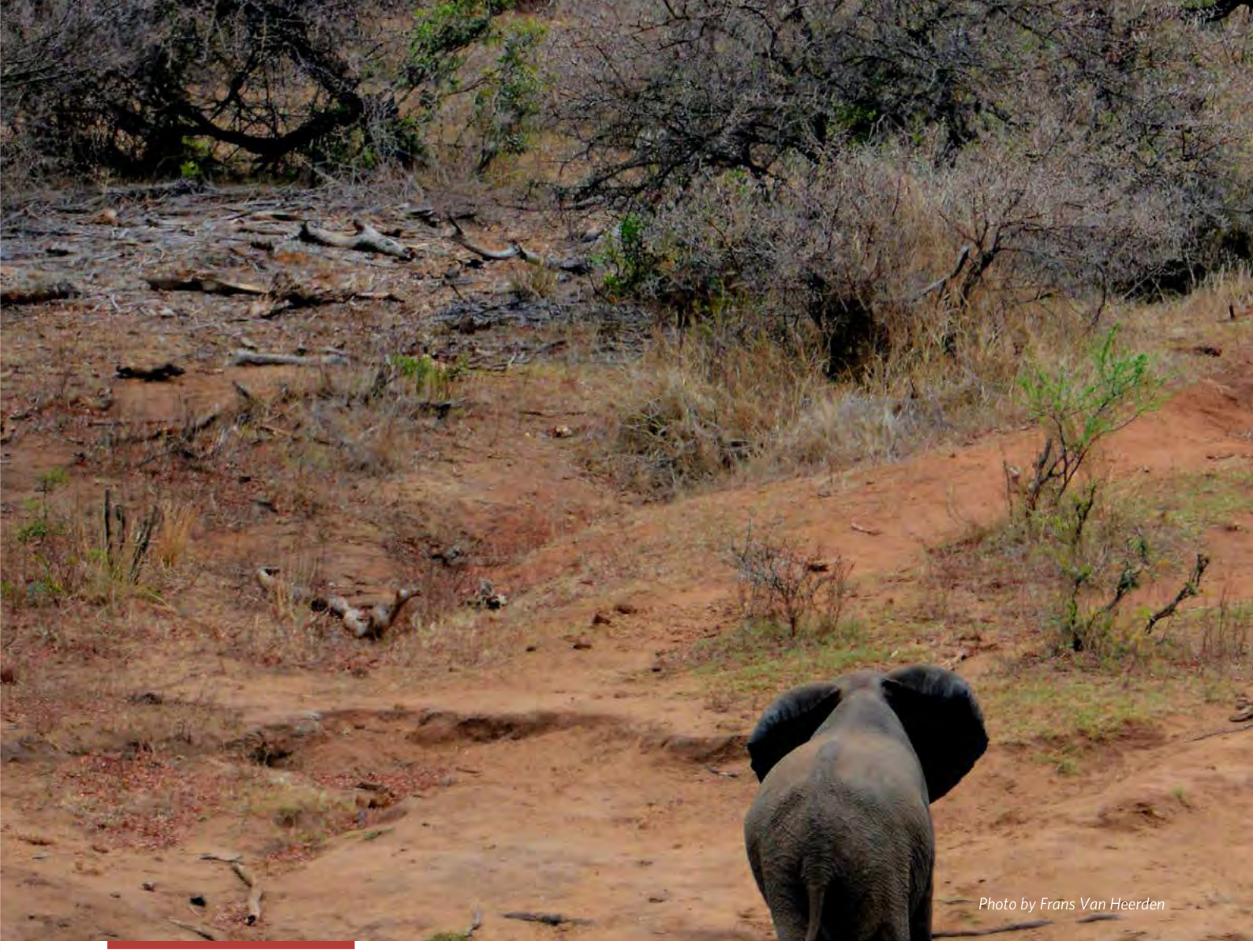
VER Verified Emissions Reductions

WRA Water Resources Authority

WRUA Water Resources Users Association

WWF World Wide Fund for Nature


Photo by Jcornelius-kaizer



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1. Introduction

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1. INTRODUCTION

The purpose of this status review of the forestry sector is to help inform decision-making across the Kenyan Government ministries, departments and agencies responsible for delivering the Nationally Determined Contribution (NDC) under the Paris Agreement and associated climate change actions, as well as parties in the non-governmental and private sectors. More specifically, it aims to provide information on:

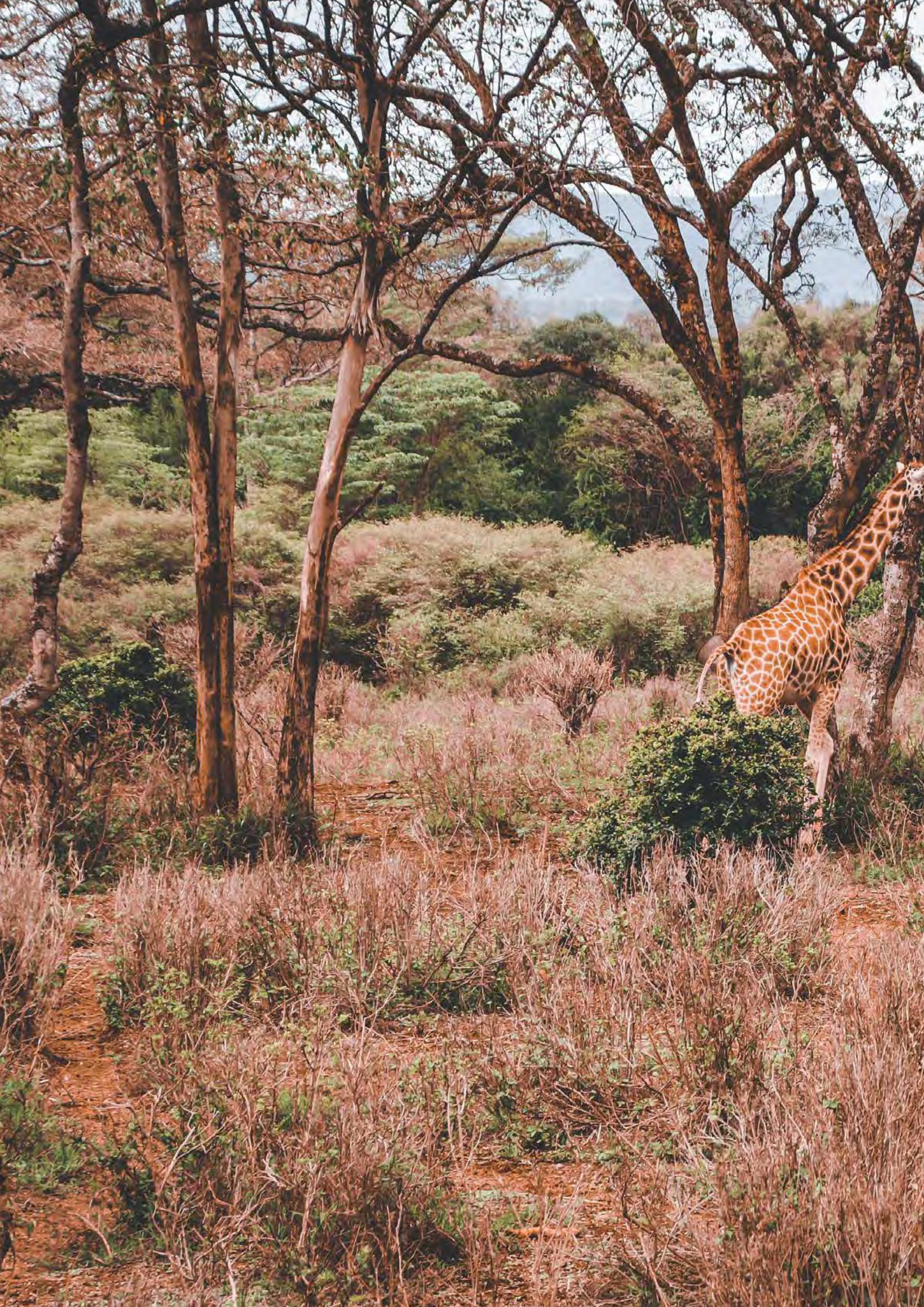
- Chapter 2 starts with the country background of Kenya, and how the forestry sector is defined (refer to Box 1-1 for Kenya's definition of the forestry sector). The chapter also analyses the status of the forestry sector in terms of the key climate-related issues and drivers for climate action;
- Chapter 3 discusses the past and ongoing government actions in the forestry sector including the development and introduction of policies, regulation, legislation and other initiatives that influence the forestry sector;
- Chapter 4 provides information of the projects and initiates in the sector.
- Chapter 5 looks at climate finance landscape – identifying the levels of public and private sector finance directed towards the forestry sector that could be available to assist in facilitating climate action;
- Chapter 6 discusses the requirements for monitoring, reporting and verification in the sector and to facilitate climate action.
- The brief concludes in Chapter 7 with a review of some of the major barriers to climate action in the forestry sector and identifies some of the ways in which these might be overcome. Readers will also find useful information about Kenya's forestry sector in the appendices.

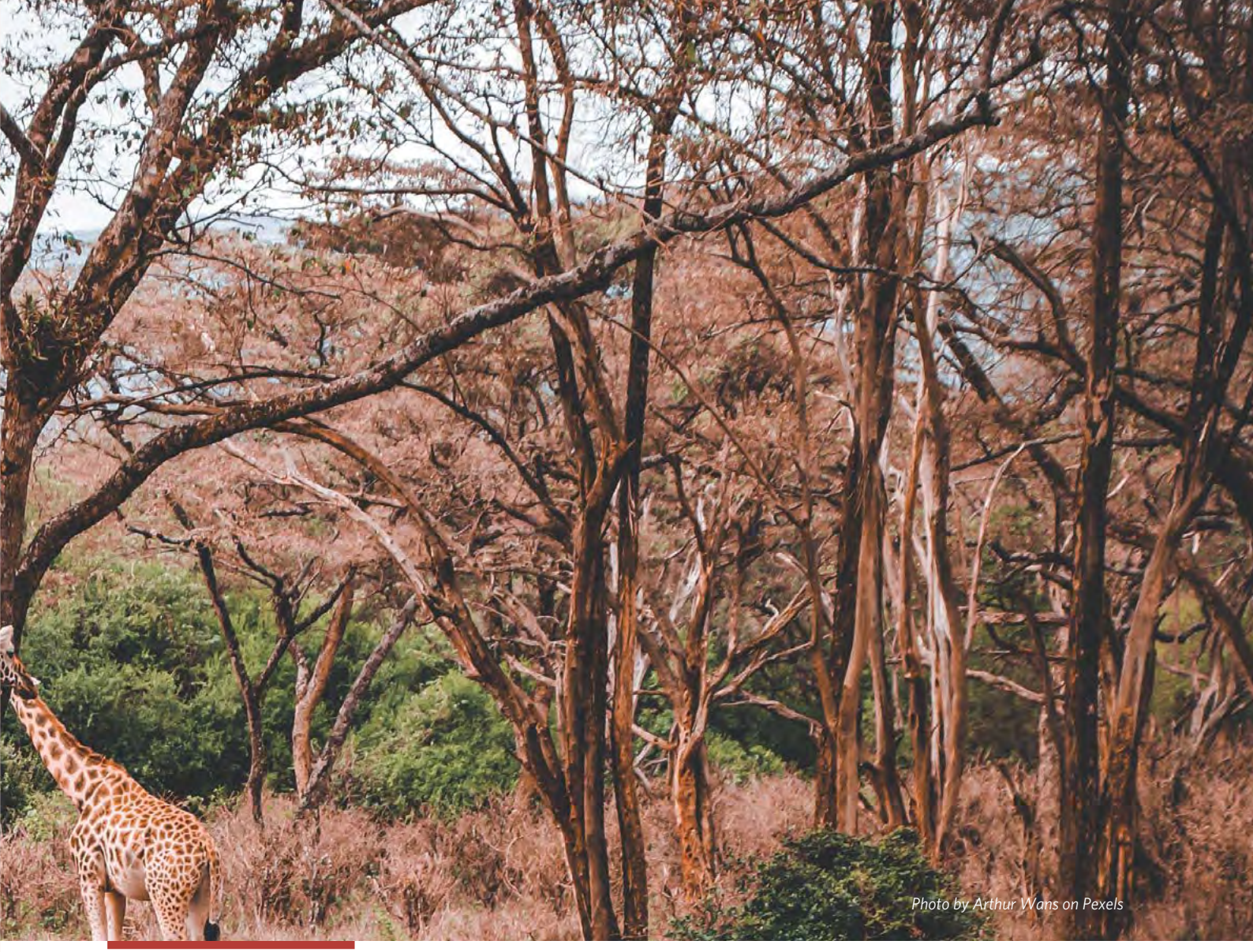
The findings are based on information gathered through a desk-based research, several rounds of technical reviews by sector experts, and workshops with relevant stakeholders conducted between March and April 2021, including representatives of both the public, private and non-governmental organisations working in the forestry sector in Kenya. Feedback received from the stakeholders was reviewed by forestry experts and included in this report.

Box 1-1 Defining the forestry sector

As there is no internationally commonly agreed definition of the forestry sector, for the purpose of this report, we have adopted the definition by the Food and Agriculture Organisation of the United Nations (FAO):

The forestry sector includes all economic activities that mostly depend on the production of goods and services from forests. This would include commercial activities that are dependent on the production of wood fibre (i.e. production of industrial roundwood, wood fuel and charcoal; sawn wood and wood-based panels; pulp and paper; and wooden furniture). It also includes activities such as the commercial production and processing of non-wood forest products and the subsistence use of forest products. (FAO, 2004a). The Forest Reference Level defines Forests as having a minimum of 15% canopy cover, minimum area of 0.5 hectares (ha) and minimum height of 2 metres at maturity in situ. Perennial tree crops like coffee and tea are not considered as trees irrespective of whether they meet the forest definition (MoEF, 2019a).





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2. Country Background and Rationale for Climate Action

2. COUNTRY BACKGROUND AND RATIONALE FOR CLIMATE ACTION

2.1. COUNTRY BACKGROUND

This chapter provides an overview of the geographical, political, as well as economic and social background in Kenya with relevance to the forestry sector and climate action.

2.1.1. GEOGRAPHICAL BACKGROUND

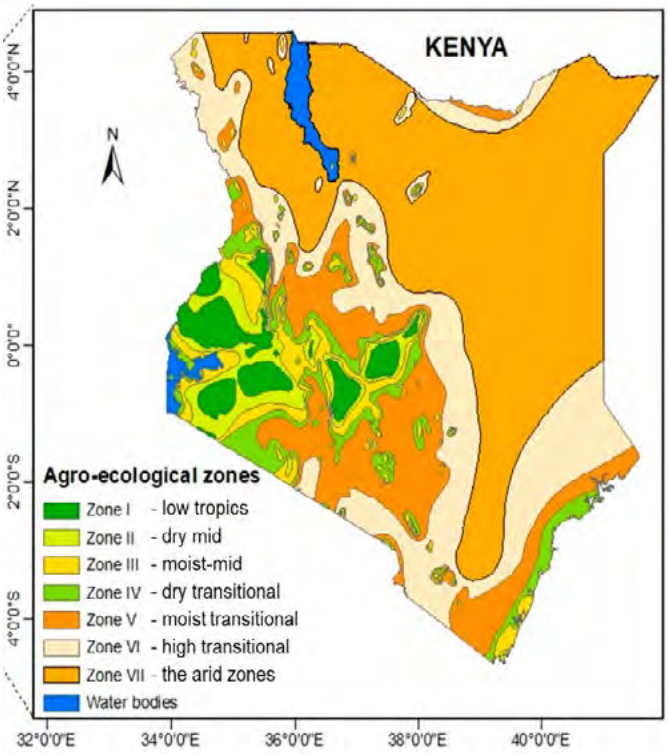
Kenya is located on the east coast of Africa, bisected by the equator which passes through the centre of the country. The territorial area of 582,646 km^2 is diverse; at the land-ocean interphase mangroves are common feature in creeks, protected bays and estuarine habitats spread across the 600km coastline. Further inland, to the west, the landscape changes into low plains and rangelands that rise into central highlands. This area of Kenya is known as the Great Rift Valley, characterised by escarpments and plateaus dotted with extinct and dormant volcanoes with an altitudinal range of 900 to 4,000 metres. Further west, the landscape descends to the shores of Lake Victoria. In the north and south of the country, arid and semiarid areas (ASALs) can be found.

The climate in Kenya is seasonal, controlled by the large-scale pressure systems of the western Indian Ocean and adjacent landmasses. Thus the climate is hot and humid along the coast, temperate in the west and south-west where there are mountainous areas and plateaus, and hot and dry in the north and east (Ingham, 2020). Typical seasons in Kenya are as follows:

- From December to March, the prevailing winds north of the Equator are northeast winds, while south to south easterly winds prevail in the south. Although rain may occur locally, these months tend to be dry.
- The rainy season extends from late March to May, also known as the "long rains" season.
- From June to August there is little precipitation, and south westerly winds prevail north of the Equator as south easterly winds prevail in the south.
- September through to early December tends to bring the "short rains" period.

However, **Kenya's weather patterns are changing and becoming less predictable**; this change has been attributed to climate change (Ongoma, 2019). These changing rainfall patterns have a potentially significant negative impact on Kenya, because 98% of the country's agriculture is rain-fed. The impact of climate change on the forestry sector is discussed in more detail later in this chapter.

Figure 2-1 Agro-climatic zones in Kenya



Source: Kogo, Kumar, Koech, & Kariyawasam, 2019
Note: This map does not represent the Government of Kenya approved territory boundary.

The climate varies across Kenya depending on the geographic location and topographical features present in the area. **Approximately 84% of the country's land area is either arid or semi-arid, and only 16% falls between high and medium potential suitable for crop production** (Kogo, Kumar, Koech, & Kariyawasam, 2019). There are seven agro-ecological zones in Kenya, as shown in Figure 2-1; these can be broadly categorised into four climatic zones, as outlined in Table 2-1.

In the very arid/arid areas of the country, annual average rainfall is between 200 and 600mm and annual temperatures range from 23°C to 34°C; semi-arid areas experience an average annual rainfall of 500 to 1,000mm and are slightly cooler in temperature. Both arid and semi-arid areas experience erratic rainfall patterns. The coastal climatic zone, a band approximately 16 kilometres wide, is humid all year round with an average annual temperature range of 22°C to 30°C and an average rainfall level of between 1,000 and 1,250mm. The central and western highlands and parts of the central Rift Valley areas are Kenya's most temperate zones, with annual rainfall levels averaging between 950 and 3,000mm and average annual temperatures ranging between 14°C to 28°C (Ingham, 2020).

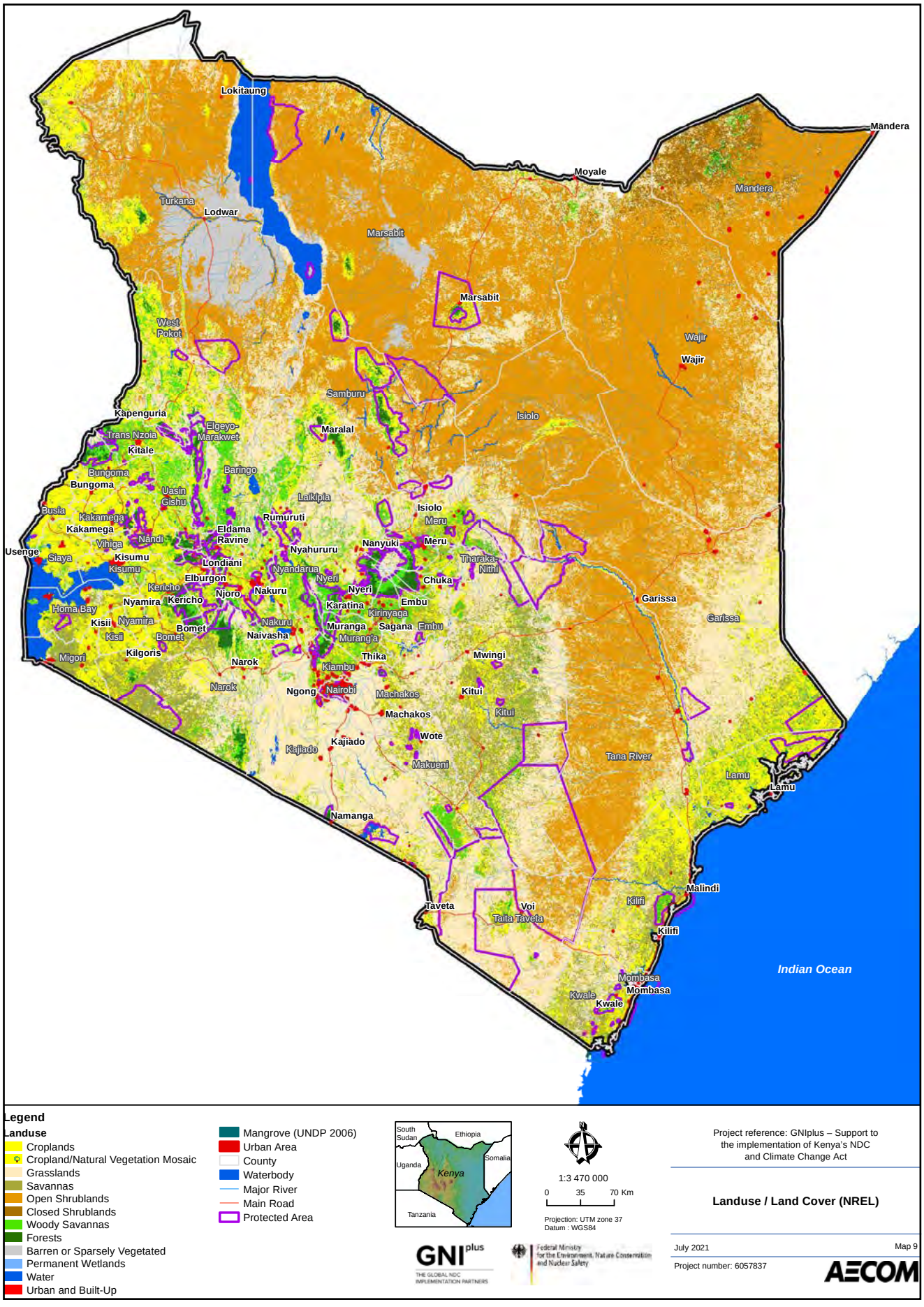
Table 2-1 Rainfall and temperature of different climatic zones in Kenya

Climate zones	Climatic conditions	Temperature	Precipitation
Arid areas	Hot and dry	23˚C-34˚C	200-600mm
Semi-arid	Hot and dry	23˚C-30˚C	500-600mm
Coastal	Hot and humid	22˚C-30˚C	1,000-1,250mm
Central and Western	Temperate	14˚C-28˚C	950-3,000mm

Source: Ingham, 2020

Reflecting the diverse topography and climate, various types of forests can be found in Kenya, **although these are highly fragmented in distribution** (as outlined in Figure 2-2). These include rainforests in the west, montane forests in the central and western highlands and on higher hills and mountains along the southern border; dry-land forests and woodland can be found in the low-land/rangelands areas, with coastal forests and mangroves on the coast (Peltorinne, 2004) (Gatsby, 2014). Further information on forest cover and types in Kenya can be found in section 2.2.1.

Figure 2-2 Land Use Land Cover of Kenya



2.1.2. POLITICAL BACKGROUND

The Republic of Kenya is a unitary state with a multi-party-political system. The Parliament of Kenya is a bicameral house consisting of the National Assembly and the Senate (GOK, 2010b). The President, being the head of state and government, is also head of the cabinet and commander-in-chief of the armed forces. The President is responsible for appointing the Cabinet Secretaries who are part of the executive branch of Government (GOK, 2010a). The role of Cabinet Secretaries is to advise the President and serve as administrative heads of their ministries.

The 2010 revision of the Constitution of Kenya saw the introduction of a devolved governance system, with the primary objective of decentralising power, resources and representation to the local level of the 47 County Governments. It also outlines the roles and responsibilities of both National and County Government functions. The National Government's role covers national defence, foreign affairs, and international trade, the use of international waters and resources, as well as the protection of the environment and natural resources (including forestry). The role of County Governments include providing health services, controlling pollution, trade development and regulations, as well as implementing specific national Government policies such as those relating to soil, water and forestry among others within their jurisdictional areas (GOK, 2010a).

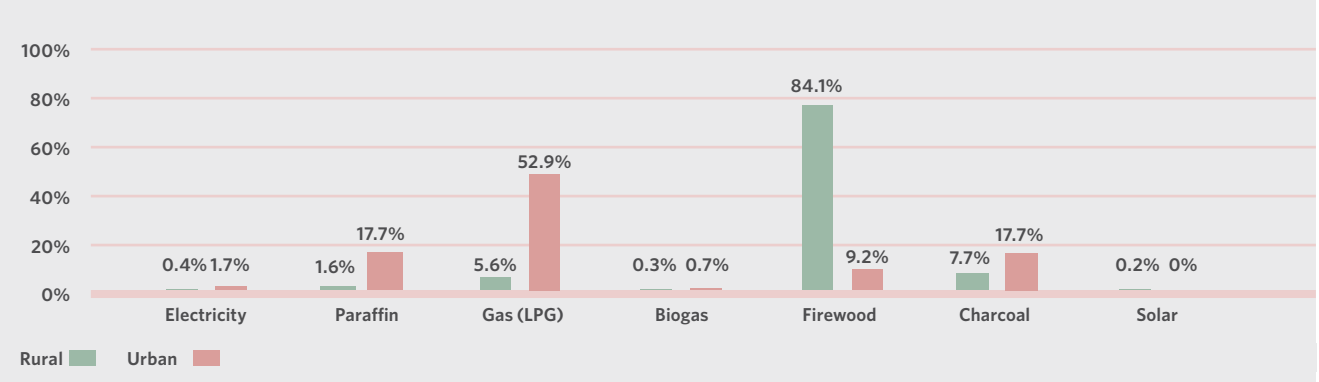
Further information on the national and county governments responsibilities in the forestry sector is found in Chapter 3.

2.1.3. ECONOMIC AND SOCIAL BACKGROUND

Kenya's gross domestic product (GDP) in 2019 was USD95.5 billion, and the country has averaged 5% annual growth in GDP over the past six years (World Bank, 2020a). In 2019, agriculture remained the main contributor to Kenya's GDP, accounting for slightly over a third of the total value of the economy. In 2019, the sector demonstrating the largest growth was service activities, **while agriculture, forestry and fishing activities (grouped as one) accounted for 14.1% of the growth**, and industry-related activities accounted for 16.3% of the growth (KNBS, 2020). Kenya's main exports are coffee, tea, and horticultural crops.

Kenya is a culturally diverse country; it has 42 tribes with different languages and unique cultures. In the 2019 Population and Housing Census, the total population was 47.6 million, a 21% increase since 2009 when the population was estimated at 37.7 million (KNBS, 2019a). The census indicated that the majority of the population (69%) resides in rural areas (KNBS, 2019a), where, for **84% of households, the main source of cooking fuel is firewood, followed by charcoal at 7.7%**, as outlined in Figure 2-3. In urban areas, the main source of fuel for cooking is liquefied petroleum gas (LPG) (53% of households), followed by charcoal (17.1% of households) and paraffin (17.1% of households).

Figure 2-3 Proportion of rural and urban households using different types of cooking fuel



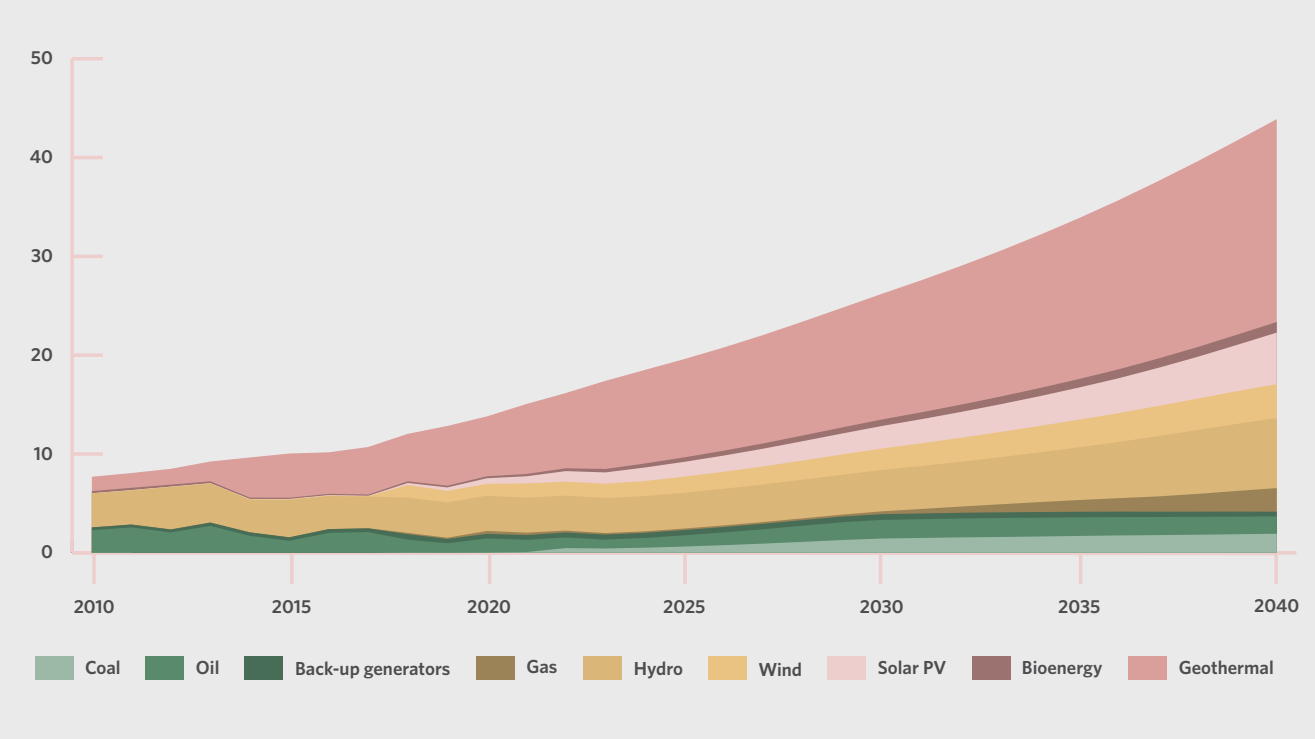
Source: adapted from KNBS, 2019b

Since 2013, **Kenya has experienced one of the fastest increases in electrification rates in Sub-Saharan Africa.** In 2018, the International Energy Agency (IEA) reported that 75% of Kenya's population had access to electricity, a significant increase compared to 8% in 2000 (IEA, 2019). Under the 'Last Mile Connectivity Project', the Government of Kenya is aiming to deliver universal access by 2022 (World Bank, 2018a) (IEA, 2019). **However, despite the increase in electricity connectivity, the rural population continue to rely predominantly on firewood for cooking.** This has been attributed to a range of externalities, such as the high connection charges, high cost of supplying electricity to rural and peri-urban households and lack of appropriate incentives to attract private sector. There are also other factors such as the better availability of firewood in rural areas, as well as the acceptability of firewood as a source of energy based on previous traditions that shape cooking habits (Githiomi & Oduor, 2013).

The country has also seen a shift towards decarbonisation of its energy grid as outlined in Figure 2-4 and Figure 2-5, with an increase in the percentage share of renewable energy, particularly from **geothermal sources,** up from 67% in 2010 to 84% in 2020. That said, the proposition of coal is projected to increase as well, contributing to the country's energy grid generation sources.

Bioenergy[1] **as an energy generation technology decreased from 3% of the total generation to 1%** over the period between 2010 to 2020 due to uptake of geothermal energy as well as other sources (IEA, 2020). The IEA estimates that bioenergy electricity generation contributed 197 Giga Watts per hour in 2019 (IEA, 2020). The uptake of clean energy such as geothermal energy is anticipated to have a positive impact on the forestry sector, reducing reliance on fuelwood and charcoal as household fuel sources and leading to a decrease in pressure on forest resources. Wind energy is Turkana (Lake Turkana Wind Power Project) is also providing reliable, low cost energy to Kenya's National Grid. Based on the same IAE study, it is anticipated that geothermal, bioenergy, solar wind, and hydro energy are projected to increase, as shown in Figure 2-4 and Figure 2-5.

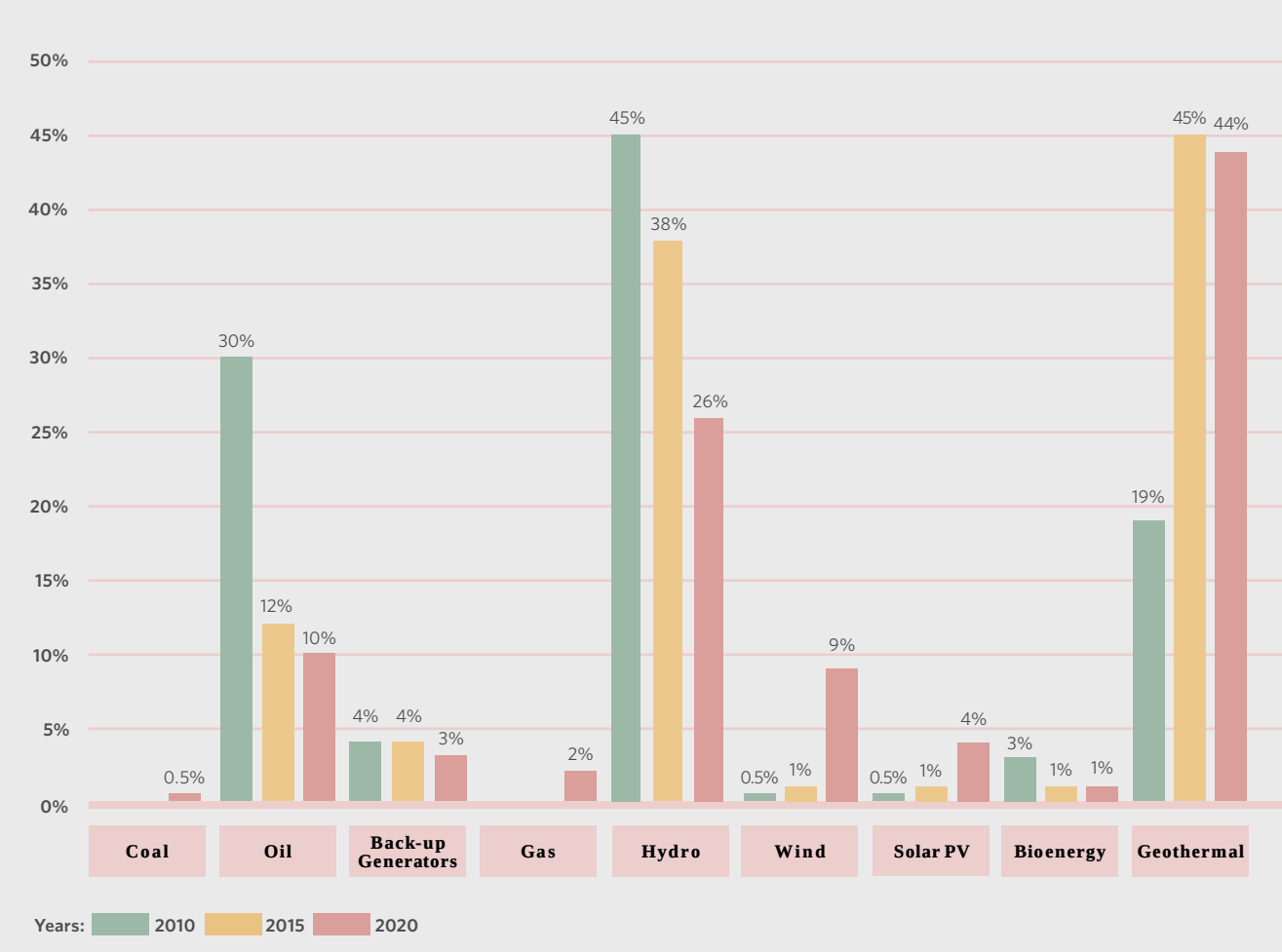
Figure 2-4 Kenya's current and projected electricity generation by technology in the Stated Policies Scenario, 2010-2040 (TWh)



Source: adapted from IEA, 2020

1 Bioenergy is a form of renewable energy that is derived from organic biomass, which can be used to produce fuel for transportation, heat and electricity.

Figure 2-5 Proportion of electricity generated by technology in 2010, 2015 and 2020

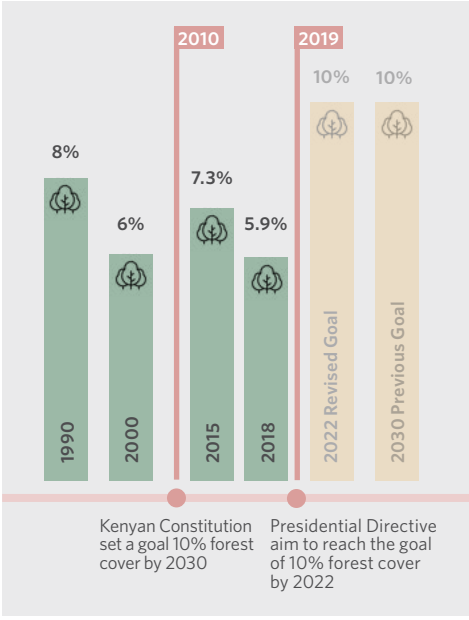


Source: adapted from IEA, 2020

2.2. FOREST COVER IN KENYA

In 1990, it was estimated that approximately 8% (4,670,877.3 ha) of Kenya was forested. By 2000, forest cover had decreased to 6% (3,492,116.2 ha). Further decrease was reported in 2015 when the cover stood at 7.3% of the total land area, equating to 4,178,600 hectares (GOK, 2018a). In 2018, **Kenya's forest cover was estimated to be 5.9% of the total land area equating to 3,462,536 ha** (MoEF, 2019a); this figure was identified in the National Forest Reference Level (FRL) report that was submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in August 2020. In 2010, the Kenyan Constitution set a goal to maintain tree cover[2] of at least 10% of the land area (GOK, 2010a). With the current forest cover, an increase based on current forest cover by 0.35% per year, equivalent to 207,213 ha per year for the

Figure 2-6 Forest cover in Kenya



Source: (MoEF, 2019b)

2 Article 69 (1)(b) of Kenya's Constitution sets out a goal to 'work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya'. However, the term "tree cover" is undefined. Further, Kenya Forest Service assesses forest cover and not tree cover and there is no systemic data collection to assess the tree cover in the country and monitor the country's performance towards achieving the target set by the Constitution.

period 2019 to 2030 should be done in order to achieve the goal. If successful, this planting, conservation and avoiding deforestation rate would reverse Kenya's emission status from the current state of net emissions to a net sink. The timeline of achieving this goal has since shortened, as per a Presidential Directive issued in 2019, which aims to achieve this target cover by 2022 (GOK, 2019a).

Comparing Kenya's forest cover with that of neighbouring East Africa countries, mainland Tanzania has the largest forest area estimated at 55% of the total land area. Tanzania is followed by Mozambique with 43% forest cover. Kenya and Uganda have the least forest in East Africa, covering an estimated 5.9% and 12.4% of the total land areas respectively (CIFOR & RCMRD, 2018).

Kenya's forests are managed under three different tenure systems: public, community and private. Whilst the Kenya Forest Service (KFS) has the mandate to ensure all forests in the country are sustainably managed, there are different governance and management structures set up for each type (MoEF, 2019b):

- **Public forests** are managed by the National Government through the KFS. Public forests are mainly managed for provision of environmental goods and services, but they also contain designated areas that are managed for timber, poles and fuelwood.
- **Community forests** are:
  - Forest land lawfully registered in the name of group representatives;
  - Forests on land lawfully transferred to a specific community;
  - Forests on ancestral lands and lands traditionally occupied by hunter-gatherer communities; and
  - Forests lawfully held as trust lands by county governments, but not including any public land held in trust by the county government.
- **Private forests** are owned or managed by individuals, (non-government) institutions or corporate entities as freehold or leasehold.

Most of the forested land in Kenya is under community and private ownership (77%) while the remaining 23% is under public management (MENR, 2013). This highlights the need for more interventions by government to attract private sector investment in the forest sector.

The National Land Act (2012) defines the land tenure system in Kenya under four main categories (GOK, 2012):

- Freehold;
- Leasehold;
- Easements; and
- Customary land rights.

Further breakdown of the land tenure forms is included in Appendix A.2.

2.2.1. FOREST TYPES

There are five main forest types in Kenya, as outlined in Box 2-1; **the most abundant being dryland forests** which make up 48.7% of the total forest in Kenya, **followed by montane forests** making up 35%, coastal forests 8.4%, western rainforests 3.5% and forest plantations 4.5% (MENR, 2013).

Box 2-1 Forest Strata in Kenya and emissions sequestration

DRYLAND FORESTS


Photo by KFS

These are located in Kenya's arid and semi-arid areas, such as Taita Hills, Tana River, Samburu and in the North Eastern parts of the country. The wider ecosystem is made up of grassland, savannahs and woodland. They contain a mixture of vegetation types; however, the most common tree is Acacia (MENR, 2016).

MONTANE FORESTS

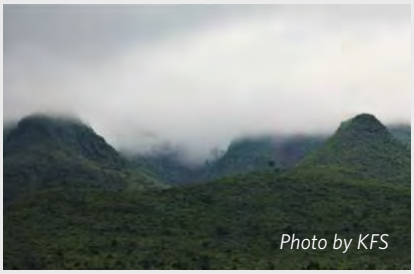


Photo by KFS

Commonly known as Kenya's water towers[3] comprise evergreen seasonal forests and evergreen forests and tend to be located at higher altitudes. Most of the closed canopy forests in Kenya are montane forests. Montane forests can be found in each of Kenya's key water towers: the Mau Forest Complex, Mt. Kenya, the Aberdares, Mt. Elgon, the Chyulu Hills and the Cherangani Hills (UNEP, 2012). Montane forests are present in some Arid and Semi-Arid Lands (ASALs) of northern and eastern Kenya, for example on Mt. Kulal, Loita Hills, Mt. Marsabit, and the Mathews Range among others.

Kenya's indigenous closed canopy[4] forest cover currently stands at 1.7% of the total land area, which is a decrease compared to its historic 2% cover in the early 1990's (UNDP, 2020a; IUCN, 1995).

MANGROVE AND COASTAL FORESTS


Photo by KFS

Mangrove forests have been defined as trees and shrubs that have adapted to life in saline environments. They are found in tidal estuaries, creeks and protected bays along the entire coastline. There are nine species of mangroves in Kenya with Rhizophora mucronata (Mkoko) and Ceriops tagal (Mkandaa) being the most dominant, occupying more than 70% of the formation (NEMA, 2017). These are found in the Counties of River, Kilifi, Mombasa and Kwale (KFS, 2017a). Lamu County has the highest mangrove forest cover of approximately 60% of the total mangrove forests in Kenya. They are gazetted, and therefore owned by the Government of Kenya and managed through the KFS. See section 2.2.2 for further information on mangroves.

Coastal forests are found in the coastal region of Kenya within a 30km strip from the shoreline. They are part of the larger coastal belt and include the Shimba Hills forest, the forest along the Tana River region, the Boni-Dodori Forest complex and the Arabuko-sokoke forest complex.

3 A water tower is an upland area with characteristics to support reception, infiltration, percolation and storage of rainfall and gradually releases it into a drainage basin.

4 Indigenous Closed Canopy Forest: A group of forests whose crowns are largely contiguous and include the ecosystem that makes it up and a tree canopy cover of over 10%. The canopy is essentially composed of indigenous tree species growing under natural conditions and excludes planted indigenous plantation forests. The forest is delineated through legal gazettement. The area includes mangroves and bamboo ecosystems (FAO, 2010a)

TROPICAL RAINFORESTS/ WESTERN RAINFORESTS

In Kenya this forest type is found in the West of Kenya - the public gazetted Kakamega Forest, Nyakweri Forest and South Nandi Forest. The forest is an important water catchment area; the Isukhu and Yala Rivers flow through the forest and gather tributaries from it (UNESCO, 2020).


Photo by KFS

PLANTATION FORESTS

This refers to areas with even-aged monoculture which have unique spectral characteristics that can allow this forest type to be distinguished from other vegetation types by remote sensing. The trees are mainly planted for commercial purposes. Plantation forests are categorised as state-owned plantations or private forest plantations.


Photo by KFS


Photo by KFS

- State-owned plantations - the predominant species are Pines and Cypress (86%), and Eucalyptus (10%), with the remainder comprising indigenous hardwood and softwood plantations. They are managed by KFS for the production of sawn logs, pulpwood, and transmission poles, as the main outputs (Ototo & Vlosky, 2018).
- Private forest plantations - are predominately fast-growing Eucalyptus species grown to provide posts, transmission and building poles, sawn timber, fuelwood, and charcoal. The tea and tobacco industries are among the leading investors in fuelwood plantations to dry their products. (Ototo & Vlosky, 2018).

The following table outlines the approximate areas covered by each forest type, as well as the historical annual carbon dioxide sinks.

Forest type	Forest sub-type	Approximate area (Ha)			Emissions (tCO_2) for 2014-2018
		2006-2010	2010-2014	2014-2018	
Dryland forests	Natural forest (mixed indigenous trees[5]). [Hilltops in Eastern and Northern Kenya and Lake Victoria regions]	774,168	820,364	744, 965	(-395,111)
Montane forests & Western rainforest	Natural forests (mixed indigenous trees) which include Mt. Kenya, Aberdares, Mau, Cherangani, Mt. Elgon, Matthews Ranges and Chyulu Hills. The montane forests form the catchments of the main rivers of the water towers. Western rainforest is found in areas of Kakamega and Nandi Forests.	1,033,823	1,081,420	1,086,615	(-442,179)
Coastal forest and mangroves	Natural forest (mixed indigenous trees) [Arabuko sokoke, Dakatcha, Boni, Shimba Hills, Kayas]	375,728	365,710	320,549	(-64, 866)
Public forest plantation	Harvesting Replanting	61,183	64,384	56,315	4,449,483 (-173,181)

Source: GOK, 2019

5 Indigenous forests are forests that have come about by natural regeneration of trees primarily native to Kenya, and includes mangroves and bamboo forests forming a tree canopy above 40%.

2.2.2. RATES OF DEFORESTATION IN KENYA

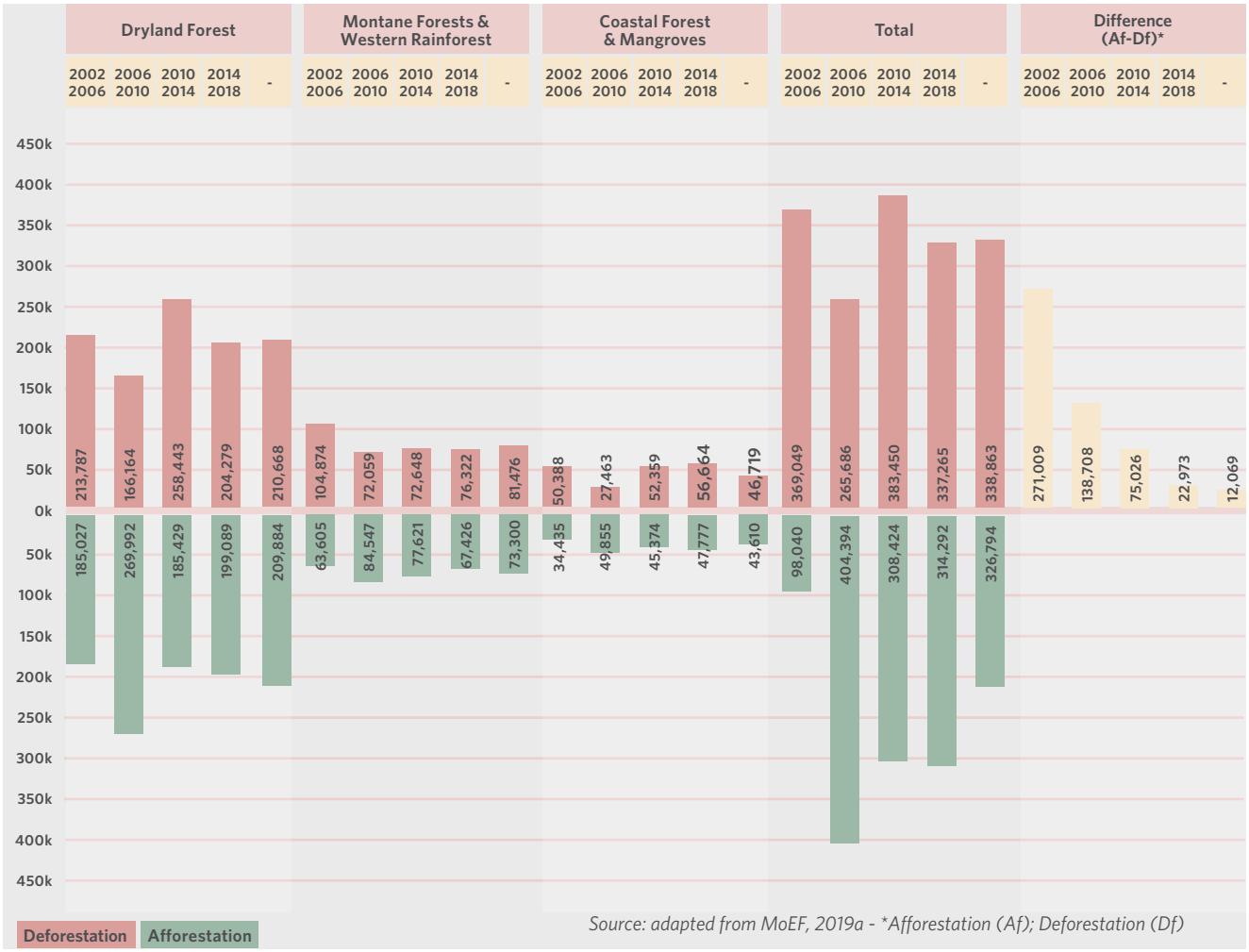
The Government of Kenya (2019) estimates the total national average CO_2 emission to be 52,204,059 tCO_2/year (MoEF, 2019a). This is determined from average annual historical emissions from deforestation and forest degradation, sustainable management of forests, and enhancement of forest carbon stocks in the period 2002-2018. The annual CO_2 net emissions classified by REDD+[6] activities have been calculated as (MoEF, 2019a):

- 48,166,940 t CO_2/year for deforestation;
- 10,885,950 t CO_2/year for forest degradation;
- 2,681,433 t CO_2/year for sustainable management of forests; and
- -9,530,264 t CO_2/year for enhancement of carbon stocks.

Between 2014 and 2018, the FRL reported higher rates of deforestation (337,265 ha) compared to afforestation (311,292 ha) activities; this trend is also the same for the average figures for the 2002 – 2018 period, as highlighted in Table 2.-2. There has, therefore, been a net loss of forest cover in Kenya, in the most recent reporting period (2014-2018), averaging 22,973 ha lost per year. The greatest transition has been observed for montane forest and western rainforest, as well as coastal forest and mangroves.

6 Reducing Emissions from Deforestation and Forest Degradation, and Forest Conservation, Sustainable management of forests, and Enhancement of forest carbon stocks (REDD+)

Table 2-2 Annual transitions (No of ha); deforestation and afforestation among forest types in Kenya



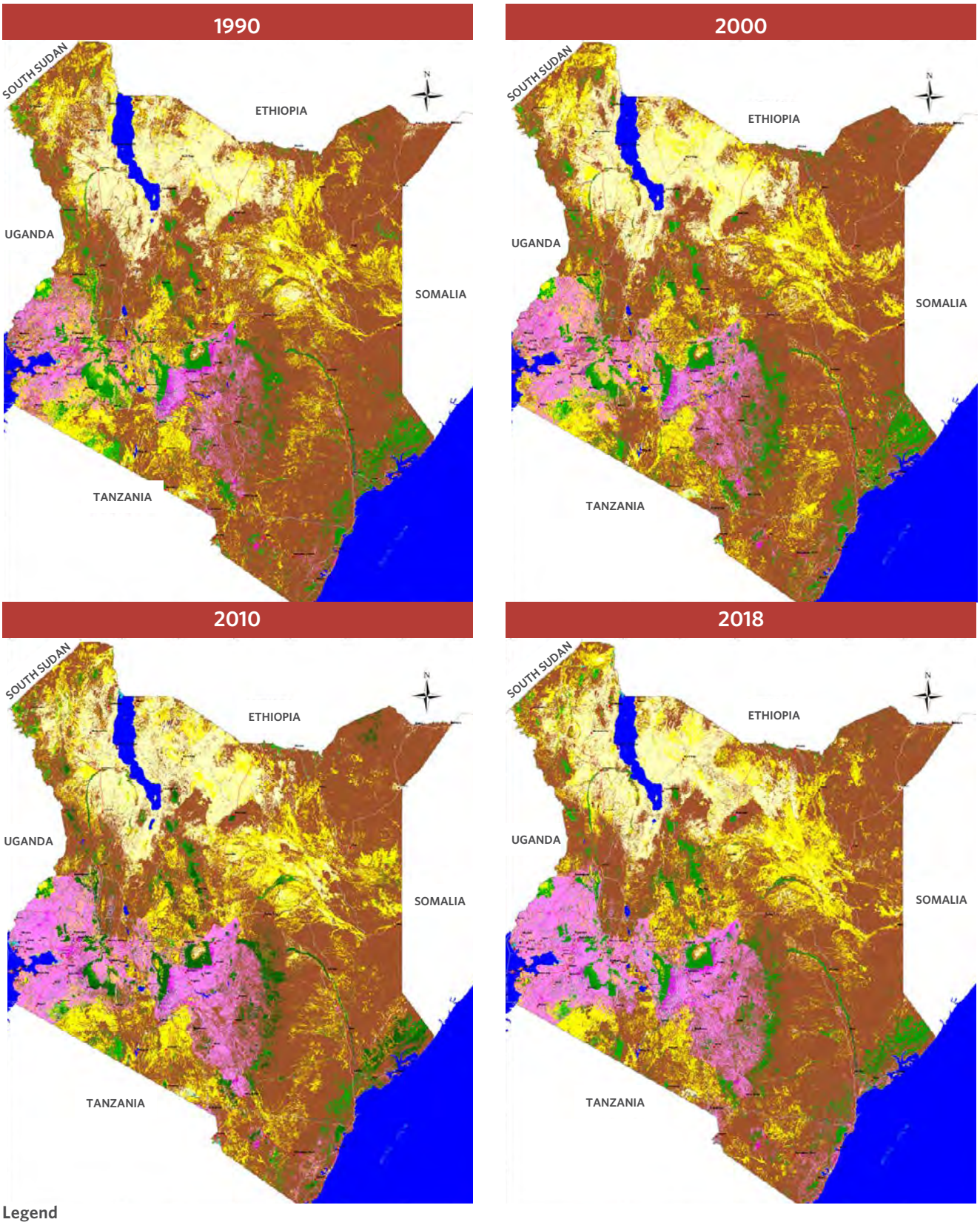
*Source: adapted from MoEF, 2019a - *Afforestation (Af); Deforestation (Df)*

The timescales over which deforestation has occurred in Kenya vary within the different forest types, as highlighted in Figure 2-7. For instance, in the 1970s, Ol Arabel, Marmanet, Aberdares, Uaso Narok and Bahati forest reserves and their environs contained dense forests. However, by 2010, most of the forests had been cleared for other land uses. In the Mount Kenya forest, intense population growth from the 1960s to 1990s led to large areas of indigenous forests being cleared for settlement. In the Mau Forest Complex over 8,214 ha of forest cover was lost from within its official boundaries between 1973 and 2005, of which approximately 43% of the loss occurred in just two years between 2003 and 2005: The cause can be attributed to the rich soils that provide fertile lands for agriculture, which has led to a rapidly growth in population and a rapid rate of land conversion of large areas of forest to farmland (UNEP, 2009). In 2001, 61,023 ha of the Mau Forest Complex was excised, which has contributed to the enhanced deforestation.

Generally, in the ten-year period between **2000-2010, deforestation in Kenya's water towers**[7] **was estimated at 50,000 ha** (NEMA, 2010). The Forest Resource Assessment report authored by FAO in 2010 showed that the rates of deforestation varied in the various categories of forests; this was further demonstrated in the 2019 FRL report, as highlighted in Table 2-2. **Factors contributing to the changes include illegal conversion of forests into other uses, mainly agriculture, logging and over-exploitation of wood for timber, poles and wood fuel.** Private plantation forests mainly owned by tea estates and private companies had marginal increases in aggregate planted area.

7 Water towers: This term is used in the Kenyan context to refer to "elevated geographical areas comprising mountains, hills, and plateaus where the topography, geology, soils and vegetation support reception, retention, infiltration, and percolation of precipitation and storage as ground water, that is eventually released through springs, streams, rivers, swamps, lakes, and oceans to sustain connected biodiverse ecosystems" (NEMA, 2010).

Figure 2-7 Landcover change from 1990 to 2010



Notes: This Map shows Kenya's land cover in 1990. Policy makers, communities and land-managers ca use these maps to understand how our land cover and land use has changed over time. The map will aslo support estimation of Kenya's emissions by driving the SLEEK system, which is the Kenya's most advanced emission estimation system ever developed in Kenya for the land-sector. Source: MoEF, 2021

Forestry and other land use-related emissions in Kenya accounted for 19.6 $MtCO_2e$ in 2010, or about 32% of national greenhouse gas (GHG) emissions. Emissions originate from deforestation, where forests are cleared for: woodland grazing, wood harvesting (for fuelwood, charcoal and other wood products), urban expansion, infrastructure development and agriculture (MENR,2013). The land use, land use change and forestry (LULUCF) sector is the second largest contributor to Kenya's GHG emissions after agriculture (GOK, 2018a).

2.2.3. DRIVERS OF DEFORESTATION AND FOREST DEGRADATION IN KENYA

Efforts to increase afforestation and reforestation activities have been observed since 2002 (average of 326,794 ha/year from 2002-2018 as outlined in the 2019 FRL), these can be **attributed largely to the establishment of private commercial plantations and Government-led initiatives.** However, deforestation and forest degradation (average 338,863ha/year) still occur at slightly higher rates: there is therefore a net loss of forest in Kenya (MoEF, 2019a). Additionally, there are threats to the conservation of water towers in Kenya including illegal logging, over-grazing of livestock and destruction of riparian areas (KWTA, 2020a). The threats of deforestation and forest degradation in Kenya can be categorised as direct and indirect drivers, as defined in Box 2-2. The drivers are the processes that impact forests, thus by identifying and understanding the causes and influences, mitigating/preventive actions can be implemented. Table 2-3 (at the end of this sub-chapter) outlines the major causes of deforestation in different forests in Kenya as determined by the KFS through sub-national consultations (KFS, 2013b); these have been further categorised in terms of their direct or indirect link to deforestation and degradation.

Box 2-2 Defining direct and indirect drivers of deforestation and forest degradation

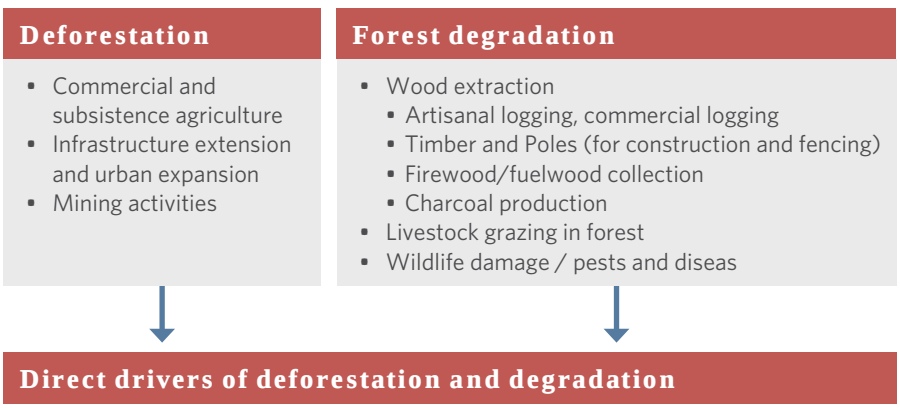
Direct drivers: sometimes referred to as 'proximate causes', are the impacts from human activities or immediate actions that directly impact forest cover and loss of carbon.

Indirect drivers: 'underlying causes' or 'driving forces', are complex interactions of fundamental social, economic, political, cultural and technological processes indirectly impacting forest cover and loss of carbon.

2.2.3.1. DIRECT DRIVERS

The direct drivers that present key threats to Kenya's forests and result in barriers for their conservation, protection and sustainable management have been summarised in Figure 2-8.

Figure 2-8 Summary of the direct drivers of deforestation and forest degradation



Source: AECOM

Agricultural land expansion is a significant direct driver of deforestation in Kenya, where forests are removed to make way for land that can be cultivated or used for pastoral farming. It can also be further sub-divided from shifting cultivation as was practised traditionally in the Mau and Mount Elgon regions, to permanent subsistence agriculture, permanent commercial farming and local trans-migration in search of work (KFS, 2013a).

Urban expansion is also occurring to create space for new housing settlements, requiring forests to be felled to provide space for infrastructure developments (including housing and transport) (KFS, 2013a).

Mining activities are also a direct driver of deforestation. In Kenya, there are rich deposits of soda ash, fluorspar, titanium, gold, coal, manganese, iron ore, gypsum, diatomite, chromite, limestone, and silica sand (MoM, 2016). In order to extract many of these resources, mines are created that significantly alter the landscape and require the excavation of large areas. If forests are in the area of the mineral resources, these are cleared. However, there is no information on specific area of forests being felled for mining.

Wood extraction is one of the largest direct drivers for forest degradation. It takes the form of artisanal logging, as well as commercial logging in plantations, natural forests and woodlands (KFS, 2013a). This includes the extraction of wood for: logging activities; use in infrastructure construction, fence building, and telecommunications; firewood and fuelwood collection; as well as charcoal production. In 2013, the Ministry of Environment and Forestry undertook an analysis of wood supply and demand identifying a national wood deficit of 10.3 million m^3. Factors contributing to the deficit included low average yield, poor processing and utilisation method and Kenya's small area of forest cover (KFS, 2013b). This issue was further reinforced in the most recent Census (2019), as outlined in section 2.1.3, where it was found that approximately 84% of households in rural areas use firewood, followed by 7.7% who use charcoal as their main source of cooking fuel (see Figure 2-3). The use of charcoal is also high in cities. The misuse and over-extraction in forests results in degradation of the forest due to the biomass that is removed at an unsustainable rate. The same study found that wood extraction from forests supports the livelihood and is the fuel source for a large proportion of the population, specifically in rural parts of the country due to its easy access and affordability; Box 2-3 summarises a case study on the value chains of wood fuel in Kenya, in particular the supply and demand of charcoal.

Photo bypexels-antony-trivet

Box 2-3 Case study: Value chains of the charcoal sector in Kenya

A report produced in 2013 by the Kenya Forest Service (KFS, 2013a) indicates that the charcoal industry employs more than 1 million people across the value chain. According to the report, charcoal provide domestic energy for 82% of urban and 34% of rural households. The charcoal industry creates jobs for wood producers, charcoal producers and vendors. However, the sector remains informal, with little recognition in the national economy. The report also revealed that most trees used for charcoal production are sourced from rangelands[8] that are under various forms of ownerships including freehold, group ownership and trust lands. The production is mostly done using inefficient technologies.

Charcoal is estimated to contribute around Ksh135 billion to the economy annually (KFS, 2013a). Despite the enactment of the Forest Charcoal Rules 2009, wood harvesting, charcoal burning, transport and trade are still largely unregulated. One requirement set out in the Charcoal Rules 2009 is for all commercial charcoal producers to organise themselves and form registered charcoal producer associations (FAO, 2009). However, it was found that 60% of charcoal producers are not registered in any association and that corruption in the charcoal trade is one of the biggest barriers in regulating the sector. Additionally, there is a lack of coordination between the different Government agencies involved in the different phases of charcoal production (i.e. production of feedstock, carbonisation and distribution), with no party assuming overall responsibility (KFS, 2013a). The 2018 Taskforce report on Forest Resource Management also identified that, in some instances of illegal charcoal production, the proceeds were used to fund terrorism activities, as found in the Boni Forest in Garissa County (MoEF, 2018a).

The objectives of charcoal producer associations include:

- Facilitating sustainable production of charcoal by their members;
- Ensuring that members implement reforestation conservation plans;
- Developing and implement a Code of Practice for the purposes of self-regulation; and
- Assisting KFS in enforcing the provisions of the Act relating to sustainable charcoal production, transportation and marketing.

Charcoal production is a strong driver of deforestation and source of GHG emissions, also considering the high proportion of non-renewable biomass used to produce charcoal (between 90% and 95%) (UNEP, 2017). Artisanal processing of wood to produce charcoal (carbonisation) involves traditional kilns which have a very low charcoal recovery rate of 9-10%. Local charcoal producers often lack skills, raw materials and investment capacities to adopt more efficient technologies. Use of charcoal in urban areas at the household level is highly inefficient although there have been efforts by the Government to disseminate charcoal efficient stoves since the 1980s.

8 Rangelands are grasslands, shrublands, woodlands, wetlands, and deserts that are grazed by domestic livestock or wild animals (Sandhage-Hofmann, 2016)

Livestock grazing in forests puts pressure on the fragile ecosystem; excessive grazing means that the forest is unable to regenerate given the biodiversity loss (particularly of new shoots and younger plants) (Giday, K et. al., 2018). With the growth of the pastoralist population and subsequent increase of the livestock population in Kenya, this has also led to increased grazing activity in forests, causing severe degradation which has also reduced livestock productivity (Mulinge, et al., 2016).

Climate change effects such as sea-level rise, sedimentation and flooding have a significant impact on mangroves. Related to this are additional drivers of forest degradation including **wildfires and the threat of pests and diseases, as all of these reduce the quality of Kenya's forests.** With future climate change, these drivers are expected to increase as both temperature and rainfall is expected to change across the country (GOK, 2018b).

2.2.3.2. INDIRECT DRIVERS

Indirect drivers are significant threats to Kenya's forests, in terms of deforestation and forest degradation. These often result in barriers for the implementation of conservation, protection and sustainable management activities in forests. Some of the key threats have been broadly summarised under five themes, as shown in Figure 2-8:

Figure 2-8 Root causes of indirect drivers of deforestation and forest degradation

Social	▪ Population growth resulting in increased impact on forest and land resources ▪ High cost of electricity for industry and LPG for domestic use / lack of cheaper energy alternatives ▪ Lack of knowledge of the public and the private sector on the effects of deforestation ▪ Improved transport infrastructure in rural areas
Cooking Technology	▪ Use of inefficient technologies (a household level and in industry) ▪ Inefficiencies in timber processing and trained sawmill operators; and in wood product processing ▪ High cost of purchasing improved cookstoves, bio-gas and electricity
Policy & Governance	▪ Conflicting interest among stakeholders in forest management ▪ Inadequate capacity and funding constraining provision of public service ▪ Land-use planning ▪ Lack of/poor incentives for sustainable forestry management and conservation activities ▪ Lack of defined carbon rights to allow finance to flow ▪ Inefficient management arrangements for forest governance and unclear division of responsibilities between public sector institutions ▪ Lack of mainstreaming of forest conservation into national land use systems ▪ Lack of harmonization across forest-related data ▪ Lack of deep community participation in forest management and conservation as well as equitable and transparent benefit-sharing arrangements ▪ Lack of promotion of dryland and coastal forestry
Economic & Financial	▪ Lack of promotion of value chains for more sustainable forestry products ▪ Inadequate resources to protect forests ▪ Inadequate tracking of resources for forestry initiatives ▪ Consideration of natural capital and green accounting into the gross domestic product
Institutional & Organisational	▪ Lack of inter-sectoral/ministerial coordination ▪ Lack of up to data and accurate forest cover data – unable to monitor and enforce forestry policies and targets ▪ Land tenure ▪ Lack of functioning Climate Change Council

Source: AECOM

SOCIAL

Population growth is the underlying indirect driver behind deforestation and forest degradation in Kenya, according to research by the KFS and Kenya Forest Research Institute (KEFRI) (MoEF, 2018a). In the 1980s, the Kenyan population grew at the rate of 4% a year, thereby **putting pressure on rich forest lands favourable to crop cultivation.** With the population continuing to rise at a rate of just over 2% (World Bank, 2020a), there is an increasing demand for food production, leading to continued agricultural land encroachments into forests (both public and private).

The **high cost of electricity for industry and LPG for domestic use further promotes the use of forest resources,** given the cheaper prices. In most cases for rural communities, fuelwood is a free resource; thus, creating a barrier for the uptake of alternative fuel sources as these would come at a cost. This **overdependence on wood fuel and charcoal for cooking and energy** is another indirect driver of forest degradation, as these resources are continually being extracted at an unsustainable rate. This is the case both at a household level and also in industry.

An **improvement in rural transport infrastructure in terms of network reach and road surface improvements has also increased the production of charcoal and timber,** which has meant previously remote areas are now better connected, and journey times have been reduced. Charcoal and timber producers have increased access to market(s), which means they are able to provide products to locations where there is demand more quickly and easier. This has the potential impact of further promoting unsustainable practices, therefore increasing the extraction of wood from forests and further enhancing degradation. Additionally, conflicts between indigenous people and law-enforcing agencies have made it difficult to conserving and managing forests in public forests in areas such as Mount Elgon and Mau Forest.

Limited knowledge and understanding on the impacts and effects of deforestation and forest degradation and the value of forests is also a challenge being faced in Kenya. Individuals, subsistence farmers, Small and Medium Enterprises (SMEs), and large organisations need should have better awareness and accesses to information to inform how certain operation procedures and decisions can have a negative impact on forests. The limited access to forestry data/information is also an issue. Limited skills and knowledge within silviculture[9], plantation management and harvesting also need to be addressed in order to support sustainable forest initiatives and plantations (Gatsby, 2020a).

COOKING TECHNOLOGY

The **use of inefficient technologies is a significant indirect driver of forest degradation, as more fuelwood/ charcoal is required to deliver the same outcome**, further increasing the pressure on forests. At a household level, the use of traditional 'three-stone' fires and kilns ('jikos') is still common, especially in rural communities. These cookstoves do not fully combust the biomass, with up to 75% of the heat being lost. In addition, the burning process releases substances hazardous to human health including carbon monoxide, nitrous oxides, particulate matter and black carbon (Natural Capital Partners, 2019). Uptake of clean/ improved cookstoves with higher thermal capacities will reduce the demand of forestry products per capita and improve the health impacts on the user. **Access and understanding of the available technologies are also barriers,** linked to the lack of information in the 'social' challenges section above.

The **increased demand for forestry products in the domestic market** is an indirect driver of forest degradation. Kenya is currently facing a supply deficit of industrial raw materials as a result of unsustainable management of its forests in the last three decades, which is forecast to aggravate further (Gatsby, 2020a).

9 Silvicultural practice consists of the interventions applied to forests to maintain or enhance their utility for specific purposes, such as the production of wood and other forest products, biodiversity conservation, recreation and the provision of environmental services.

Restocking of harvested industrial plantations by KFS has been behind schedule with an estimated 3,000 ha being replanted versus more than 6,000 ha of mature plantations harvested annually (Ototo & Vlosky, 2018). The low rates of regeneration of clear-cut plantations is a significant challenge, particularly for the KFS run plantations. This is **further exacerbated by poor management practices (silviculture), poor access to improved seedlings and quality planting material** (Gatsby, 2020a), among others.

Both at artisanal and industrial level, **inefficient wood processing technologies and processes** are also an issue – in the production of timber resulting in low recovery rate and low-quality wood supply. A study by Ototo and Vlosky (2018) found that, on average, smaller scale sawmills had a low utilisation efficiency of roundwood of approximately 28%. In contrast, the country's only largescale integrated mill that produces timber, plywood, particleboard, and hardboard achieves about 80% recovery (Ototo & Vlosky, 2018). To fuel its operations, the mill utilises waste material for combined heat and power. However, most other sawmills in Kenya have smaller capacities and produce single products (mainly timber) using inefficient technologies and outdated equipment which contributed to the identified low recovery rates (Ototo & Vlosky, 2018). This therefore increases the demand on forests, especially plantations (both public and private) and private/community forests (e.g. farmlands). For industries that use fuelwood , as a source of energy for its operations or production processes (e.g. tea), the use of inefficient combustion technologies is also a common issue to be overcome.

POLICY & GOVERNANCE

Weak institutional capacity and poor enforcement of forest laws and regulations have been identified as major indirect drivers of forest cover change in Kenya (GOK, 2018c), not only at the national level but at the local level as well. Forests on community trust lands, for example, that are in the control of local authorities, continue to be destroyed through unregulated grazing, over-exploitation for poles and timber, charcoal and clearance for agriculture (MoEF, 2016b). Minimal engagement of county governments in forest conservation and management is also contributing to deforestation and degradation. In a recent taskforce review of KFS, it was also found that corruption within the institutions mandated to protect our forests is a challenge (MoEF, 2018a)(MoEF, 2018).

Inadequate land tenure policies, limited collaboration among forest management agencies and overlapping policies have hindered sustainable forests efforts, and in some cases have been attributed to deforestation and degradation in Kenya's water towers (GOK, 2018c). For example, there is no framework laid out for collaboration between KFS, the Water Resources Authority (WRA) and other agencies such as Kenya Wildlife Service (KWS) and Kenya Water Tower Agency (KWTA), which impedes conservation efforts for water, wildlife, and forest, as well as the protection of Kenya's water towers. In addition to this, the limited capacity of the Enforcement and Compliance Division of KFS and the lack of clear separation in the forest protection and forest exploitation functions of KFS have made law enforcement in the protection of forest resources ineffective (MoEF, 2018a). The law enforcement in Kenya has resulted, for instance, in regulatory interventions more focused on water towers than on dryland woodlands and coastal forests.

Human settlement, excision and evictions: In the Mau Forest Complex in the Rift Valley regions of Kenya, poor governance and unclear (or lack of) policies were considered the biggest driver of deforestation underlying the excision of gazetted forests before and up to 2001, where more than 60,000 ha of forests were degazetted (UNEP, 2008) (KFS, 2013b). This was coupled with a populist policy to provide land to the poor. The encroachment has not only seen a reduction in forest cover but a general rise in population in the area putting further pressure on the forest, for the aforementioned reasons.

Kenya has numerous policies, plans and strategies for the forest sector, but has limited overall coherent strategy for sustainable forest management and conservation. As per the taskforce report published in

2018, governance in the forest sector has historically been bureaucratic and inefficient, and large parts of KFS's mandate have not been fulfilled (refer to section A.2 for further information). **Legislative reform in the forest sector has been ongoing and the repeal of the Forest Act Cap 385 and enactment of the Forest Act, 2005, was instrumental in this reform process.** The 2005 Forest Act attempted to enact better forest governance but a lack of effective regulations in combination with the new requirements set forth in the 2010 Constitution (e.g., public participation, community rights, gender, equity, benefit sharing, devolution and 10% tree cover) demonstrated the need for an integrated management approach that recognises the variety of uses and users of all types of forests (including dryland and coastal forests). The Forest Conservation and Management Act (FCMA) was enacted in 2016 to give effect to the Constitution but has not fully addressed the challenges in the sector. At the time of writing this report, the FCMA was under review. The delays experienced in enacting the Climate Change Act 2016 and lack of operationalisation of the Climate Change Council (refer to section A.2 for further information) have meant that incentives that were envisaged under the Act, some of which may have been utilised to achieve mitigation outcomes through forests, have not been implemented.

Considering that in Kenya 77% of natural forests are community or privately owned (MENR, 2013), there are **a number of challenges in the administration of land** that impact forest conservation and the investment on land. Typical issues linked to land administration include: the presence of non-adjudicated and un-registered land, long delays in the issuing of title deeds of adjudicated land, and the high incidences of land ownership disputes due to fraudulent dealings or multiple claims of ownership over the same parcel of land. The possibility of compulsory acquisition of land is also a barrier, for increasing private sector sustainable forestry initiatives. The law allows for compulsory acquisition, and there is a risk that land may be taken away from companies or communities in the future once forestry initiatives have been established, with delayed compensation, given amendments to the Land Act in 2019 (refer to section A.2 for further information) – this in turn can disincentivise investments or related private initiatives for the afforestation and conservation of privately-owned forest.

The **lack of sufficient incentive measures to get community and private landowners to establish forests** on their own land also jeopardises the achievement of the 10% tree cover goal in Kenya. The FCMA for example allows the Cabinet Secretary for the National Treasury, on the recommendation of the Cabinet Secretary responsible for forestry, to propose tax and other fiscal incentives to increase investments in forest land use and forest resource utilisation in order to promote forest conservation and management and to prevent or abate forest degradation. However, incentives under this provision have not been provided as envisaged. Rules such as the Agriculture (Farm Forestry) Rules, 2009, make the planting of trees on farms a mandatory requirement and provide that District Agricultural Committees can undertake farm forestry activities financed through devolved and any other funds. However, the rules do not elaborate on whether and how these funds would be disbursed to incentivise farmers to plant trees on their farms, if at all.

The current legal framework also limits clarity on rights to emissions reductions or removals achieved from land-based activities such as REDD+, which may hinder the ability for carbon offset projects to be developed and finance to flow.

ECONOMIC & FINANCIAL

Overall, there is a significant shortfall in climate-related investment in the forest sector. The national strategy for achieving and maintaining over 10% tree cover has also shown how this **shortfall in finance is going to cost Kenya approximately Ksh 168 Billion by 2022, due to reduced supply of important products and ecological services emanating from forested landscapes** (MoEF, 2019). With this potential economic cost significantly larger than the anticipated finance needed (Ksh 48 billion) to achieve the target 10%

cover, the business case for financing forests is clear. However, the scale of finance required compared to the financial flows tracked in 2018 is so vast that urgent action is required, and much of that should be expected to come from the private sector. However, it is evident from the Landscape of Climate Finance in Kenya (2021) that the private sector is not a major participant in the forest sector, compared to other low-carbon sectors. Therefore, there is a need for continued public sector finance (domestic and international) to catalyse private finance.

Furthermore, there are **inadequate resources directed for the protection of forests both within KFS at a national and regional level**. One key implication of this is that the reduced presence of rangers in forests allows for illegal activities to occur more regularly, thus contributing to the degradation of forests (GOK, 2018c).

The **high cost of more efficient technologies** is also a challenge for promoting the wider uptake of efficient wood and timber processing technologies. A study by UNEP (2017) estimated that $38,8 million per year would be necessary to improve efficiency in forestry operations and forest product processing resulting in 21 $MtCO_2e$ emission reductions from REDD+ related activities, mainly from non-renewable forest biomass savings. The lack of incentives on these technologies leads to the use of inefficient technologies that require larger volumes of fuel wood or charcoal raw material, resulting in increased extraction of forestry products. Efforts to conserve natural forests, improve plantation quality, and to ensure the sustainable provision of goods and services from the forests requires partnerships between local communities and the Government. There is, therefore, the need for the provision of incentives to make communities less dependent on forests for their livelihoods in order to ease pressure on forest resources (Ototo & Vlosky, 2018). These incentives need to remain to indicate to the private sector that it should invest in sustainable or efficient technologies.

Access to innovative financial mechanisms for forestry initiatives and projects is required to promote private sector involvement, as this is currently lacking in Kenya, particularly as the returns from forestry projects take time, given the length of time a tree needs to reach maturity.

INSTITUTIONAL & ORGANISATIONAL

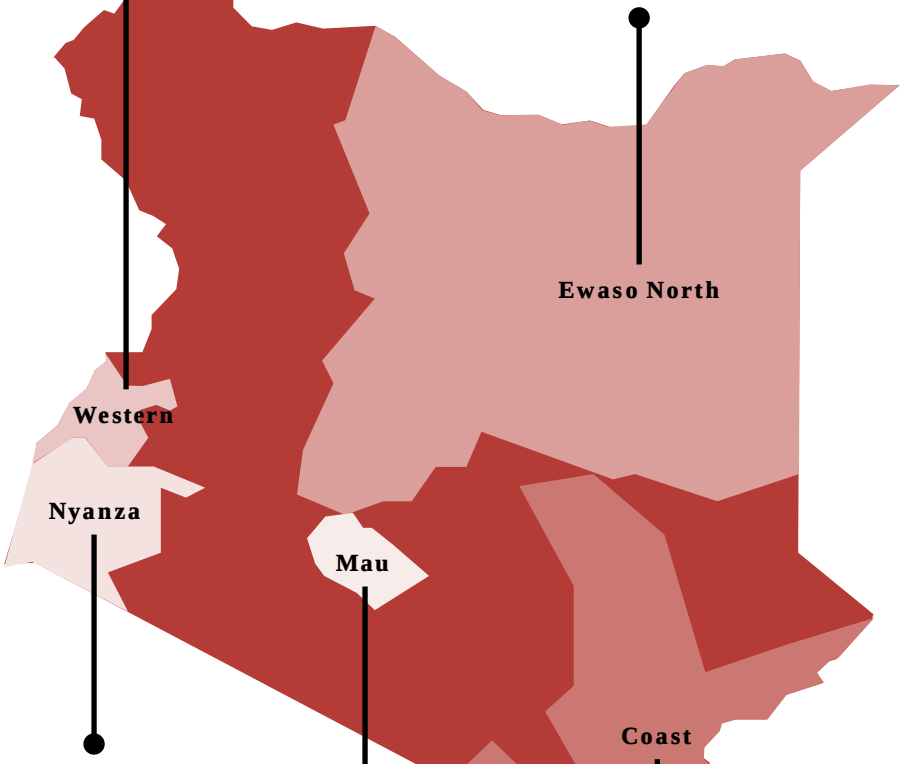
Limited accurate and up to date information on forest cover makes monitoring and reporting challenging, particularly the enforcement of complex forest policies and reviewing progress against targets. This is exacerbated by the fact that forest data is not harmonised across Government institutions, which makes it difficult to track progress toward goals like the 10% tree cover and forest related NDC targets. **Furthermore, there is also a need to improve inter-sectoral/ministerial coordination and decision making to support the implementation and monitoring of initiatives.**

Limited capacity within the community forest associations (and other coordination bodies) to support the promotion of sustainable practices and technologies at the local level is a challenge. This could otherwise support reforestation and afforestation initiatives on small scale farmer's lands, if they had access to the information and support leading to potential additional revenue for the farmers, but also relieving the pressure on forests through the production of fuelwood.

Figure 2-10 Drivers of deforestation and degradation in the different forest types in Kenya

Forest Types	Direct Drivers	Indirect Drivers
• Western rain forest • Industrial plantations	• Agricultural expansion • Wood extraction • Firewood and charcoal • Poles for construction and fencing	• Low rates of regeneration of clear-cut plantations • Population pressure • Rural pressure • Poor land-use planning

Forest Types	Direct Drivers	Indirect Drivers
• Western rain forest • Industrial plantations	• Agricultural expansion • Wood extraction • Firewood and charcoal • Poles for construction and fencing	• Low rates of regeneration of clear-cut plantations • Population pressure • Rural pressure • Poor land-use planning



Forest Types	Direct Drivers	Indirect Drivers
• Western rain forest • Industrial plantations	• Agricultural expansion • Wood extraction • Firewood and charcoal • Poles for construction and fencing	• Low rates of regeneration of clear-cut plantations • Inadequate institutional presence of the forest service • Population pressure • Poor land-use planning

Forest Types	Direct Drivers	Indirect Drivers
• Mangroves • Dry woodlands • Coastal forests • Montane-Taita Hills Plantation	• Wood extraction • Poles • Charcoal production • Firewood • Timber • Agricultural expansion • Infrastructure-tourism establishment	• Industrial demand for fuel wood- for the production of salt, soap, vegetable oil industries. • High cost of electricity for industry and LPG for domestic use. • Urban over-dependence on charcoal • Poor land-use planning • Absence of industrial plantations

Forest Types	Direct Drivers	Indirect Drivers
• Montane • Industrial plantations	• Agricultural expansion • Wood extraction • Domestic fuel wood and charcoal • Commercial timber	• Governance-deliberate excisions of gazetted forests • Poor governance • Government unwritten policies • Population pressure • Demand for timber and poles • Poor land-use planning

Source: (KFS,2013b)

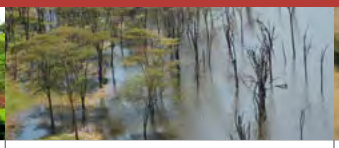
2.3. VALUE CHAINS OF THE FORESTRY SECTOR IN KENYA

Forests in Kenya are considered one of the most important national assets by the Government in terms of the economic, environmental, social and cultural value they provide. As outlined in the 2019 FRL, the **forest sector provides the backbone of Kenya's tourism sector as they provide habitats for wild animals and offer grazing grounds during the dry season to support wildlife populations.** They also support and protect Kenya's water towers which in turn support the agriculture, horticulture, industry and energy sectors. The **forestry sector was estimated to contribute more than 3.6% of the country's GDP**, although in some rural areas, forests contribute over 75% of the cash income and provide virtually all of a household's energy requirements (MoEF, 2019). It is estimated that the **forest sector contributes about Ksh 7 billion to the economy annually and employs over 50,000 people directly and another 300,000 people indirectly** (MoEF, 2018a). Job opportunities in the sector emerge from pole-supplying industries, timber processing industry, sawmill processing industries and charcoal production and transportation.

There are both direct and indirect values (as summarised in Figure 2-10) that can be derived from forest and forest products in Kenya (FAO, 2004b):

- The **direct** use of forests can be described as the extraction of resources such as timber, tree products, wild game (bush meat) and plants, as well as other non-timber forest products. They provide employment opportunities and the direct use of forests for non-extractive purposes such as recreation and cultural activities. Examples include:
  - Timber, pole wood and fuelwood;
  - Non-timber forest products (such as honey);
  - Recreation and tourism;
  - Fish from mangrove protection;
  - Livestock grazing; and
  - Employment.
- The indirect environmental services provided by forests include carbon storage, habitat for wildlife, hydrological function, and air pollution reduction. For instance, mangrove forests sequester many more times carbon dioxide than most comparable biomes, including seagrass meadows and dry jungles (CIFOR, 2021).

Table 2-3 Ecosystem goods and services generated from forests

Forests can generate multiple ecosystem services and goods			
			
Provisioning services e.g. provision of food, raw materials (wood, timber, biofuels and fibres from wild of cultivated plant/animal species) fresh water, and medicinal resources	**Regulating services** e.g. regulation of climate, carbon sequestration and storage, moderation of extreme events (flood risk), waste-water treatment, erosion prevention and maintenance of soil fertility, pollination, biological control, regulation of water flow	**Cultural services** e.g. recreation and mental and physical health, tourism, aesthetic appreciation and inspiration for culture, art and design, and spiritual experience and sense of place	**Supporting services** e.g. habitat for species (biodiversity), maintenance of genetic diversity, nutrient cycling and soil formation

(CIFOR,2021)

Figure 2-11 Value Chains of the Forestry Sector in Kenya

Value Chains of the Forestry Sector in Kenya

The forest sector provides the backbone of Kenya's **tourism sector** as they provide **habitats for wild animals** and offer **grazing grounds** during the dry season **to support wildlife populations.**

The forest also **support and protect Kenya's water towers** (i.e. water catchment areas) which in turn support **the agriculture, horticulture, industry and energy sectors.**

The forestry sector was estimated to **contribute** more than

3.6% of the country's GDP

In some rural areas, forests contribute over

75% of the cash income

and **provide** virtually all of a **household's energy** requirements

(MoEF, 2018a)

Forest **direct** values

- Timber, pole wood and fuelwood
- Non-timber forest products
- Employment
- Livestock grazing

Forest **indirect** values

The indirect environmental services provided by forests include **carbon storage, habitat for wildlife, hydrological function, and air pollution reduction**.

The forest sector contributes annually to the economy about

KSH 7 billion

The forest sector also employs, directly and indirectly, over

50,000 - 300,000 people

(MoEF, 2018a)

TIMBER AND POLES

According to a study by Ototo and Vlosky (2018), wood-based industries in Kenya consist of about 450 sawmills, two integrated panel mills that manufacture plywood, particleboard, and hardboard (one of which also manufactures sawn wood), and one pulp and paper mill. Most of these operations procure their raw materials from state-owned plantations for which harvesting and utilisation levels are established by KFS. Farmland or woodlands, which are not state-owned forests, provide wood for transmission poles, wood fuel, and sawn logs for small-scale sawmills spread across many regions in the country (Ototo & Vlosky, 2018).

A report published in 2017 by UNEP (UNEP, 2017), analysed whether increased efficiency in forestry operations, forest product processing and utilisation are viable REDD+ policies and measures for the Government of Kenya to pursue, with the potential to attract both public and private investments to support REDD+ implementation. With the increasing population, the demand for timber and fuelwood is correspondingly increasing. The report identified sustainable utilisation of wood resources, such as through efficiency in processing as one of the ways Kenya can achieve a reduction or removal of emissions and hence REDD+ results. The opportunities for efficiency recommended in the report are summarised in Box 2-4 below.

Box 2-4 Improving Efficiency in Forestry Operations and Forest Product Processing in Kenya: A Viable REDD+ Policy and Measure

CHARCOAL PRODUCTION

The provision of training to charcoal producers can increase the efficiency in the production of charcoal, and in turn reduce the pressure on forests by decreasing the amount of wood needed to produce charcoal (UNEP, 2017). Raising awareness of the best practices to improve earth kilns, or on the use of alternatives kilns (brick or metal, transportable or permanent, with direct or indirect heating source e.g. retorts) instead of the traditional direct-combustion earth kilns, are some examples of how efficiency can be improved.

TIMBER CONVERSION (SAWMILLS)

Investments in sawing and drying technologies as well as in vocational training are required to create efficiency in timber processing. Promoting the substitution of fuelwood from non-renewable forest sources with briquettes made of recycled sawn wood can lead to a small amount of biomass savings per year of about 36,000m^3 round wood equivalent (RWE) (UNEP, 2017).

COMMERCIAL LOGGING

Investments in more efficient equipment in the timber processing sector to increase the timber processing average recovery rate. Afforestation and reforestation as well as improving plantation management by appropriate silvicultural practices such as thinning, pruning and extension of rotation age, can reduce forest carbon emissions from both public and private plantations. Improving harvesting techniques also has the potential to cut logging waste from harvesting volumes by 5% (UNEP, 2017).

USE OF CHARCOAL AND FIREWOOD IN COOKING STOVE TECHNOLOGY

Improved cook stoves in urban and rural areas to replace the current inefficient cooking devices and reduce the demand for fuelwood. Increasing efficiency in the consumption of fuelwood, mainly sourced from natural forests where high levels of non-renewable biomass are estimated, could lead to 960,100 m^3 RWE of non-renewable biomass savings per year from natural forests (UNEP, 2017).

WATER SUPPLY

Forests are critical to Kenya's rural and urban water and energy supplies, supporting river flow regulation, water purification, groundwater recharge, flood mitigation, and local climate regulation. **Five key forests, namely the Mau Forest Complex, the Mount Kenya Forest, the Aberdares, Cherangani Hills and Mount Elgon forests have been identified as crucial 'water towers' as they provide 75% of the country's renewable water supplies** (KFS, 2016).

WIDER ECONOMIC BENEFITS

Forests also support Kenya's economy through agriculture, tourism, fisheries, wood for construction, recreation and providing habitats for wildlife and a source of medicine. For instance, the Kenya Marine and Fisheries Research Institute estimates that 80% of commercial coastal fisheries depend in one way or another on mangrove ecosystems. Mangroves provide habitat, breeding grounds and refuge for various fish species.

Farming is the most important economic sector in Kenya, with the country being the third leading exporter of fresh produce globally. Avocados, cabbages, onions and mangoes are sold locally and internationally contributing to economic growth and poverty alleviation. Honey and other products such as beeswax, bee pollen, flower pollen and royal jelly are also important export products (Ministry of Agriculture, 2020). Kitui and Baringo counties are among the leading counties with high honey production.

CLIMATE CHANGE REGULATION

Forests are a vital component of Kenya's fight against climate change through their roles as carbon sinks. Carbon captured and stored by Kenya's mangroves has been found to range from 500-1,000 tCO_2 per ha; **which is ten times higher than the average carbon content of terrestrial forests in the country.** Despite these benefits, coastal communities regard mangroves as a free natural resource that is, therefore, heavily exploited (KFS, 2017a).

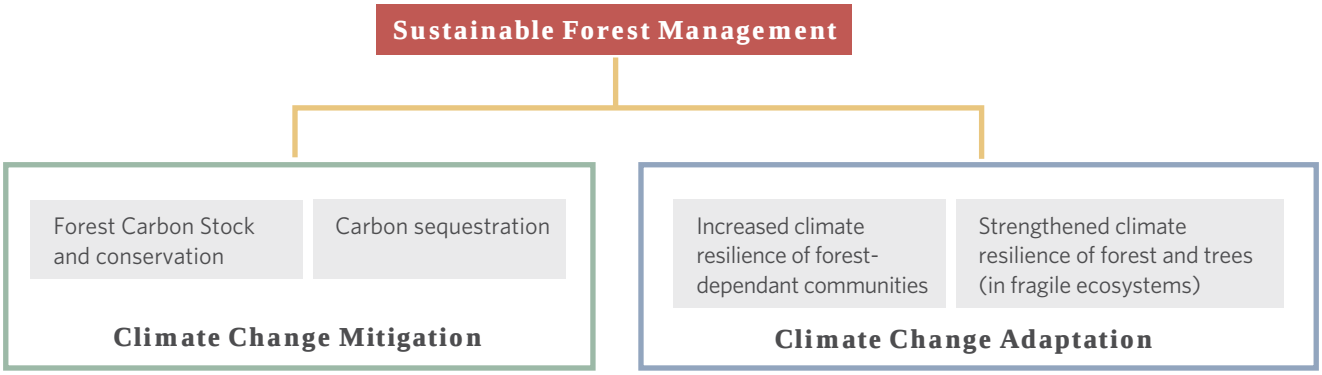
2.4. RATIONALE FOR CLIMATE ACTION IN THE FORESTRY SECTOR IN KENYA

2.4.1. NEED FOR CLIMATE ACTION

Forests play an important role in regulating the earth's global climatic system. They capture carbon dioxide, including emissions from anthropogenic sources, and from the atmosphere and convert it, through photosynthesis into living biomass: tree trunks, roots, branches and leaves. Forests also store carbon in forest soils, absorbed through leaf litter, woody debris and roots (UN, 2019). Actions to increase or maintain forest cover sustainably not only have important carbon benefits, but adaptation benefits as well, as outlined in Figure 2-12. **Other benefits from forests include preventing flooding and landslides, reducing erosion and sediment discharge into rivers, which in turn also prevents sequestered carbon from being released into the atmosphere.** They also contribute to water availability by slowing the loss of rainwater runoff, which demonstrates the importance of reforesting and rehabilitating the main water towers and water catchment areas (DFID, 2016).

As discussed in section 2.2.2 above, sustainable forest management additionally secures forest ecosystems and enhances the environmental, social-cultural and economic services they provide, such as protection of soil, water, production of goods, conservation of biodiversity, provision of socio-cultural services, livelihood support and poverty alleviation (FAO, 2010b).

Figure 2-12 Forest management and climate change regulation



Source: adapted from FAO, 2010b

Recognising the need for climate action, the Kenyan Government has also committed to international climate action initiatives (mitigation and adaptation), as outlined in Table 2-4.

Table 2-4 Commitments by the GOK for the forestry sector

Agreement/ Strategy	Commitment	Target year
The Paris Agreement	Kenya is a signatory to the Paris Agreement, and has committed to a GHG emissions abatement target of 32% by 2030 relative to the BAU scenario of 143 $MtCO_2eq$ (GOK, 2020).	2030
Africa 100Initiative	To restore 5.1 million ha of deforested and degraded lands (in line with its 10% tree cover target) (AUDA-NEPAD, 2016). However, in 2019 the Government announced plans to ratchet up this ambition to achieve the 10% tree cover by 2022, instead of 2030 (MoEF, 2019).	2022
UN Decade for Ecosystem Restoration	The UN Decade inspires and support governments, UN agencies, NGOs, civil society, children and youth, private sector companies, indigenous peoples, local communities and individuals globally to collaborate and develop the appropriate skillsets for catalysing and successfully implementing restoration initiatives across the world. The support includes: promoting a global movement focussing on restoration; developing legislative and policy frameworks to incentivise restoration; developing innovative financing mechanisms to fund operations on the ground; detailing a values-based imperative to conserve, restore and care for nature; undertaking social and natural science research on restoration in terrestrial, freshwater, estuarine as well as marine environments; monitoring global progress on restoration; and building the technical capacity of restoration practitioners globally. (UNEP, 2020)	
The Constitution of Kenya, 2010	The Government committed to increase tree cover to 10% countrywide. The target date has now been reduced, as per a Presidential Directive in 2019, to achieve this target sooner.	2022 (previously was 2030)
United Nations Agenda 2030	The Government of Kenya has shown a commitment to achieving the United Nations Sustainable Development Goals (SDGs). This includes SDG 13 which calls for urgent action to combat climate change, SDG 14 (life under water) Kenya is championing sustainable blue economy that include rehabilitation, conservation, and sustainable utilization of mangrove resources. and SDG 15 that looks to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.	2030

Agreement/ Strategy	Commitment	Target year
National Climate Change Action Plan (NCCAP)[10] 2018-2022	The NCCAP 2018 – 2022 is made up of seven Climate change priority objectives; the fourth of these is focussed on forests, wildlife and tourism, with the target of "increasing forest cover/tree cover to 10% of total land area, rehabilitate degraded lands, including rangelands, and increase the resilience of wildlife" (GOK, 2018c). Actions have been outlined in the plan that include (but are not limited to) afforestation and reforestation projects, restoring degraded landscapes, promoting sustainable timber production and conserving areas for wildlife. The Government has set a forestry sector target of reducing GHG emissions of 10.4 $MtCO_2e$ by 2023 through forest restoration, afforestation, reforestation and reduction of deforestation (GOK, 2018c). This is in line with its sustainable development agenda and considering the emissions from the land use, land-use change and forestry (LULUCF) sector, among others - with the baseline being 19.6 $MtCO_2e$ in 2010, as outlined in the NDC and NCCAP 2018 - 2022 (GOK, 2018c). The Government has also identified a technical maximum abatement potential of 40.2 $MtCO_2e$ per year by 2030 in the forestry sector (MoEF, 2019).	2022
NDC (2020)	Kenya has a conditional NDC to reduce its greenhouse gas (GHG) emissions by 32% by 2030 relative to a business as usual scenario of 143 $MtCO_2e$ (this includes LULUCF). The forestry sector is outlined as a key sector to support achieve these reductions. Implementation in the forestry sector to support achieving the NDC will include making progress towards achieving a tree cover of at least 10% of the land area in Kenya, providing better access to clean energy and improving energy efficiency and, promoting climate-smart agriculture to reduce deforestation while improving productivity (GOK, 2020).	2030

Source: (summarized from the table's first column)

2.4.2. IMPACTS OF FOREST COVER LOSS: EXPERIENCES IN KENYA

Deforestation and land degradation have a wide range of adverse impacts, ranging from degradation of water catchments, depletion of water resources, loss of biodiversity and wildlife, which in turn threatens vital ecosystem services and leads to conflict (GOK, 2018c). The following are consequences of deforestation as experienced in Kenya:

- When forests are burned or cleared to make space for other uses such as agricultural/pasture land, or for infrastructure/urbanisation, the **net flow of carbon from the atmosphere into the forests ends,** because deforestation causes the release of stock carbon, that has not only accumulated in the trees and the forest soil, into the atmosphere, which can further contribute to climate change. Furthermore, there will be a **loss of the adaptation and resilience measures that forests naturally provide** (UN, 2019).
- **Degraded upper catchment areas** have a diminished capacity to absorb rainwater or slow (via interception) the entry of water into water bodies. Forests can and do act as a flood prevention mechanism; however, with degradation the benefits they provide reduce.
- The North-Eastern Kenya, Rift Valley, Coastal regions, Central and parts of Western Kenya suffer from severe flooding. Whilst this is mainly due to an increase in precipitations levels, the degradation of forests has reduced the natural resilience of these areas.

10 At the time of writing this report, it is understood that the NCCAP 2018-2022 has been approved by the Cabinet of Kenya; however, the final version of the document was still undergoing editing; references are taken from the draft version.

- An **increase in soil erosion and siltation of water bodies as a result of deforestation across Kenya** are also major consequences. For instance, the Government has estimated that, over a 25-year period, the Masinga Dam has lost 23% of its capacity due to siltation (MoEF, 2018a). There have also been increased cases of landslides during rainy seasons attributed to forest destruction. Late in 2010, increased wet season flows, mostly in the Western and Rift Valley regions led to erosion and sedimentation, resulting in a loss of productive soil resources for agriculture. Increased erosion has also led to increased siltation and turbidity of water supplies. This reduction in water quality reduced inland fish catch by Ksh 86 million and increased the cost of water treatment for potable use by Ksh 192 million (UNEP, 2008).
- In the development of the NCCAP 2018-2022, it was estimated that deforestation leads to an annual **reduction in water availability** of approximately 62 million cubic metres (GOK, 2018a). This is a concern, given Kenya is a water-scarce country.
- **An increase in human-wildlife conflict instances** has also been observed as a result of the loss of ecosystems and disruptions to wildlife corridors. For example, the introduction of a 'Plantation Establishment and Livelihood Improvement Schemes' (PELIS) in the Muchene wildlife corridor linking Mount Kenya and the Imenti Forest has meant elephants now have to exit the forest, increasing the likelihood of encounters with local farmers and communities. Between 2016 and 2018, ten farmers were killed as a result of these interactions (GOK, 2018c).
- As the **population and economy in Kenya expands, the demand for fuelwood and construction materials such as sawn timber, will increase**. According to the Gatsby Charitable Foundation, Kenya is only able to currently meet 70% of this demand through sustainable domestic supply. The annual deficit of 12 million m^3 is met by formal and informal imports plus unsustainable extraction from natural forests. With future population growth, industrialisation and urbanisation, the situation is projected to deteriorate further. By 2030, it is estimated that the demand will increase to 66 million $m^{3,}$ yet sustainable supply is projected to stay almost static; leading to a near trebling of the annual deficit to 34.4 million m^3 (Gatsby, 2020a).
- **Loss of coastal forests** such as mangroves leads to increased coastal erosion, vulnerability to effects of storm surges and sea level rise, adverse effects on marine ecosystems such as seagrass beds and coral reefs leading to biodiversity loss and fisheries production, loss of livelihood for coastal communities and impacts on coastal economic activities such as the tourism sector.

Climate change is likely to affect the growth and development of tree species, resulting in reduced biodiversity and capacity to deliver forest goods and services. Additionally, future climate change is predicted to have an impact through the increase in heat and drought events testing the resistance of species, a possible increase in wildfires and an increase in the occurrence of pests and diseases as a result of temperature changes. Impacts on forest resources will also have subsequent indirect impacts on other sectors and subsectors mainly through the reduction of water quantity and quality, such as on agriculture (both arable and livestock), fisheries, tourism, trade and industry that together contribute between 33% and 39% of the country's GDP. Moreover, in 2010, the FAO estimated that more than 10% of households living within five kilometres of forest reserves depend on them for subsistence (FAO, 2020b).

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3. Government Roles and Legal Framework in the Forestry Sector

3. GOVERNMENT ROLES AND LEGAL FRAMEWORK IN THE FORESTRY SECTOR

The Government of Kenya has recognised the threat of deforestation to the economy and the livelihoods of its people and has set out activities, policies and initiatives aimed at increasing the nation's forest cover. This includes afforestation, forest and landscape restoration (FLR) initiatives and preparatory activities to enable the country's participation in Reducing Emissions from Deforestation and Forest Degradation, as well as fostering conservation, sustainable management of forests, and enhancement of forest carbon stocks (REDD+) as a climate change mitigation process (GOK, 2018a) (information on Kenya's REDD+ activities, including REDD+ nesting, is discussed in Table 3-3).

Kenya has several legislative instruments and policies related to forestry activities, which are set out in section A.2 below. These government policies, when implemented with strong public stakeholder participation, may also be part of a national strategy to contribute to the implementation of the SDGs (WRI et. al, 2018).

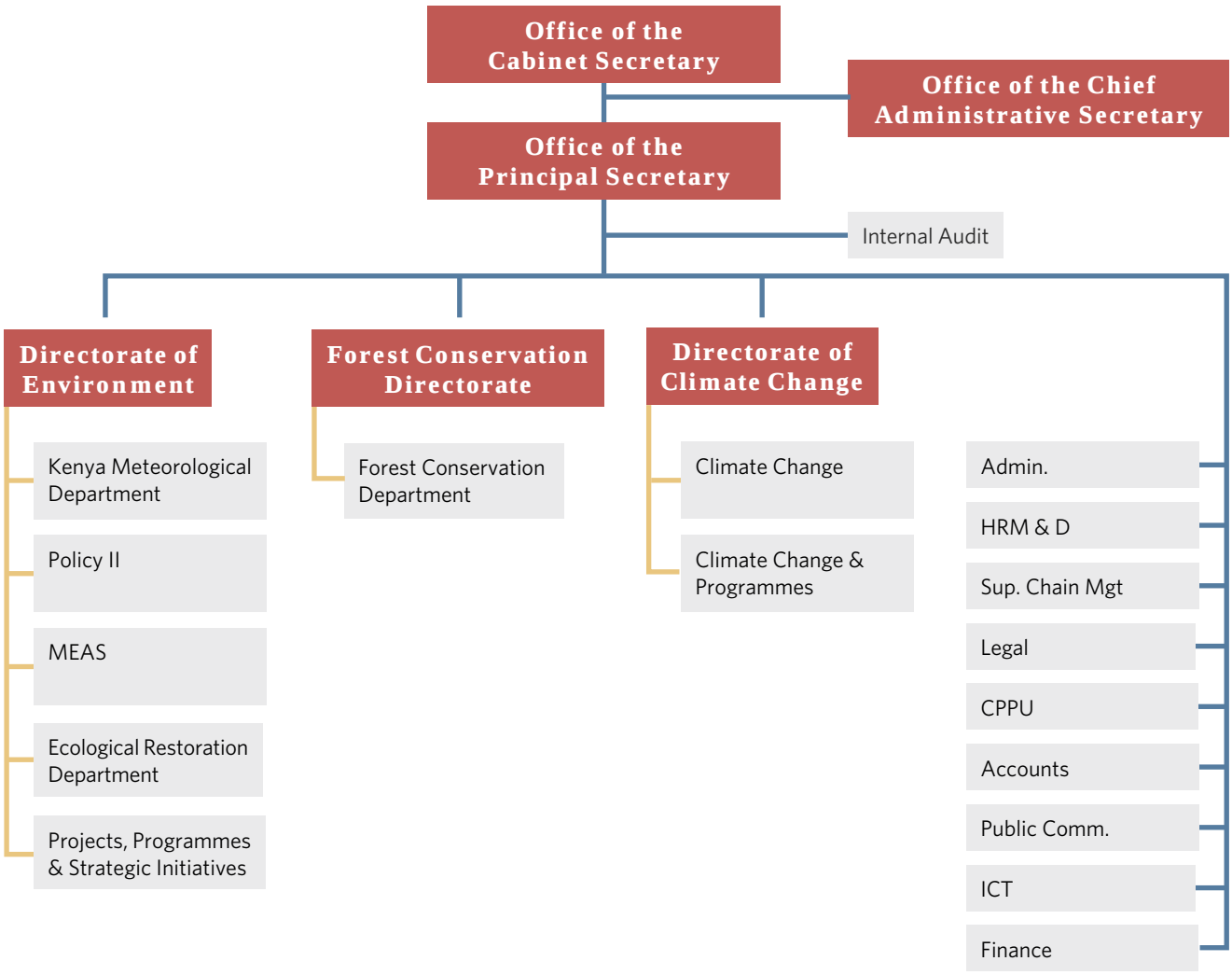
The following sections outline the Government bodies involved in supporting Kenya to reach its forest cover targets, as well as some of the initiatives that have been run to date.

Photo byali-khalil on Pexels

3.1. GOVERNMENT BODIES

Under the Ministry of Environment and Forestry (MoEF), the Directorate of Forestry Conservation has been mandated to formulate, interpret, monitor and coordinate forestry conservation strategic policies and to review and monitor the implementation of the national forestry conservation and management strategy in Kenya (MoEF, 2013). There are also three other Directorates within the MoEF, as outlined in Figure 3-1 along with their mandates.

Figure 3-1 Organisation Chart of the Ministry of Environment and Forestry



Source: MoEF, 2020

The MoEF also has a number of parastatals, or semi-autonomous Government agencies, which fall under the umbrella of the Ministry and are involved in forestry activities as outlined in Table 3-1. They all support the overarching objective of the Ministry, but each has a different area of focus.

Other ministries across the Kenyan Government also support and undertake forestry initiatives. These include the National Climate Change Council, Ministry of Tourism, Ministry of Water, Sanitation and Irrigation, Kenya Wildlife Service, the National Treasury and Planning and the National Lands Commission among others. For further information, refer to Appendix A.1.

Table 3-1 Government agencies and bodies under MoEF involved in forestry activities

Name of agency	Summary of responsibilities
Kenya Forest Service (KFS)	Designated by the Forest Management and Coordination Act of 2016, KFS is overseen by a board of directors. Its responsibilities include (KFS, 2020): • Ownership, management and protection of all state-owned forests including mangroves forests which were declared Government forest reserve in 1932. • Promoting forestry education and training and operating the Kenya Forestry College. • Enforcing the conditions and regulations pertaining to logging, charcoal making and other forest utilisation activities. • Apprehending and prosecuting violators of forest law and regulations. • Collecting revenues from the legal exploitation of forest products.
Kenya Water Towers Agency (KWTA)	The KWTA was established through an Executive Legal Notice No. 27 of 2012 to coordinate and oversee the protection, rehabilitation, conservation and sustainable management of all the critical water towers in Kenya. There are 88 water towers in Kenya, of which 18 are gazetted and therefore fall within KWTA's mandate for protection, rehabilitation, conservation, and sustainable management (KWTA, 2012). KTWA's responsibilities include (KWTA, 2018): • Coordinating and overseeing the protection, rehabilitation, conservation, and sustainable management of all water towers; • Coordinating the restoration of forest lands, wetlands and biodiversity hotspots; • Promote the implementation of sustainable livelihood programmes in the water towers in accordance with natural resource conservation; • Mobilising resources from the Government, development partners and other stakeholders as well as through payment for environmental services, including carbon reservoirs and sequestration; • In consultation with the relevant stakeholders, identifying water towers and watersheds for protection; • In 2014, the Kenya Water Towers Conservation Fund was established. The fund's purpose is to support the restoration, conservation and sustainable management of the Mau Forest Complex and other water towers in Kenya in an equitable, efficient and transparent manner (KFS, 2014a).
Kenya Forest Research Institute (KEFRI)	Established in 1986 by the Science and Technology Act, KEFRI is mandated to undertake research in forestry and allied natural resources. Its activities are categorised under five thematic areas namely: • Forest Productivity and Improvement; • Biodiversity and Environment Management; • Forest Products Development; • Social-economics, Policy and Governance; and • Technical Support Services. • KEFRI's strategic plan for 2018-2022 includes generating technologies for establishing and managing forest plantations, afforestation on farms and enhancing priority tree species for different agro-ecological zones (KEFRI, 2018)
National Environment Management Authority (NEMA)	The Authority is semi-autonomous and exercises general supervision and coordination over all matters relating to the environment, forestry conservation being among them. NEMA offices are devolved to the Counties to enable coordination with the county Governments and other stakeholders on matters relating to environment and forestry.

Source (Summarized from the agencies websites)

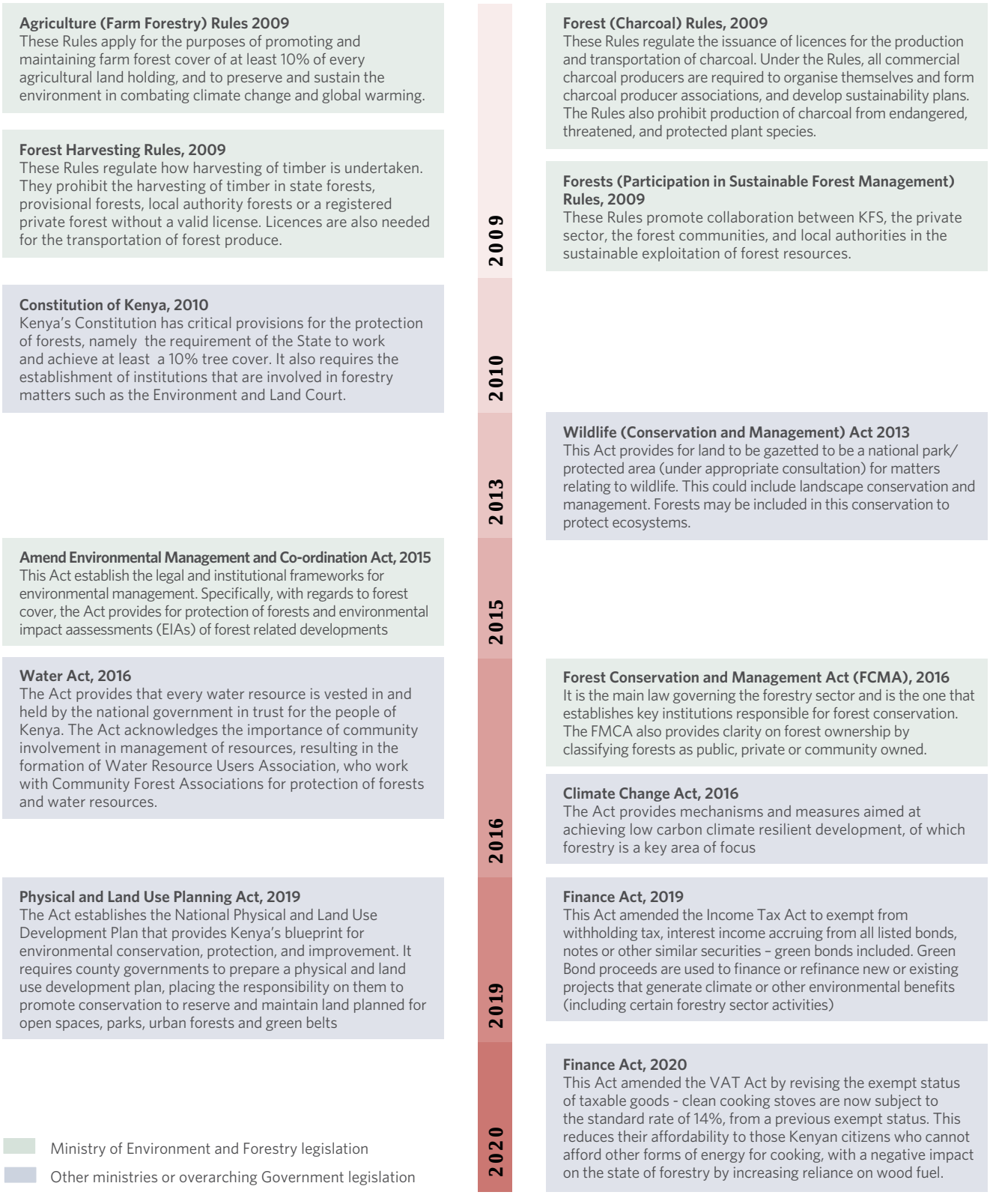
The County Governments also play a key role in the forestry sector as they advise and assist communities and individuals in the management of community forests or private forests. In the Constitution it is outlined that public land shall be vested in and be held by the county government in trust of the people, which would include forested areas. Furthermore, the Forest Management and Conservation Act 2016 outlines the forestry functions that fall under the responsibility of County Governments (Kenya Law, 2016):

- Implement national policies on forest management and conservation;
- Manage all forests on public land defined under Article 62(2) of the Constitution;
- Prepare an annual report, with the approval of the County Assembly, for the Service on the activities of the county Government in relation to the Act and any national policies on forest management and conservation; and promote afforestation activities in the county.

3.2. EXISTING LEGISLATION AND POLICIES

There are several legal, governance and institutional frameworks for the forestry sector in Kenya. Figure 3-2 provides a high-level overview of the legislation relevant to the forestry sector. A more detailed review of each Act and Rule is provided in Table 3-2 and Appendix A.2.

Figure 3-2 Legislation in Kenya impacting the forestry sector.



Source: Government institutions websites

Whilst the Government has emphasised the importance of the forestry sector in Kenya through its inclusion in legislation, there are also several dedicated policies and strategies being implemented by the MoEF. The Government of Kenya has also included forestry in several national development strategies, as outlined in Box 3-1.

Table 3-2 Kenyan forestry policies and strategies

Policy / Strategy	Overview
Draft National Forest Policy, 2014	This policy aligns to the objectives in the Constitution of Kenya, 2010, and seeks to balance the needs of the people of Kenya with the opportunities for sustainable forest conservation, management, and utilisation and underscores forestry's unique role in both climate change mitigation and adaptation. It provides a framework for improved forest governance, resource allocation, partnerships, and collaboration with state and non-state actors. A key objective of the policy is to increase and maintain tree and forest cover of at least ten percent of the land area of Kenya. Kenya is currently in the process of preparing a Draft National Forest Policy 2020, to replace the current policy, with the aim of creating an improved policy environment to halt, and reverse the pace of deforestation and forest degradation in the country and increase forest cover, as well as ensuring Kenya takes advantage of emerging opportunities for sustainable forest financing both at national and international levels. More information on the policy can be found here.
Kenya Forestry Master Plan, 1996-2020	This plan provides an overarching framework for the development of the forestry sector in Kenya. It details the forestry sector blueprint and was the basis for the Forest Act of 2005 and Forest Policy of 2007. It recognises the environmental role of forests including water values, biodiversity values, climate change values through carbon sequestration and the value of other environmental services. The National Forest Programme (2016-2030) has replaced this.
National Forest Programme (NFP) 2016-2030, 2016	This is a strategic framework for forest policy, planning and implementation. The goal of the programme is to develop and sustainably manage, conserve, restore and utilise forests and allied resources for socio-economic growth and climate resilience. The stakeholders involved in the programme are National Government, County Governments, communities, private sector, and civil society. The strategic objectives of the programme are to increase forest and tree cover and reverse forest degradation, enhance forest-based economic, social and development policies, develop the capacity of stakeholders, research and adoption of technologies, increase investments in forest development and integrate national values and principles of good governance in forest development. More information about the programme can be found here.
National Strategy for Achieving and Maintaining over 10% Tree Cover By 2022, 2019	The Strategy is aligned to the National Forest Program, and is a cross-sectoral framework that sets out initiatives for: • Broad Institutional and multi-stakeholder participation in accelerating the achievement of the Constitutional target of 10% tree cover across the national land area. • Implementation of Presidential Directives that the Constitutional target of 10% national tree cover should be delivered by 2022 to be achieved in various ways such as through directives that all Government Ministries, Departments and Parastatals/Agencies (MDAs) commit 10% of their Corporate Social Responsibility (CSR) budget to tree growing activities. • An opportunity to achieve national and global commitments with respect to climate change, biodiversity conservation, and land degradation. For example, the Government has committed to restore 5.1 million ha of degraded landscapes as a contribution to the Africa Forest Landscape Initiative (AFR100). • Shared responsibility towards addressing public concerns with regard to continued deforestation, forest degradation and the need for enhanced protection, conservation and sustainable management of forest resources. • Enhancing the contribution of the forestry sector towards implementation of the Big 4 Agenda . Refer to Appendix A.4 for additional information. More information on the strategy can be found here.
KEFRI Strategic Plan 2018-2022, 2018	The Strategic Plan strives to achieve the following seven objectives: (KEFRI, 2018) • Generate technologies for the establishment and management of forest plantations. • Develop technologies for efficient processing and utilisation of wood and non-wood products. • Formulate forestry policies for sustainable forest management and improved livelihoods. • Strengthen institutional capacity for research and development. • Disseminate forestry research technologies and enhance institutional research and develop capacity. • Enhance corporate communication and publicity.

Policy / Strategy	Overview
KFS Strategic Plan (2018-2022) , 2018	This Plan is KFS's 3rd Strategic Plan and seeks to promote development and sustainable management including conservation and rational utilisation of all forest resources to facilitate socio-economic development. The goal is to increase forest cover by 1.15% during the plan period and the Service has identified five strategic objectives to be implemented during the plan period to realise this goal. These are: • To rehabilitate 500,000 ha of degraded natural forest areas, develop and conserve all public natural forests • To restock 30,000 ha and sustainably manage all public forest plantations • To increase forest cover outside public forest areas by 380,000 ha • To protect and secure 2.4 million ha of public forests and other corporate assets • To strengthen capacity for efficient utilisation of resources and effective service delivery To achieve the above strategic objectives, appropriate strategies and activities have been identified for implementation during the plan period. More information can be found here.
National Mangrove Management Plan 2015-2025, 2015	The goal of the management plan is to enhance mangrove ecosystem integrity and its contribution to the economy of Kenya through sustainable management and rational utilisation. It recognises that mangroves are Government forest reserves and all land between the high water and low water marks are described as mangrove areas. These forests are currently managed by the KFS either alone, or with KWS when they fall in a marine protected area. The lack of a coordinated management plan to guide utilisation of mangrove resources has led to losses and degradation of mangrove ecosystems. The plan sets out the following management programmes to address this challenge: • **Mangrove forest conservation and utilisation -** To ensure that forests are managed sustainably for wood and non-wood forests products while maintaining environmental integrity. • **Fisheries development and management -** To ensure sustainable management and conservation of mangroves as habitat and breeding grounds for fisheries and other wildlife. • **Community participation -** To promote community participation and local institutional capacity in mangrove resource conservation and management for improved livelihoods and ecological integrity. • **Research and education -** Promote conservation and management of mangrove ecosystems through problem-oriented research, education and training. • **Tourism development -** Enhance tourism development and management to maximise benefits and revenue streams, while safeguarding ecosystem integrity. • **Human resource and operations -** Skilled motivated personnel, adequately equipped with appropriate tools and equipment to support best practice in mangrove management. Refer to Appendix A.5 for further information.
The Kenya Strategic Investment Framework on Sustainable Land Management 2017 – 2027	The framework provides a strategy for enhancing investments, interventions and actions for the management of the country's natural capital in a sustainable manner. • It recognises water towers/forest areas as among the five broad types of hot spots that need to be targeted for sustainable land management (SLM) interventions in the country. • It provides broad classification systems for: forest type and agro-climatic zones • The vision for these geographic areas under the strategic framework is the restoration of forest/vegetation cover to enhance the hydrological and ecosystem functioning of water towers. • Within the ten-year span of the strategy, this vision for water towers/forest areas will be met through five components of the programme: - Implementation of on-the-ground projects and activities: for example, on farm forestry and agroforestry, energy saving stoves, biogas units, micro hydropower, subsidised LPG, alternative livelihoods such as sustainable use of forest products, e.g. bee keeping and Payment for Ecosystem Services (PES) schemes and Voluntary Carbon Markets (VCM). - Enhancing policy, legal, institutional frameworks and investments for SLM. - Capacity building to strengthen the technical, socio-economic and support services for SLM. - Supporting research and extension support for SLM best practices. - Strengthening SLM knowledge management, M&E and information dissemination. • More information can be found here.

Source: summarized from the policies in the table's first column.

Box 3-1 National strategies and plans with impacts on the forestry sector in Kenya

KENYA VISION 2030, 2008

This is the country's development blueprint that covers the period 2008 to 2030. It is based on three pillars (economic, social and political) with environmental issues placed within the social pillar. It highlights the need to protect and rehabilitate indigenous forests in the five major water towers (Mau Forest Complex, the Mount Kenya Forest, the Aberdares, Cherangani Hills and Mt. Elgon forest) as well as the other smaller significant water towers and catchment areas in the country. It sets a goal to increase forest cover by 10% in the country by 2030. Vision 2030 is implemented through Medium Term Plans (MTPs), and Kenya is currently implementing MTP III for the 2018-2022 period.

THIRD MEDIUM TERM PLAN (MTP III) 2018-2022, 2018

Under MTP III, the Government has committed to:

- Protecting natural forests in the water towers and to continue rehabilitation of landscapes to increase and sustain water flow and ecological integrity. As part of enhanced environmental governance, the Government will also prepare water towers status reports.
- For forest conservation and management, the focus will be on establishment of forest plantation, promotion of forest-based nature enterprises, establishment of commercial woodlot, promotion of bamboo establishment and utilisation and, control of invasive species.
- For forestry research and development, the focus will be on research activities related to promotion of sustainable forest products utilisation, forestry conservation and management, biodiversity and environment management,
- An employment creation strategy to create 1.3 million new jobs annually to address the pressing problem of youth unemployment by initiating labour intensive public works programme including re-afforestation, environmental waste management and other green projects.
- Implementation of the National Climate Change Action Plan (2018-2022) and the mitigation and adaptation actions to be implemented in various sectors of the economy including forestry.
- Promoting green energy options.

BIG FOUR AGENDA, 2018-2022, 2018

The current Government in its second term of office set out the Big Four Development Agenda to cover the period 2018-2022. The Agenda areas focus on food security, affordable housing, manufacturing, and affordable healthcare for all. However, the Agenda does not factor in environmental concerns nor mainstream them, suggesting a lack of coherence on the priority of environmental conservation in the Government's development agenda. Plans and Strategies in the Environment and Forestry sector have however made an effort to align with the Agenda, such as the National Climate Change Action Plan (2018-2022). The National Strategy for Achieving and

Maintaining Over 10% Tree Cover By 2022 has also highlighted its goal for contribution of the forestry sector towards implementation of the Big 4 Agenda, noting that the environment and forest sector is the foundation upon which the performance of the key primary sectors of the economy is anchored including, manufacturing, energy, health and agriculture.

REVISED FIRST NATIONALLY DETERMINED CONTRIBUTION, 2020

Kenya submitted its revised first Nationally Determined Contribution (NDC) in December 2020 to the United Nations Framework Convention on Climate Change (UNFCCC). This version supersedes the initial NDC dated 28th December 2016.

Kenya seeks to abate its GHG emissions by 32% by 2030 relative to the BAU scenario of 143 $MtCO_2eq$. Land use, land use change and forestry are mentioned as key sectors to support meet this target. Mitigation activities that impact the forest sector are outlined in the revised NDC, such as:

- Enhancement of energy and resource efficiency across the different sectors.
- Making progress toward achieving a tree cover of at least 10% of the land area in Kenya.
- Make efforts towards achieving land degradation neutrality.
- Scaling up nature-based solutions (NBS) for mitigation.
- Enhancement of REDD+ activities.
- Clean efficient and sustainable energy technologies to reduce over reliance of fossil and non-sustainable biomass fuels.

NATIONAL CLIMATE CHANGE ACTION PLAN, 2018-2022

The National Climate Change Action Plan (NCCAP) aims to further Kenya's development goals by providing mechanisms and measures to achieve low carbon climate resilient development in a manner that prioritises adaptation and undertakes actions, where possible, in a way that limits GHG emissions to ensure that the country achieves its mitigation-related actions under its NDC.

The NCCAP contains seven priority climate action areas and sets out their strategic objectives, and main actions to deliver them. Forestry, wildlife and tourism is set out as a priority area, with the objective to increase forest cover to 10% of the total land area, rehabilitate degraded lands, including rangelands; increase resilience of the wildlife and tourism sector, afforest and reforest degraded and deforested areas in counties, implement initiatives to reduce deforestation and forest degradation, restore degraded landscapes (arid and semi-arid lands (ASALs) and rangelands), promote sustainable timber production on privately-owned land and conserve land areas for wildlife.

This linking of forestry with wildlife in the NCCAP highlights the close connection between the two sectors and the need for coherence in the laws, polices and institutions for streamlined operations and heightened conservation.

Refer to Appendix A.3 for more information, and a breakdown of the priority actions in the forestry sector.

NATIONAL CLIMATE CHANGE RESPONSE STRATEGY, 2010

The National Climate Change Response Strategy (NCCRS) outlines the profound impacts of climate change on Kenya's socio-economic sectors, including the forestry sector, and specifies interventions to be undertaken to meet its call to grow 7.6 billion trees on 4.1 million ha of land during the next 20 years. The NCCRS recognises that building the capacity of local communities to help them adapt to the adverse impacts of climate change as well as take opportunities such as those offered by the Reduced Emissions from Deforestation and Degradation (REDD) mechanisms is important. Whereas REDD was considered in policy documents as early as 2010, Kenya still lacks an overarching law on it in the legal framework, though there are laws that have since been enacted with a bearing on the enhanced mechanism (REDD+) and Government initiatives have been undertaken geared towards REDD+ readiness.

NATIONAL SPATIAL PLAN 2015-2045, 2015

The National Spatial Plan (NSP) contains a policy statement that all environmentally sensitive areas shall be protected and utilised in a sustainable manner and contains measures for the protection of forest ecosystems. The NSP strategy for environmental protection areas is based on multi-ranking criteria of function and severity of impacts, and rank 1 consists of water towers, wetlands and natural forests. No development is permitted in these areas except for the purpose of eco-tourism and research. Despite this provision, project approvals have been granted for development that should not be allowed, such as in the case of grant of an EIA licence to the National Water Conservation and Pipeline Corporation for the construction of Chemare Dam inside the South Western Mau Forest Reserve, despite the fact that this forest is part of the Mau Forests Complex water tower (MoEF, 2018a). This indicates the failure of licensing bodies such as NEMA, to adhere to requirements laid out in relevant plans and policies.

NATIONAL LAND POLICY, 2009

This policy offers a framework designed to ensure the maintenance of a system of land administration and management that will provide economically viable, socially equitable and environmentally sustainable allocation and use of land. The policy promotes efficient and effective utilisation of land and land-based resources and efficient and transparent land dispute resolution mechanisms. It also contains a resource tenure policy that places various obligations on the Government. Some of these have been attained, such as the vesting of all non-renewable resources in the State to hold in trust for the people of Kenya. Others are yet to be attained such as the state's obligation to provide incentives for communities and individuals to invest in income generating resource conservation programmes.

NATIONAL LAND USE POLICY, 2017

The policy aims to co-ordinate land use practices and policy responses in Kenya. Its overall goal is to provide a legal, administrative, institutional and technological framework for optimal utilisation and productivity of land related resources, in a sustainable and desirable manner at national, county and community levels. It recognises major land-cover types in Kenya to include forests, and contains forest protective provisions including that the Government shall:

- Review the gazettement of forests and protected areas to foster the realisation of their multiple values and ensure that they are protected for their ecosystem values and not merely to physically exclude human activities.

- Ensure protected areas and areas of high intrinsic value such as forests, among others, will not be allocated for private use or de-gazetted.
- Incorporate multi stakeholder participation in a forestation programmes and initiatives as well as promotion of a forestation programmes to communities and individuals.
- Develop a framework for incentives to encourage achievement of a minimum 10% forest cover at county level, placing forest land use where it will provide the greatest public benefit and compensate those owners who are disproportionately affected by the extinguishment of rights to till or to graze.
- Promote the use of alternative sources of energy and building materials to reduce demand for forest products.
- Enhance the capacity of regulatory and enforcement agencies such as NEMA, KFS, KWS and KWTA.
- Identify, map and gazette forests.
- Zone forests in urban areas.

UNITED NATIONS STRATEGIC PLAN FOR FORESTS 2017-2030, 2017

Adopted by the UN General Assembly, the United Nations Strategic Plan for Forests (UNSPF) provides a framework for forest-related contributions to the implementation of the 2030 Agenda for Sustainable Development, the Paris Agreement adopted under the UN Framework Convention on Climate Change, the Convention on Biological Diversity, the UN Convention to Combat Desertification, the United Nations Forest Instrument (UNFI), and other international forest-related instruments, processes, commitments and goals which Kenya has ratified. Under the Plan which contains 6 goals and 26 targets, Kenya has committed to being part of the effort to inter alia, reverse the loss of forest cover worldwide, with targets including increasing forest area by 3% worldwide and maintaining or enhancing the world's forest carbon stock by 2030,as well as eradicating poverty for all forest dependent people, and increasing the area of protected forests.

THE 8-POINT ECONOMIC STIMULUS PROGRAMME, 2020 – POST COVID RECOVERY

In May 2020, the President of Kenya announced the rolling out of an 8-Point Economic Stimulus Programme, amounting to a total of Ksh 53.7 Billion. The injection of this money into the economy is intended to stimulate growth and cushion families and companies navigating the COVID-19 pandemic. The seventh element of the stimulus programme is focused on the environment.
To mitigate the impact of deforestation and climate change, and to enhance the provision of water facilities, the Government set aside Ksh. 850 million to rehabilitate wells, water pans and underground tanks in the Arid and Semi-Arid areas, a further Ksh 1Billion for flood control measures, and Ksh 540 Million for the Greening Kenya Campaign. The Greening Kenya Campaign involves the Kenya Prisons and National Youth Service who have come together to grow 50 million tree seedlings to help meet the target of 10% national tree cover by 2022.

THE NATIONAL INDUSTRIALISATION POLICY, 2012

The policy recognises forestry and natural resources among the resources that can be exploited to form the basis of value addition. Initiatives suggested in the policy to strengthen value additions include initiatives such as dispersion of industries to exploit available local resources.

BLUE ECONOMY STRATEGY 2018-2022, 2018

Blue Economy is an independent sector in MTP III; and covers fisheries, aquaculture, tourism, logistics, shipping and maritime affairs, transport, port, environment Mangrove forests contributes directly to sustainable blue economy (particularly fisheries) and will be impacted equally with infrastructure development.

Photo by Donald Kamau on Pexels

3.3. GOVERNMENT INITIATIVES

In addition to the legal and policy aspects outlined above, the Government of Kenya has developed several focussed initiatives aimed at forest conservation and management in a bid to attain the 10% tree cover target and reduce GHG emission levels. These are outlined in Table 3-3. Note that this area is continually evolving and therefore the list of activities is not exhaustive.

Table 3-3 Government Initiatives in the Forestry Sector

Initiative	Brief overview
Taskforce to Inquire into Forest Resource Management and Logging Activities in Kenya **NCCAP 2018-2022 alignment:** Strategic Objective 4 (mitigation) Priority Actions: 1, 2 and 3	The Taskforce was appointed through Gazette Notice No. 28 dated 26 February 2018 to investigate the Forest Resources Management and Logging Activities in Kenya. The Taskforce determined the scale of illegal logging, destruction, degradation and encroachment of public and community forest, water towers and other catchment areas as well as the associated impacts. The Taskforce used different methods to collect information from primary and secondary sources, as well as conducting a series of in-depth interviews with selected key stakeholders. Some of the key findings and recommendations from the Taskforce include (MoEF, 2018). • Illegal logging of indigenous trees is a major threat to forests and is rampant in key forest areas due to illegal squatters. • Some of the commercial forest plantations are characterised by poor quality planting materials, delayed re-planting, poor silvicultural and management regimes. • Inadequate coordination among the various agencies in the environment and forest sector has resulted in duplication of roles and inefficient management of forest resources. Recommendations from the Taskforce: • Logging of all indigenous trees should be banned • A need for KFS to engage effectively with the private landowners and state corporations with extensive acreage of land to increase investment in private forest plantations to complement public plantations in meeting the ever-increasing wood demand in Kenya. • Establishment of a clear coordination framework for the agencies working in the environmental and forestry sector to ensure that institutions such as NEMA and KWTA effectively deliver their mandate. • Development of regulations on mangrove harvesting.
REDD+ Nesting Strategy **NCCAP 2018-2022 alignment:** Strategic Objective 4 (mitigation) Priority Actions: 1, 2 and 3	Strategic Objective 4 of the GOK National Climate Change Action Plan (2018-2022) is focused on increasing forest cover to 10% of the total land area, rehabilitating degraded lands, including rangelands and increasing the resilience of wildlife. The REDD+ programme, which is still in progress, aims to achieve this through carbon stock enhancements, payment through ecosystem services and the development of REDD+ architecture through multi-stakeholder engagements including a national Strategy. The REDD+ nesting approach refers to implementing broad-based mitigation measures/ programmes that impact forests across large landscapes, including through local-scale activities, and allowing existing initiatives to transition into a jurisdictional approach while continuing to generate and sell carbon units. In order to maximise opportunities for climate finance linked to REDD+ action on the ground, the MoEF is in the process of convening a group of Governmental and non-governmental stakeholders to advise the Government of Kenya on the various legal, policy, technical and other elements that require alignment to achieve the said goal. The proposed objectives of the nesting strategy in Kenya are to: • Support the flow of climate finance to REDD+ activities, including from international sources, to enable the achievement of Kenya's NDC. • Create an enabling environment for future projects, as well as existing site-scale projects to transition into a national approach, including by regulating the ways in which projects measure their GHG performance to align with the national REDD+ accounting. • Support the National REDD+ Strategy.

Initiative	Brief overview
Logging Ban (2018)	This Government directive imposed a moratorium on timber logging on 24 February 2018. The purpose of the moratorium was to allow for the reassessment and rationalisation of the forest sector in Kenya. • Following the directive, a task force on forest resources management and logging activities was set up to inquire into forest resource management and illegal logging in the country, to determine the extent of environmental degradation, and provide practical recommendations to ensure the sustainable restoration of forest resources. • The task force presented its report on 30th April 2018, and among its key findings was that: - Corruption and mismanagement were widely observed within KFS and there was limited capacity within the organisation leading to ineffective law enforcement in the protection of forest resources. - Illegal logging of indigenous trees and destruction of indigenous forests for a variety of reasons including unclear forest zonation, the introduction of irregular settlements and large-scale public infrastructure developments. - Poor management of KWS managed commercial forest plantations. - Inadequate coordination among the various agencies in the environment and forest sector. - County Governments were ineffectively undertaking their functions in the management of forest resources. • The initial moratorium was initially intended to last 90 days. However, to ensure ample time to implement the recommendations of the taskforce, enhance tree planting and allow restoration and rehabilitation of water towers and natural forests, the ban has been subject to multiple extensions (this moratorium had not expired at the time of writing this report). The moratorium elicited criticism from saw millers who lamented its negative effects on their businesses, and the Government moved to lift the ban on privately owned commercial forests in a bid to allow the timber industry to continue running (Chisika, Park, & Yeon, 2020). The moratorium has however been cited as an exacerbator of the unsustainable management of trees on both smallholder and commercial farms by encouraging more cutting of trees on such sites (Chisika, Park, & Yeon, 2020). More information can be found here.
The FCPF REDD+ Readiness Grant Project (Phase 2: 1/06/2018-31/12/2021) **NCCAP 2018-2022 alignment:** Strategic Objective 4 (mitigation) Priority Actions: 1, 2 and 3	The overall objective of the Grant is to assist REDD country participants in the FCPF to develop their REDD+ Readiness Plans. Kenya received its first Grant in 2008 with a project period of eleven months; 07/2009-06/2010. Progress made in that period included information sharing and initial consultation process as well as Readiness Preparation Plan. The REDD+ Technical Working Group was created in November 2009. A new roll out of funding for the project was received in 2018, which is being implemented by UNDP through the Ministry of Environment and Forestry. The expected outputs for the project include: • An operational national REDD+ Strategy and investment plan. • A functional multi-stakeholder engagement and capacity building approach in REDD+. • An operational safeguard information system for REDD+[11] • Technical support provided for improvement of the National Forest Monitoring System and Forest Reference Level. • Once the FCPF REDD+ Readiness Grant Project is implemented which is currently underway, the project will identify effective ways to reduce deforestation and forest degradation. The National REDD+ programme in Kenya aims to put in place mechanisms to enable Kenya to reach its overall goal to improve livelihoods and wellbeing, conserve biodiversity and to contribute to the national aspiration of attaining a minimum 10% forest cover (UNDP, 2018).
National Programme for Payment for Ecosystem Services in Kenya **NCCAP 2018-2022 alignment:** Strategic Objective 4 (mitigation) Priority Actions: 1,2,3 and 4	A National Programme for Payment for Ecosystem Services (PES) in Kenya scheme is being proposed by the Ministry of Environment and Forestry, with the support of the secretariat (KWTA) and a multi-stakeholder technical working group (both Governmental and non-governmental). The proposed programme is being implemented in three phases from 2019 through to 2021. The National PES scheme will help the country deliver the following objectives: • Address water scarcity as the water towers provide critical ecosystem services to downstream users. • Promote more sustainable land management. • Deliver Kenya's NDC and promote climate resilience. • Address flood risk, erosion and dam siltation while improving water quality. • Provide a long-term, sustainable source of funding for environmental protection.

11 The aim of REDD+ is to encourage developing countries to contribute to climate change mitigation efforts by reducing GHG emission by slowing, halting and reversing forest loss and degradation and increasing removal of GHGs from the earth's surface through the conservation, management and expansion of forests.

Photo by Breston on Pexels

4. Projects and Initiatives Within the Forestry Sector

4. PROJECTS AND INITIATIVES WITHIN THE FORESTRY SECTOR

Whilst there are several Government forestry initiatives ongoing in Kenya, there are also a wide range of organisations and institutions that have undertaken projects or initiatives within the sector. Information in this chapter is developed for the use by any investor in the sector to gather lessons learnt and any other relevant information. It can also be used by the Government stakeholders in the sector to know what has been done/is being done in the sector. The forestry projects identified in this chapter are grouped according to the following actors:

- Bilateral country support;
- Development Banks / Development Institutions;
- Non-Governmental Organisations (NGO) / Civil Society Organisations (CSO); and
- Private sector.

The map in Figure 4-2 provides a snapshot of some of these projects and their location in the country. It highlights that most of the projects are concentrated in the central and western parts of the country. This corresponds to the land-use cover map (Figure 2-2) which highlights the locations of forests, in the same locations.

Figure 4-1 Mapping of forestry projects and initiatives in Kenya

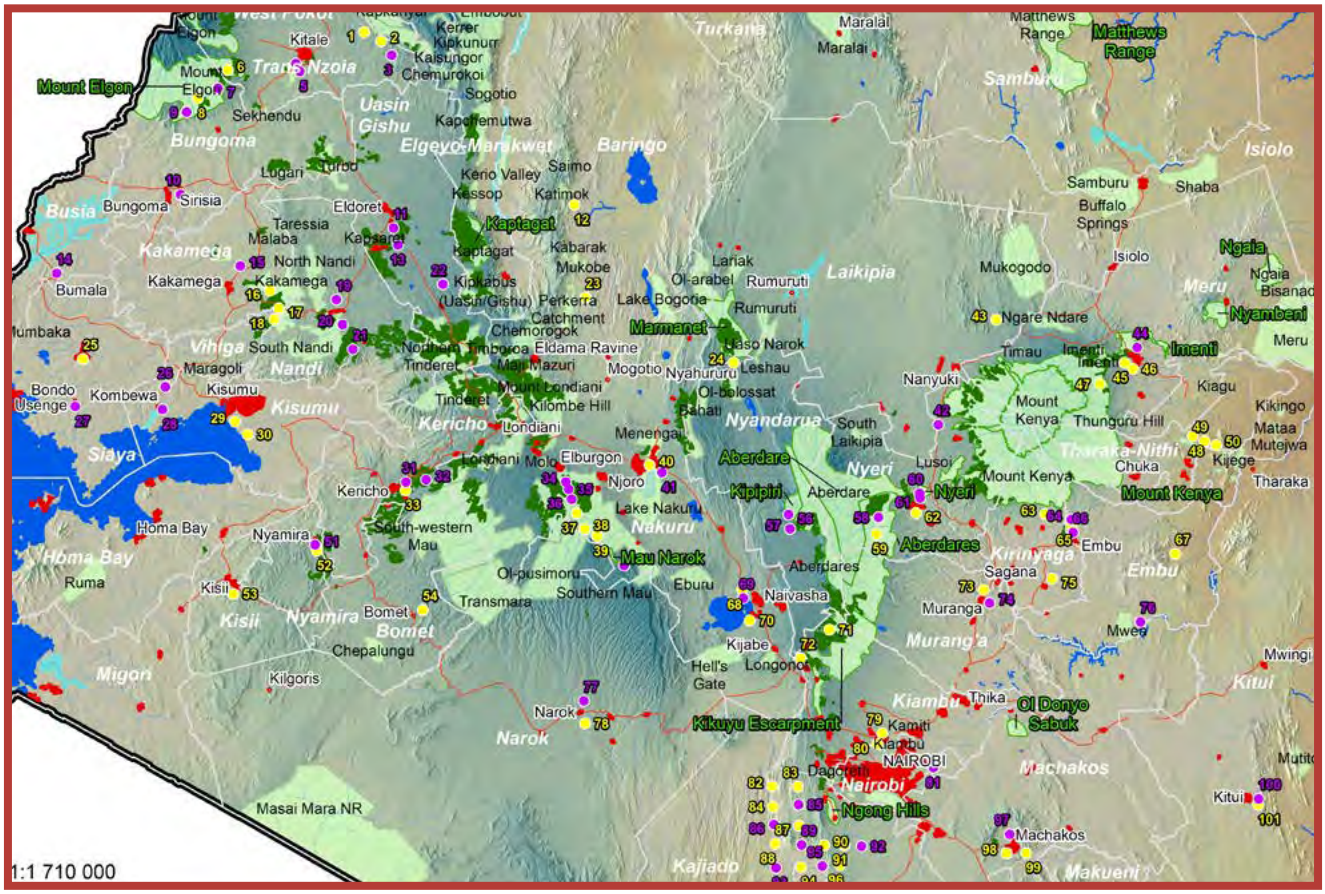
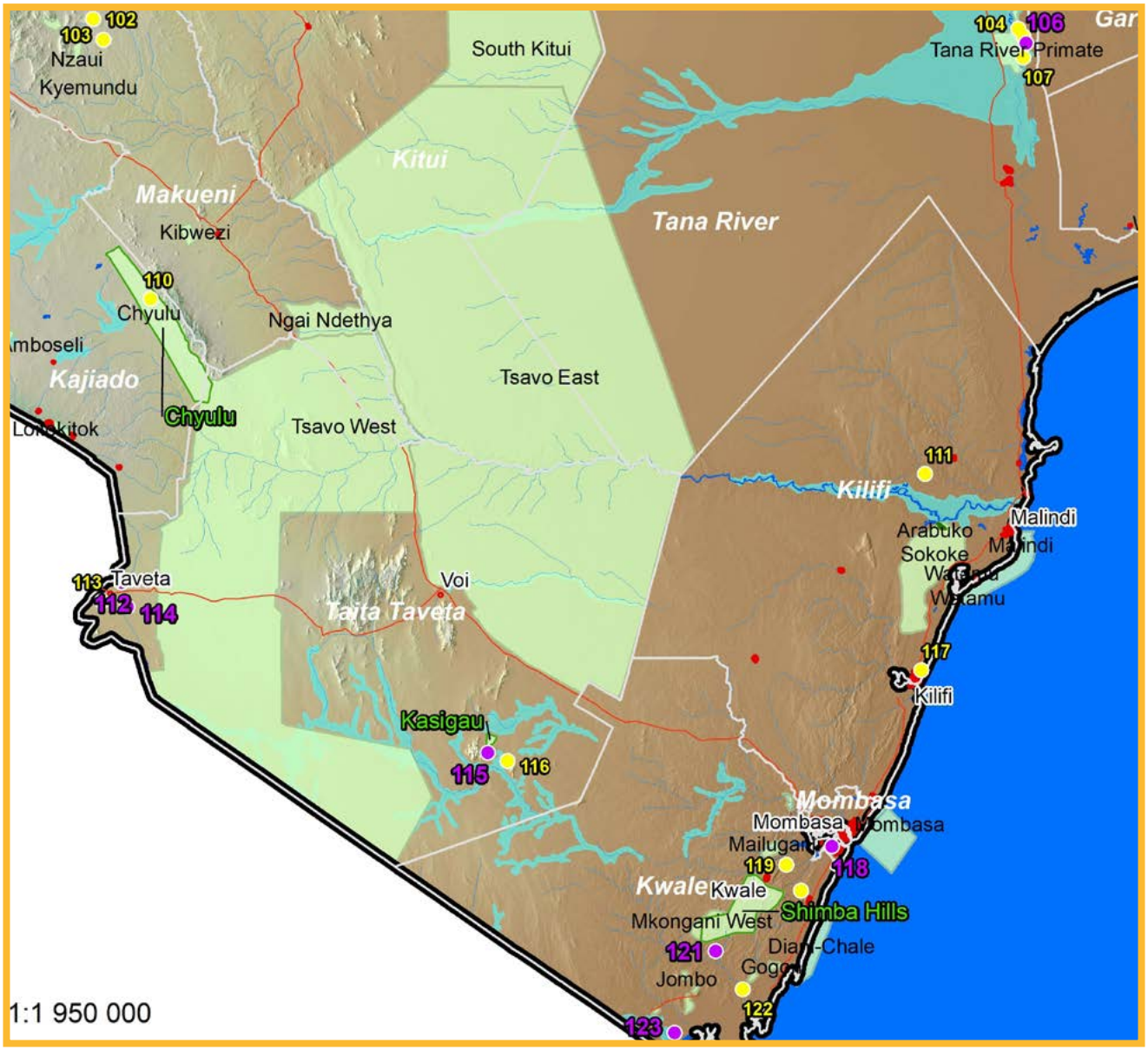
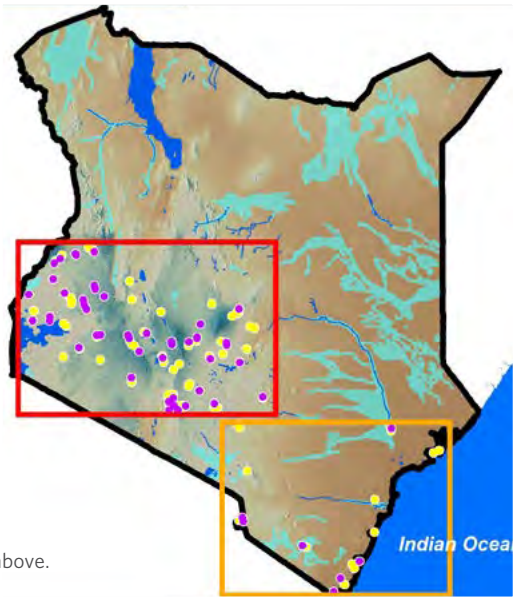


Figure 4-1 Mapping of forestry projects and initiatives in Kenya (Cont.)





Note: See Appendix C.11 for the name of each forestry project by the number in the image above.
Note that the list is not exhaustive.

For the purpose of this report, the forestry projects in Kenya can be broadly categorised under eight themes, as outlined in Figure 4-1. A review and summary of past and current projects is provided in Appendix C.

Figure 4-2 Forestry project main theme/objective

Afforestation, reforestation and restoration initiatives

Direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human induced promotion of natural seed sources. Projects that aim to enhance the protection of carbon sinks and reservoirs of greenhouse gases.

Carbon sequestration and emission reductions from reduced deforestation

Initiatives that restore and protect forests through sale of carbon credits, including REDD+ projects.

Improving forestry operation efficiency and promoting sustainable alternative fuels

Initiatives that promote more efficient practices in the forest sector, or the use of alternative fuels that reduce deforestation and degradation of forests.

Forest conservation and sustainability initiatives

Those that incorporate sound management that considers social, cultural, economic and environmental values now and in the future.

Capacity building

Initiatives that enhance the forestry knowledge, skills and expertise of stakeholders to make a positive impact for the forestry sector.

Sustainable livelihoods improvement

Initiatives that enhance the ability of stakeholders to cope with and recover from stresses and shocks and maintain or enhance capabilities and assets both now and in the future, while not undermining natural resource bases.

Forest governance, policy and strategy support

Those that incorporate a wide range of stakeholders to negotiate, make and enforce binding decisions about the management, use and conservation of forest resources. The three pillars of forest governance are (i) policy, legal and institutional frameworks, (ii) planning and decision-making processes and (iii) implementation, enforcement and compliance. Stakeholders can include public and private actors and formal and informal institutions.

Enhancing private sector engagement in the forestry sector

Projects that can demonstrate increased private sector involvement in reforestation, afforestation initiatives and reduced deforestation.

Source: AECOM

Photo byjamiesx-co

5. Climate Finance Landscape in Kenya

5. CLIMATE FINANCE LANDSCAPE IN KENYA

When the Government of Kenya published its revised NDC in 2020, it estimated the implementation of the required mitigation and adaptation actions across all sectors up to 2030 to cost approximately USD62 billion (Ksh6,775 billion) (GOK, 2020). The funds are to be sourced both locally and internationally with significant contribution expected from the private sector (UNDP, 2020b). If these financing requirements are met, the country may achieve its commitment to abate its GHG emissions by 32% by 2030 relative to Business as usual (BAU) scenario under its revised NDC (2020).

The 2020 NDC only provides cumulative investment needs for mitigation and adaptation actions and it is not broken down into sectors yet. Therefore, the NCCAP 2018-22, based on the previous 2015 NDC represents the most recent estimate of investment needed to implement the five priority actions for the Forestry, Wildlife and Tourism sectors currently available.

The **NCCAP 2018-2022 estimated that Ksh63.5 billion (USD616 million) is needed to implement the priority** actions under NCCAP in those five years (GOK, 2018a) with a further Ksh90.1 billion (USD900 million) required for the following five years (UNDP, 2020c). This corresponds to only 3% of the total finance needed to implement the 2015 NDC (USD40 billion), even though forestry is one of the main components of Kenya's NDC and the sector has the greatest potential for emissions reductions.

Realistically, more investment is needed to meet the greater ambitions contained in the 2020 NDC.

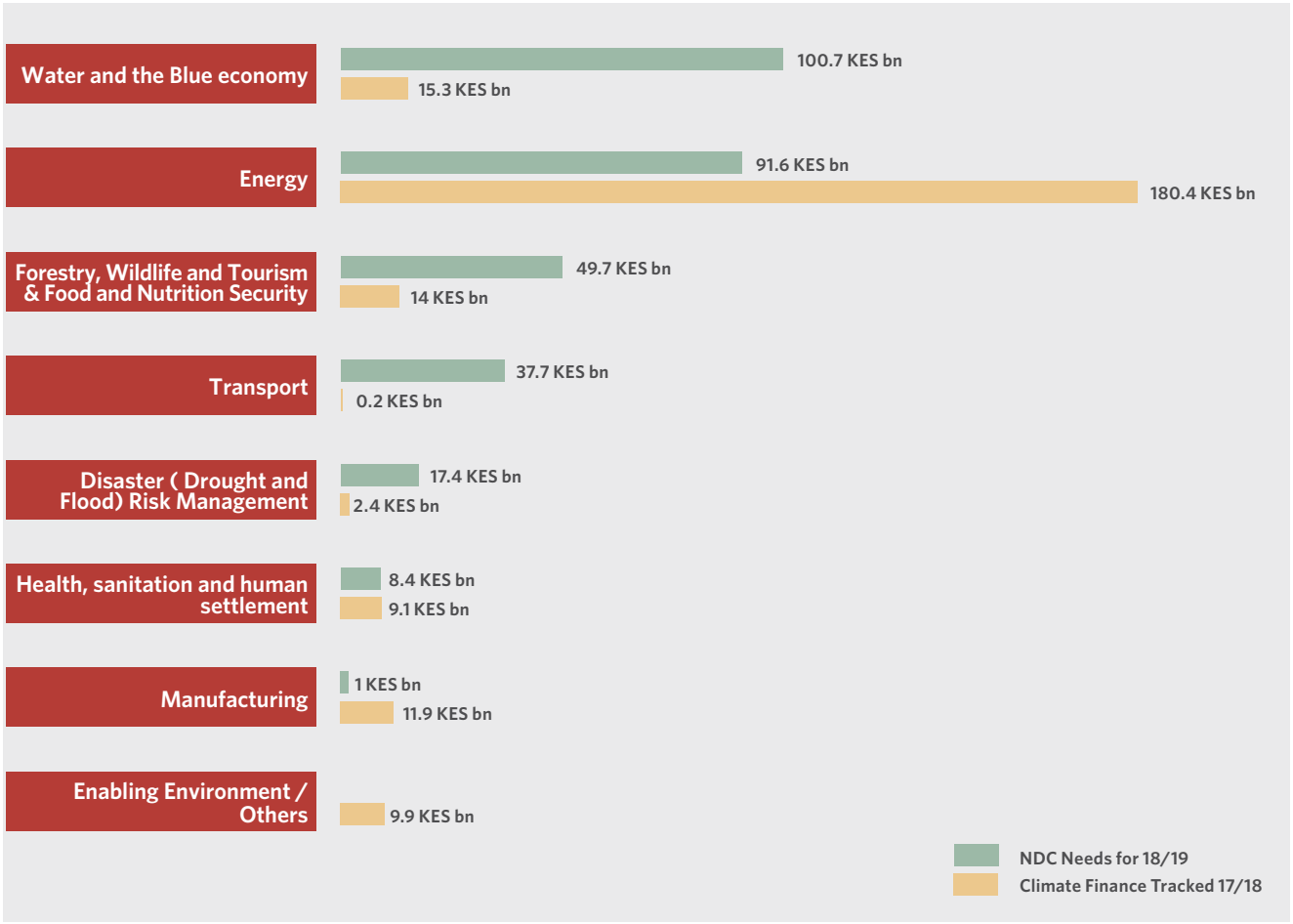
Photo by Antony Trivet on Pexel

5.1. CLIMATE FINANCE FLOWS IN 2018

In 2020 the National Treasury of Kenya, in partnership with Climate Policy Initiative under the GNIplus project, conducted a study into the climate finance flows in Kenya in 2018, 'The Landscape of Climate Finance in Kenya'. This exercise mapped the life cycle of finance targeting climate mitigation and adaptation activities in Kenya, financed through domestic, international, public and private sources, at the national and county levels.

Kenya's climate-related expenditures to NDC priority sectors in 2017/2018 fell short of the estimated budget for 2018/2019 for each of the corresponding NCCAP sectors[12]. This is most stark in the main adaptation sector, water, and in the forestry and land-use sector. Whilst most sectors fall below the anticipated need, only the energy, health, and manufacturing sectors appear to have fulfilled the budgeted needs.

Figure 5-1 Investment gaps in NDC priority actions



Notes: the report combined the Forestry, Wildlife and Tourism with the Food and Nutrition Security sector for practical reasons. Figures include public and private, domestic and international climate-related investment in Kenya refer in the fiscal year 2017/18. Needs are based on the NCCAP 2018-22, where the earliest year available is the year 2018/19. Source: GOK, 2021.

The report identified **Ksh 3,787 million (~USD4 million) in investment relevant for the Forestry, Wildlife and Tourism in 2017/18, roughly one third of the Ksh11.39 billion (~USD104 million) that the NCCAP estimated were needed annually.**

The majority (66%) of this amount was provided by Kenyan private sector institutions, mostly through grants for tree planting activities. The Government of Kenya channelled Ksh1,286 million (~USD11.7 million) through its Ministries, State Departments, and Semi-Autonomous Agencies (SAGAs), originating domestic resources and external transfers from bilateral and multilateral international partners (Table 5-1).

12 Needs are based on the NCCAP 2018-22, where the earliest year available is the year 2018/19. Source: GOK, 2021.

Table 5-1 A breakdown of climate finance flowing to the forestry sector in 2018 by provider of finance

Sources	Domestic (million Ksh)	International (million Ksh)	Total
Private sector	**2,436**	**65**	**2,501**
Commercial financial institutions*	1,852	-	1,852
Corporations	584	-	584
Philanthropic foundations	-	65	65
Public sector	**874**	**412**	**1,286**
Kenyan Ministries	542	-	542
Kenyan SAGAs	332	-	332
Bilateral Development Partners**	-	396	396
Multilateral Development Partners**	-	17	17
Total	**3,310**	**478**	**3,787**

*Notes: * includes insurance companies. These figures were captured through dedicated surveys to private sector companies and banks in Kenya and may include funding obtained from international partners.*
*** Bilateral and multilateral international funding channelled through Kenya's National Budget. Source: GOK, 2021.*

It is important to note that due to data limitations, expenditures from SAGAs may have been underreported in the study. This means that the figure is likely to be higher. However, the gap is so significant that data limitations are only a partial explanation for the shortfall in finance. Given fiscal limitations, much of this gap will need to be met by investment from the private sector.

The **numbers tracked are significantly lower than the Ksh48,000 million (USD440 million) needed to meet the constitutional target of achieving and maintaining over 10% tree cover by 2022** published in May 2019 (MoEF, 2019b). The same strategy also estimated the cost of inaction at Ksh168 billion (~USD1.5 billion) by 2022.

Such inaction would lead to much higher long-term costs, which could have considerable impacts on the economy, given the forestry sectors' importance to many elements of Kenya's GDP (see section 2.1.3.).

5.2. ENHANCING PRIVATE INVESTMENT IN THE FOREST SECTOR

Action is needed by the Government to attract private investment, which can be in the form of incentive schemes and subsidies. This has proved very successful in the renewable energy sector for reducing perceived risks and catalysing significant private investment, both domestic and international. However, there are other measures that can be applied as well, such as:

- The Ministry of Environment and Forestry and the National Treasury to provide economic and fiscal incentives such as tax rebates that promote efficiency in wood conversion and utilisation, incentives to engage in commercial forestry, or land tax rebate for forest areas.
- Creating enabling environments for the private sector to invest in forestry projects, reducing the risks of political instability and lost investments as well as the lengthy and costly procedures of acquiring permits in the sector.

- Promoting Payment for Ecosystem Services, including water, carbon (including REDD+ and other carbon crediting schemes in the country), and tourism levies. This could also include the establishment of private sector led conservation funds, such as the Upper Tana-Nairobi Water Fund, developed by the Nature Conservancy (TNC);
- Provision of affordable credit facilities to businesses engaged in forest development projects;
- Provision of grants to support forest development projects; and
- Enhancing research and development to develop sustainable forestry business ideas and products.

Other incentives directed at grassroot level can also support achieve forestry and conservation goals, such as the promotion of trophies, certificates, cash and in-kind prizes, as well as recommendations to the Head of States for decoration for distinguished services in the forestry sector- these can be used to motivate support in the sector from institutions, schools, media houses, communities, and individuals across the country.

Most of the incentive schemes mentioned above are yet to be implemented.

It is also important for the Government of Kenya to look at the drivers of deforestation and provide fiscal support to change practices and incentivise alternatives. One of the main drivers of deforestation is use of fuelwood for cooking. **The Government of Kenya could remove VAT on clean cooking alternatives such as LPG to encourage a shift away from fuel wood and charcoal. As outlined in section 2.1.3, in rural areas the main source of cooking fuel is firewood and charcoal** in over 90% of households, therefore the current subsidies are not sufficient or reaching these communities and additional public sector support is needed. Farmers should also be incentivised to plant 10%+ trees in their farmlands.

Photo by Get Inspo Co Bibhash-Banerjee on Pexels

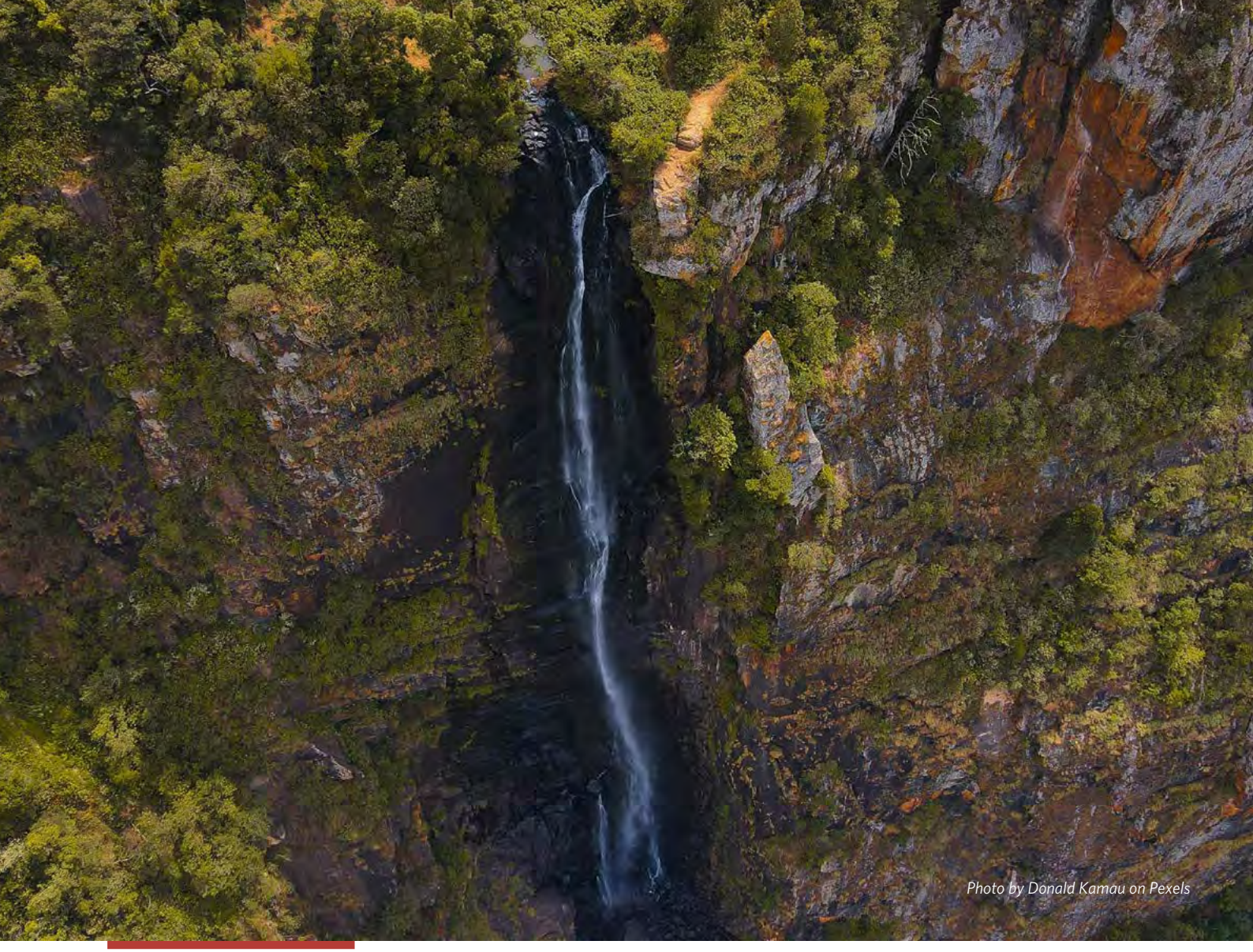


Photo by Donald Kamau on Pexels

6. Monitoring and Measurement, Reporting and Verification in the Forestry Sector

6. MONITORING AND MEASUREMENT, REPORTING AND VERIFICATION IN THE FORESTRY SECTOR

The Government of Kenya has set out activities, policies and initiatives aimed at increasing the nation's forest cover and tackling the threat of deforestation, as outlined in section 3.2 above.. One key component to ensuring the success of interventions is to track their implementation. Tracking progress is achieved through a process known as monitoring and measurement, reporting and verification (M&MRV), refer to Box 6-1.

Box 6-1 Defining monitoring and measurement, reporting and verification

Monitoring and measurement, reporting and verification (M&MRV) is a combination of three independent processes that feed into one another to create an overarching system that is used to help a user (e.g. a Government) understand how things are (e.g. emissions and/or removals from the forest sector), how they have changed in the past, and how they might change in the future. The three components of M&MRV are:

- **Monitoring and measurement:** the processes of understanding how much of something there is or by how much something has changed. For example, calculating the GHG emissions emitted annually from a sector of the economy, or quantifying what impact a mitigation measure might have on those emissions. Best practice is to make these quantifications using methodologies prescribed under international standards, e.g. the IPCC guidelines for national GHG inventories or clean development methodologies for baseline and monitoring.[13]

  For the forestry sector, this means monitoring and measurement of the country's forest cover and condition plus indicators related to these, e.g. the use of forest resources; through a National Forest Inventories (NFI) and a National Forests Monitoring Systems (NFMS) for example. It can also be determined through the land use, land use change and forestry (LULUCF) sector in the national GHG emissions and removals inventory, as well as their changes over time.

- **Reporting:** the process of communicating the information that has been monitored or measured. This might be because it is a national and/or international legal requirement to do so, it might be to indicate to international audiences where action could be taken or support could be directed, or it might be to share experiences and best practice with the international community. The format of the information communicated is generally guided by international guidelines so that similar information reported by different countries can be compared. Examples of reports required to be published internationally by developing countries include: National Communications (NCs), Biennial Update Reports (BURs), as well as Biennial Transparency Reports (BTRs) in the future. Current and future UNFCCC requirements are explained in Appendix B.3 and B.4.

  For the forestry sector, this is done through, for example the Forest Reference Level (FRL) and/ or Forest Reference Emission Level (FREL) under the UNFCCC REDD+ *mechanism. The REDD+ results are communicated through a technical annex to the Biennial Update Reports (BURs) and, in future, a technical annex to the Biennial Transparency Report (BTR).*

13 Available at: https://cdm.unfccc.int/methodologies/index.html

- **Verification:** the process by which reported information is checked, usually by an independent third party. Generally, information is checked to ensure that it is adhering to the guidelines and requirements used to produce the information. Fox example, BURs are subject to a technical analysis by a team of technical experts selected from the UNFCCC roster of experts, through a process known as International Consultation and Analysis (ICA – see details in Appendix B.3 and B.4.).

  For the forestry sector, what this means, is that FRL and/or FREL proposals and REDD+ results are subject to a technical assessment/analysis conducted by two LULUCF experts from the UNFCCC roster of experts.

6.1. FOREST MONITORING OVERVIEW

Forest monitoring is a key component of any national (or sub-national) policies and programmes aiming to identify and implement climate change mitigation and adaptation actions; not only in the forest sector, but also across sectors with which deep synergies are evident (e.g. agriculture or energy). Forest monitoring typically comprises three main components:

- **National forest inventories (NFI):** Technical process of data compilation and analysis of forest resources from a multitude of data sources, including field inventories and remote sensing, to estimate relevant forest characteristics at particular points in time.
- **National forest monitoring (NFM):** Comprehensive process of assessment evaluation, interpretation and reporting of data and the derivation of information, usually from repeated inventories, that allows for the monitoring of change and trends over time.
- **National forest monitoring system (NFMS):** Is essential for tracking progress made in implementing and achieving the goals set-out in NDCs, national GHG inventories, the REDD+ programme and mechanisms (in particular for the establishment of FRL and/or FREL), as well as NAMAs and others. It outlines the stakeholders, institutions and resources required to implement national forest monitoring.

Depending on the dimensions, biophysical conditions and diversity of the forest sector in-country, there can be immense challenges to developing, implementing and maintaining a good and reliable NFMS, both from a technical and a financial point of view. Additional challenges can exist when linking the NFMS and/or its results to the NDC and its associated climate change actions.

International technical references, experience from within the country and good practice cases from other countries with similar conditions (bearing in mind that there is no 'one-size-fits-all' approach for national forest monitoring) can help to minimise such challenges. One good example of an international technical reference that can be used to guide the development and operation of a NFMS, is the **"Voluntary Guidelines on National Forest Monitoring"** published by FAO (FAO, 2017a). See appendix B.1 for more information on this guide.

6.2. FOREST MONITORING IN KENYA

KFS is in the process of developing a Forest Information Platform, which would be the country's version of a NFMS. Various initiatives are underway that are supporting Kenya monitor current forests in the country, as well as supporting the set-up of a system that can help track coverage and monitor change in the future.

The first National Land cover maps were created under the Forest Preservation Programme (FPP), led by the KFS, which produced Land Cover / Land Use Maps for 1990, 2000 and 2010 based on imageries of LANDSAT4, 5, 7 and ALOS.

The KFS has also implemented a Forest Management Information System (FMIS) using UVIO technology[13]. The FIMS was developed to support mid to large scale forestry organisations and created forest datasets for 52 forest stations which translates to about 6,500 sub compartments. The system is web based and it can manage inventory activities, track silvicultural operations and store forest geo data (KFS, n.d.).

The Kenya Indigenous Forest Conservation Program (KIFCON) provides the earliest systematic forest inventory in Kenya and extensively covered 15 blocks of indigenous forests of Kenya in the period 1990 to 1994. It carried out a national inventory of all the plantation forests in the country for the period 2009-2011.

Improving Capacity in Forest Resources Assessment in Kenya (IC-FRA), a project that was funded by the Government of Finland and supported technically by the Natural Resources Institute of Finland (Luke) was completed in 2015 and included field plots, sampling design and production of a "National Forest Resources Assessment Field Manual Biophysical Survey Kenya" (KEFRI, 2016a).

In 2013, Kenya launched the System for Land-Based Emission Estimation in Kenya (SLEEK) programme to support the National GHG inventory process. The project worked with the Department of Resource Surveys and Remote Sensing (DRSRS) in processing and preparing the satellite data for use. Land cover classification of forest and non-forests was completed, with land cover classification manual and processing manual produced from that work (FAO, 2017). Extensive mapping has been done as part of SLEEK, using a semi-automated method and produced the Land Cover / Land Use Maps for the years 1990, 1995, 2000, 2002 through to 2015, as well as 2018 based on imagery of LANDSAT4, 5, 7 and 8. These maps allow analysis of land cover and cover change through time based on IPCC land cover categories and their subtypes based on local requirements. SLEEK has worked across the whole land sector including forest land as well as grassland, cropland and other land uses.

In addition to supporting SLEEK, the maps and statistics generated by the programme are recognised as official Government documents for informing Government processes across the land sector – such as land use planning, tracking deforestation, and landscape restoration (MoEF, 2016a) (MoEF, 2019a).

In 2019, Kenya submitted its National Forest Reference Level for REDD+ Implementation for review to the UNFCCC (refer to Appendix B.3 for further information on UNFCCC reporting). The national FRL proposed by Kenya is derived from its average annual historical emissions from deforestation, forest degradation, sustainable management of forests and enhancement of forest carbon stocks in the reference period 2002–2018, which were monitored over four-year intervals (UNFCCC, 2020d).

14 UVIO FMIS is a forestry software, and include features such as managing inventories, tracking silvicultural operations, storing and manipulating forest geo database

Kenya is establishing a Forest Reference Level (FRL) for REDD+ to (MoEF, 2019a):

1. Harness opportunities for reducing current emissions arising from deforestation and forest degradation; and
2. Develop opportunities for enhancement of carbon stock arising from afforestation, reforestation and restoration of degraded forest areas.

In terms of GHG reporting, forestry has been included in Kenya's national GHG inventory since the 2nd National Inventory. The same approach has been used for the 3rd GHG Inventory (which at the time of writing this report, has not been published). Improvements in the GHG methodology have been observed due to the improvement in the quality and quantity of data used over time.

Box 6-2 summarises the institutional arrangements for M&MRV in Kenya. Additional information on the benefits of M&MRV can be found in Appendix B.

Box 6-2 Institutional arrangements for monitoring and measurement, reporting and verification in Kenya

The institutional arrangement is key for operationalising a monitoring and measurement, reporting and verification (M&MRV) system. Data necessary for the measurement and monitoring step will be obtained from key stakeholders, such as private companies operating in the sector, industry and trade associations representing those companies, academic and research institutions (e.g. KEFRI), civil society, non-governmental organisations, Government agencies (KFS, KWTA, NEMA) as well as relevant ministries and Government departments (MoEF and CCD, Country Governments, National Treasury, Ministry of Tourism and Wildlife, Ministry of Energy and Petroleum).

The reporting step will rely on the line ministry/ministries responsible for coordination (MoEF and CCD), other supporting ministries and Government departments, academic institutions, civil society and private companies and consultants that have fed into the process.

The verification will be the responsibility of the relevant coordinating line ministry or entity liaising with reviewers (e.g. technical experts under the UNFCCC conducting the international consultation and analysis).

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7. Barriers Analysis and Recommendations for Climate Action in the Forestry Sector

7. BARRIERS ANALYSIS AND RECOMMENDATIONS FOR CLIMATE ACTION IN THE FORESTRY SECTOR

Kenya has made significant progress to reduce deforestation and implement sustainable management practices in the forestry sector. However, despite these actions, the country still faces numerous challenges in the management and conservation of its forest resources. This chapter aims to highlight some of the main challenges Kenya is facing, whilst emphasising the areas of opportunity and where capacity needs to be developed in order to help meet its domestic and international forestry commitments.

In terms of assessing the challenges, barriers and threats to the forestry sector, this chapter will be structured around the two of the NDC (2020) objectives related to the forestry sector, namely:

- Making progress towards achieving a tree cover of at least 10% of the land area in Kenya.
- Energy efficiency and access to clean energy, encompassing the increase of energy efficiency of forest-biomass such as in wood processing and access to clean energy technologies,

The analysis is structured around three types of actors:

1. Institutional actors (public sector) – such as Government both National and County level, as well as parastatals.
2. Private sector/organisations – such as companies, industrial bodies, associations and coordination/ cooperative groups.
3. Individuals and communities – this entail each member of Kenya's population (both rural and urban), including also individual small holder farmers and community members.

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The Sustainable Livelihoods Framework[15] has been used and adapted to the analysis of this chapter. This framework aims at conceptualising livelihoods in a holistic way to capture the many complexities, constraints and opportunities livelihoods are subject to (definitions are outlined in Box 7-1 that will be used as part of the assessment process). This approach is applied in the analysis not only at the individual level but also for the private sector/organisations scale. In addition, at the institutional scale, policy, governance and financial mechanisms were identified as important components to evaluate barriers, as well as determining recommendations, and a way forward (discussed further in the next chapter).

It is important to note that the barriers identified are not specified by geographic area, value chain nor forest type in Kenya; these will be identified during a forestry project's implementation phase where a range of factors will be considered to make the activity specific and tailored to the issue/barrier.

This chapter also looks to identify possible recommendations that could be implemented by each actor type. This is summarised in terms of actions and capacity building needs to overcome the challenges identified.

Box 7-1 The Sustainable Livelihoods Framework five capitals

Human capital: skills, knowledge, the ability to work and good health. Human capital is needed to leverage all other forms of capital.

Social capital: the social resources that people draw on to make a living, such as relationships with either more powerful people (vertical connections) or with others like themselves (horizontal connections), or membership of groups or organisations. Generally, relationships of trust, reciprocity and exchange that the poor can draw on in times of need, and that lower the costs of working productively together. Like human capital, social capital has an intrinsic value; good social relationships are not simply a means, they are an end in themselves.

Natural capital: the natural resource stocks that people can draw on for their livelihoods, including land, forests, water, air and so on.

Physical capital: the basic infrastructure that people need to make a living, as well as the tools and equipment that they use. For example, transport and communication systems, shelter, water and sanitation systems, and energy.

Financial capital: savings, in whichever form, access to financial services, and regular inflows of money. (UNDP, 2017a)

7.1. BARRIERS AND RECOMMENDATIONS TO INCREASE FOREST COVER IN KENYA

Kenya currently has a forest cover of 5.9% (as of 2018). Within the National Constitution (2010), a target of achieving 10% forest cover by 2030 was set, with the timeline later accelerated to achieve this target by 2022. Kenya faces a number of barriers and challenges in increasing its forest cover, which are presented in Table 7-1, along with possible recommendations for overcoming the challenges. These have been identified from existing literature (refer to Chapter 8), the report authors' analysis, and through interviews and workshops with key stakeholders in the sector (refer to the Acknowledgments section).

15 For detailed information, please refer to: https://www.soas.ac.uk/cedep-demos/000_P528_RF_K3736-Demo/unit1/page_22.htm https://www.undp.org/content/dam/rblac/docs/Research%20and%20Publications/Poverty%20Reduction/UNDP_RBLAC_Livelihoods%20Guidance%20Note_EN-210July2017.pdf

Table 7-1 Barrier analysis and recommendations – Increasing forest cover to 10% by 2022

Type of Actor: Institutional

Dimension	Forest cover increase	
	Barriers and challenges	Recommendations
Forest Policy, Laws and Regulations	▪ Inadequate effort and motivation to increase public forest area by afforestation on unstocked lands and improving the quality of standing forests (thinning, pruning, extension of rotation age, etc.). ▪ Insufficient efforts to increase private forest area (commercial forestry) by incentivising plantation schemes through direct incentives and provision of extension services[16], etc. ▪ Insufficient policies to protect forests from agricultural and urban expansion. Lack of adequate consideration for forests in planning policies. ▪ Inadequate land-use planning at local level (designation of land for commercial forestry, agriculture/agroforestry, conservation, urban expansion, etc.). ▪ Insufficient promotion and adoption of climate-smart agriculture practices such as agroforestry and conservation agriculture ▪ Lack of updated maps of the extent and distribution of mangroves and inadequate information of carbon stocks stored by mangrove ecosystems, trends in these carbon stocks as well as emission levels. ▪ Limited understanding of the economic value of mangrove ecosystems undermines the development of strategies for minimizing trade-offs between climate, conservation and coastal development goals. ▪ The reinstatement of VAT on locally purchased or imported goods including clean cookstoves and fuels by manufacturers to 14%. Previously, these goods were tax exempted (as per the Finance Act, 2020).	▪ Increase afforestation and reforestation on public and private lands. ▪ Develop forest management standards and code of good practice and guidelines for plantation forest management. ▪ Develop extension services such as training in rural areas on policies and regulations governing the sector. ▪ Promote sustainable land-use planning policies and initiatives. ▪ Promote deforestation-free land-use activities, including in mining. ▪ The issue of overlapping institutional mandates and harmonisation of forest sector laws needs to be addressed in any forest sector legal/policy reform process. ▪ Clarify rights on emission reductions or removals from land-based activities from REDD+ projects; accelerate REDD+ readiness efforts; accelerate the development of systems to recognise/ authorise site-scale interventions (e.g. nesting), as appropriate; clarify land tenure. ▪ A platform that provides the link between site/ project level data with a national/regional MRV system is needed. The Ministry of Environment and Forestry should recognise the role of current carbon projects in reducing emissions and find ways of supporting them to be long-term and sustainable projects. ▪ Joint efforts between Environment and Agricultural Ministries should be part of a new policy for integrated land planning-management across critical areas of the country. ▪ The Government should not only advocate for the 10% tree cover but should also incentivise the pubic on using its locally extracted non-wood products such as fruits, leaves, essential oils etc. for local use and the domestic market. This will be a key driver for communities to protect forests, through alternative incomes and jobs.

16 Extension services, mostly applied in agriculture, refer to providing farmers with information that helps them optimise their use of resources.

Type of Actor: Institutional

Dimension	Forest cover increase	
	Barriers and challenges	Recommendations
Forest Governance	▪ Unsustainable management of forests, including planning, silviculture, harvesting practices, in-forest transport, etc. ▪ Inadequate human resources directed to the protection of forests (forest management). ▪ Inadequate control/governance on the charcoal sector (i.e. illegal charcoal and cartels). ▪ Corruption within institutions managing forests in Kenya. ▪ Insufficient coordination efforts at the institutional scale, leading to inefficient communication on forest policies, laws and regulations. ▪ Unclear separation of forest protection and forest exploitation functions of KFS have made law enforcement in protection of forest resources ineffective (MoEF, 2018a). ▪ Limited coordination between the MoEF and the Ministry of Agriculture in order to promote incentives to develop agroforestry practices and integrated livestock and agriculture practices. ▪ Inadequacy of accurate and up to date forest cover data to enable monitoring and reporting, including comprehensive data on illegal logging. ▪ Lack of harmonisation of forest related data (national and county level) – this issue is linked to the fact that many counties are yet to take up the functions as outlined in the Constitution of Kenya, 2010; and there has been a challenge in signing and implementing the Transition Implementation Plans (TIPs). ▪ Lack of integration between the monitoring systems at site level initiatives and the national level is a challenge for M&MRV efforts in Kenya. There is a need to conciliate the monitoring and verification process, so the project level results add up or are accounted into the national level. ▪ Insufficient early warning systems for wildfires and lack of resources to be able to respond quickly. ▪ Limited finances, lack of capacity and coordination among government agencies are factors underlying lack of effective management of mangroves.	▪ Promote sustainable forest management plans (SFM planning). ▪ Provide adequate resources and training for forest control and forest monitoring, including forest datasets. ▪ Stricter enforcement of the charcoal sector to remove control from the cartels and illegal production. Government support for sustainable charcoal producers. ▪ Promote enhancement of Participatory Forest Management. ▪ Enhance cross-ministry projects to integrate Climate-Smart Agriculture practices within the forestry sector, including agroforestry, integrated livestock and agriculture management. ▪ Giving tree nurseries a better structured implementation programme is important in tracking tree seedling distribution which could feed into the National Monitoring Reporting and Verification process. ▪ Royalties paid by timber should be benchmarked to understand what other countries are paying. ▪ Finding afforestation options for the arid and semi-arid regions is key in finding permanent solutions for droughts and floods.
Forest/ climate financing mechanisms	▪ Limited climate-related investment in the forest sector compared to needs. ▪ Inadequate incentives for sustainable forestry management, afforestation-reforestation and conservation activities. ▪ Tax burden on efficient technologies limiting their uptake. ▪ Uncertainty around carbon rights. ▪ Lack of synergies between adaptation and mitigation.	▪ Demonstrate the climate benefits of afforestation-reforestation, sustainable management of forests and forest conservation. ▪ Provide financial support for the most cost-effective emission reductions/ removals activities as well as clarify climate finance flow between investor/buyer, government and site-scale actors (via nesting guidelines). ▪ Incentivise sustainable forest management, afforestation-reforestation and forest conservation. ▪ Develop models for the replication of Payment for Ecosystem Services (PES) schemes across the country to generate a sustainable financial flow to support forest conservation. ▪ Kenya needs to complete certain parts of its REDD+ readiness to facilitate and accelerate finance flows to forest protection/ management. ▪ Government to consider how to reflect all the five REDD+ activities in its national programme.

Type of Actor: Private sector/ Organisations

Dimension	Forest cover increase	
	Barriers and challenges	Recommendations
Human capital	• Inadequate or ineffective planning of sustainable forest management (silviculture, in-forest access, etc.), harvesting and wood processing activities. • Unsustainable grazing leading to encroachment on forests and other fragile ecosystems. • Limited promotion of sustainable forestry product value chains. • Limited skills and knowledge within silviculture, plantation management and harvesting, sawmilling/wood processing. • Limited skilled sawmill operators and/or inadequate supervision. • Limited number of people trained on sustainable mangrove forest management.	• Provide support to better understand forest products value chains. • Provide training in sustainable forest management planning, integrated forest-crop-livestock management, grazing plans, harvesting and wood processing. • Provide CFAs with resources, including extension services (training opportunities) to support community forest implementation. • Need for capacity building on REDD+ projects for organisations and private sectors that have not worked on REDD+ before. Support is needed to build the private sector's capacity for emission management – i.e. how to become carbon neutral; benefits/negatives of biomass energy production; etc.
Social capital	• Difficulty in setting up production facilities due to barriers to authorisations and utilities. • Gender inequality in restoration projects and decision-making limits project buy-in and capacity enhancement.	• Provide support to develop forest-friendly local community land-use plans (sub-county level). • Provide capacity building on REDD+ rules and guidelines (including nested system). • Political stability is key for sectors such as the forestry as it takes more than five years for most trees to mature.
Natural capital	• Pressure on highly productive lands for agriculture (i.e. where forested land is being converted to agriculture). • Uncertainty over land tenure or short leases lead to lack of investment in planting and maintaining forests. • Traditional mining leads to deforestation as well as threatening water and soils. It can also cause social and health issues as well	• Undertaking all the counties' natural capital assessment. • Enhance raw material quality through implementing silvicultural good practices (thinning, pruning) • Diversify tree species used in plantations to make the most of marginal lands. Develop the concept of "ecozones" and "silvicultural guides". • Provide mechanisms to secure long-term forest investments. • Clarify land tenure and carbon rights, as well as eligibility and arrangements for trading these on different markets.
Physical capital	• Shortfall in infrastructure, including in-forest roads, and low-performing poorly maintained wood processing machinery and equipment. • Inadequacy of efficient sawmills / timber processing sites.	• Develop sustainable forest management plans that include in-forest log skidding and in-forest transport management and maintenance. • Provide vocational training for harvesting and sawmill operators.
Financial capital	• High cost of forest plantation establishment and maintenance in absence of financial incentives. • Lower return on investment of commercial forestry in comparison with other land-use activities. • High interest rates on loans versus long-term rate of returns in forestry investments. • High equipment purchases costs partly due to high taxation on imported equipment/machinery. • Lack of incentives by the Government such as tax reductions or exceptions on energy-efficient products such as cookstoves hence reliance on wood fuel. • Fluctuating prices of carbon in the international markets. • High cost of developing and implementing carbon offset projects. • Limited land suitable for large scale forest projects.	• Incentivise forest plantation through public and private planting schemes, including training opportunities in rural areas. • Raise awareness on co-benefits of sustainable forestry despite lower rate of return. • Undertake assessment of co-benefits of REDD+ projects, including economic impact assessment. • Increase tax credits to stimulate investments in the forestry sector. • Establish a mechanism that will allow private sector interventions in the forest sector including REDD+ to be aligned with national systems that will ensure that the private sector can engage in international market mechanisms. • Provide incentives (e.g. through enabling conditions via nested system) for private sector investment in forestry projects. • A national law on incentives should be provided to ensure the long-term investment into forestry projects.

Type of Actor: Individuals

Dimension	Forest cover increase	
	Barriers and challenges	Recommendations
Human capital	▪ Inadequate or ineffective planning of harvesting and other forestry operations. ▪ Inadequate understanding of the impact of deforestation and degradation (local scale, but also at a national scale). ▪ Limited understanding of alternative fuels and technologies to reduce reliance of fuelwood. ▪ Lack of promotion of sustainable forestry product value chains. ▪ Limited skills and knowledge within silviculture, plantation management and harvesting. ▪ Unskilled chainsaw operators and/or inadequate supervision leading to inefficiencies in operations. ▪ There is a general lack of understanding of REDD+ from organisations and the private sectors that have not worked on REDD+ previously.	▪ Implement simplified sustainable forest management plans (code of good practice) for forest owners. ▪ Train forest owners and operators on nursery management, plantation establishment and maintenance, silvicultural techniques, harvesting and renewal practices, as well as agroforestry practices and their benefits. ▪ Raise public awareness on alternative fuels, co-benefits of sustainable forestry, etc.
Social capital	▪ Growth of pastoralist populations leading to increased numbers of livestock that encroach on forests – poor understanding of the impacts of forest degradation and deforestation. ▪ Limited community participation in forest management and conservation. ▪ Urban expansion that has led to forest encroachment – inadequate consideration of forests in planning processes. ▪ Lack of understanding of full values of mangrove forests in fishery function, shoreline protection and carbon sequestration. ▪ Population pressure and associated increased demand for forest products and services. ▪ Limited understanding of social costs associated with carbon emission from forest sector.	▪ Promote community land-use planning. ▪ Implement community sustainable forest management plans in conjunction with integrated forest-crop-livestock management practices that identify potential grazing areas in conflicted areas (Climate Smart Agriculture practices). ▪ Include indigenous knowledge on forest conservation and management. ▪ It is critical that all restoration initiatives seek the consent of both men and women when implementing activities on their lands. Similarly, initiatives need to solicit the inputs from both women and men in order to ensure the restoration initiatives are aligned with community members' development priorities and enhance their wellbeing.
Natural capital	▪ Low productivity – poor access to improved seedlings and quality planting material. ▪ Uncertainty over land tenure or short leases lead to lack of investment in planting and maintaining forests.	▪ Assess land productivity through laboratory soil analysis and obtaining quality seedlings from research institutions such as Kenya Forest Research Institute. ▪ Train communities on quality local seeds collection, understanding of seed pre-treatments and physiology. ▪ Diversify tree species used in plantations to make the most of marginal lands. Develop the concept of "ecozones" and "silvicultural guides". ▪ Implement community land use planning to clarify land tenure rights locally.
Physical capital	▪ Low-performing and poorly maintained machinery and equipment for wood processing.	▪ Provide vocational training for commercial wood processing operators.
Financial capital	▪ Low access to financing mechanisms to purchase more efficient technologies and equipment. ▪ High interest rates on credit. ▪ High cost of forest plantations establishment and maintenance in absence of incentives. ▪ Lower return on investment of commercial forestry in comparison with other land-use activities. ▪ Lack of market for other ecosystem services of forests beyond carbon.	▪ Provide mechanisms to secure long-term forest investments by private individuals. ▪ Provide incentives to renew (or retrofit) equipment that has improved environmental safeguards and performance. ▪ Develop micro-credit and other forms of rural credit plus provide incentives conditional to the success of forest plantation establishment. ▪ Raise awareness on co-benefits of sustainable forestry despite lower rate of return, hence the need for dedicated financing mechanisms.

7.2. BARRIERS AND RECOMMENDATIONS TO IMPROVED ENERGY EFFICIENCY AND ACCESS TO CLEAN ENERGY

Improving access to more energy-efficient technologies and alternative sources of clean energy will reduce demand for fuel wood derived from Kenya's forest resources such as charcoal and decrease in GHG emitted to the atmosphere. However, Kenya still faces a number of challenges in meeting this objective, with barriers presented in Table 7-2. Recommendations for overcoming some of these challenges have also been identified.

Similar to the identification of barriers and recommendations for the achieving 10% forest cover (as outlined in the table above), the findings in Table 7-2 have been identified from existing literature (refer to Chapter 8), the report authors' analysis, and through interviews and workshops with key stakeholders in the sector.

Table 7-2 Barrier analysis and recommendations– energy efficiency and access to clean energy

Type of Actor: Institutional

Dimension	Energy efficiency and access to clean energy	
	Barriers and challenges	Recommendations
Forest / Energy Policy, Laws and Regulations	• Limited policies to promote the use of alternative and sustainable fuels / no incentives for the continued use of unsustainable fuel products. • Complex regulatory framework and policies limiting wider operations of Charcoal Producers Associations and licenced operators. • Lack of policy measures to improve charcoal production quality (product standards, incentives for sustainable charcoal, communication campaigns on reducing fuel/charcoal consumption). • Overlap between different government policies that give contradicting guidance.	• Review and revision/ simplification of the charcoal regulatory framework. • Development of effective policy measures to increase production quality (product standards, incentives for sustainable charcoal, communication campaigns on reducing fuel/charcoal consumption). • Review the licencing process for professional and non-professional charcoal producers.
Forest / Energy Governance	• Inadequate human resources directed to the protection of forests (forest control) to avoid unsustainable charcoal / wood fuel production.	• Improve governance and tighter restrictions on charcoal producers and the supply chain. • Promote the concept of decentralised, multi-party roundtables on sustainable charcoal. • Create Government scheme to promote energy efficient technologies.
Forest / Energy / Climate financing mechanisms	• High cost of more efficient technologies. • Lack of public financing for affordable, alternative, deforestation-free energies. • Tax burden on efficient technologies limiting their uptake.	• Promote cost-effective technologies to achieve high emission reductions at large scale: (i) high yield processing units (improved kilns and retorts) for charcoal production, both at industrial and artisanal level, and (ii) improved cookstoves for urban and rural households. • Promote deforestation-free, affordable, alternative sources of energy for households in urban and rural areas. • Enhance tax or cost of carbon-intensive fuels / provide tax relief / incentives on clean-energy fuels (e.g. VAT exemption).

Type of Actor: Private sector / Organisations

Dimension	Energy efficiency and access to clean energy	
	Barriers and challenges	Recommendations
Human capital	▪ Lack of training programmes on how to implement simple measures to increase productivity of traditional earth kilns (wood drying, homogenising wood diameters, wood species and other parameters affecting pyrolysis). ▪ Limited extension services such as field education by forestry officers from Government forestry institutions to disseminate good practices and raise awareness among wood producers. ▪ Inadequate understanding of the impact of deforestation and degradation (local scale, but also at a national scale). ▪ Absence of sustainable wood fuel (as raw material) production plans. ▪ Lack of expertise/ understanding of alternative fuels contributing to continued use of fuel wood products.	▪ Promote local sustainable charcoal production planning based on biomass production potential. ▪ Strengthen charcoal producer associations (CPAs) to disseminate good practice and raise awareness among operators. ▪ Capacity building and generating awareness for all stakeholders in timber production and processing on the impacts of deforestation and degradation.
Social capital	▪ Lack of defined structure and coordination within Community Forestry Association ▪ Lack of knowledge and skills for sustainable forestry management and efficient wood processing processes within some SMEs and large private sector organisations.	▪ Provide technical training support to CPAs on efficient methods for wood fuel conversion.
Natural capital	▪ Use of inefficient energy conversion technologies such as traditional earth kilns during charcoal production. ▪ Limited availability of fixed and semi-mobile high-yield processing units (retorts) for the purpose of achieving raw material savings in dry-land forests. Retort kilns use indirect heating instead of partial combustion to initiate pyrolysis.	▪ Study value-chains and raise awareness of more efficient technologies (improved kilns and retorts, furnaces, boilers, etc.).
Physical capital	▪ Use of inefficient energy conversion technologies such as traditional earth kilns during charcoal production. ▪ Limited availability of fixed and semi-mobile high-yield processing units (retorts) for the purpose of achieving raw material savings in dry-land forests. Retort kilns use indirect heating instead of partial combustion to initiate pyrolysis.	▪ Study value-chains and raise awareness of more efficient technologies (improved kilns and retorts, furnaces, boilers, etc.).
Financial capital	▪ High costs of electricity and LPG for industrial use / lack of cheaper, deforestation-free alternatives – fuelwood in rural areas is free. ▪ Difficulty with accessing credit and high interest rates. ▪ High equipment purchases costs partly due to taxation on imported equipment/machinery (furnaces, boilers, etc.). ▪ Poor incentivising of the biomass-energy sector.	▪ Incentivise the biomass-energy sector to promote the uptake of more efficient combustion technologies. ▪ Enhance the capacity of staffs in local banks/ financial institutions on new and efficient technologies to reduce the perceived risks associated with the technologies. This will enable easier access to loans for mass production of energy-efficient technologies.

Type of Actor: Individuals

Dimension	Energy efficiency and access to clean energy	
	Barriers and challenges	Recommendations
Human capital	▪ Lack of awareness of efficient technologies to replace traditional cooking stoves. ▪ Lack of extension services such as training to disseminate good practices and raise awareness among charcoal producers. ▪ Inadequate skills and research to innovate variety of affordable energy efficient technologies (improved cookstoves). ▪ Inadequate understanding of the impact of deforestation and degradation (local scale, but also at a national scale).	▪ Provide vocational training and raise awareness on improved kilns and retorts. ▪ Raise awareness amongst individuals to demonstrate the rationale and benefits for more efficient technologies and their paybacks (needed on a case by case basis for each technology).
Social capital	▪ Lack of defined structure and coordination within Community Forestry Associations. ▪ Lack of public extension services such as training for sawmill operators and maintenance staff.	▪ Provide vocational training and raise awareness on improved kilns and retorts.
Natural capital	▪ Lack of access to alternative, deforestation-free fuels. ▪ Reliance on wood fuel products – easily accessible and cheap.	▪ Raise awareness on affordable, deforestation-free alternative sources of energy. ▪ Promote local sustainable wood fuel production planning based on biomass production potential. ▪ Establish forest plantations dedicated to wood fuel production.
Physical capital	▪ Very low-performing energy conversion technologies such as traditional earth kilns.	▪ Promote uptake of improved kilns, retorts and cookstoves.
Financial capital	▪ High cost of alternatives to fuel wood (electricity and LPG), lack of cheaper energy alternatives. ▪ Difficulty with accessing credit and high interest rates. ▪ Low access to financing mechanisms to purchase more efficient technologies and equipment.	▪ Incentivise improved kilns, retorts and cookstoves to reduce their cost. ▪ Provide credits/loans for higher investments (industrial furnaces, boilers and semi-industrial kilns and retorts). ▪ Raise awareness within local lending and financial institutions of energy-efficient technologies and their benefits; to help reduce the perceived level of risk. This could allow for an enhanced uptake amongst individuals.

7.3. CONCLUSION AND WAY FORWARD

Although there are a number of barriers for implementing climate action initiatives in the forestry sector, it is important to recognise the work that has been carried out to date in the sector in Kenya. Furthermore, there are a number of opportunities and recommendations to overcome the challenges, as well as lessons learned from previous project implemented, that can be used or built on, as outlined in the Chapters of this report. Effort is need from all actors involved in the sector: the Government, private sector, NGO/CSO communities, as well as at the individual. The intention of this report was to provide the reader with a broad background on the status of the forestry sector, primarily under a climate change lens, to help inform decision making in the design and implementation of projects.

As a next step to this report, the GNIplus team will be developing a Forestry Sector Roadmap. This document will look to build on the findings in this Climate Action Status Report as well as the work in the NCCAP 2018-22 and other key MoEF initiatives and policies focused on the forestry sector – identifying the opportunities that can help meet Kenya's forestry commitments. The opportunities identified will undergo a ranking exercise (multi-criteria analysis), to identify high-potential opportunities that can help achieve Kenya's forestry NDC targets. The ranking activity will aim to assess of how enabling the opportunities are, the of speed and ease of implementation, implementation duration and time required until effect is felt. These opportunities will be developed in more detail, outlining key information on the technical activities for implementing each opportunity, as well as the proposed timeframe. The roadmaps will also aim to facilitate the flow of investment to support the implementation of low-carbon, resilient infrastructure projects, and ultimately help the Government of Kenya to achieve its NDCs ambition.

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Appendices

APPENDIX A GOVERNMENT OF KENYA INVOLVEMENT IN THE FORESTRY SECTOR

A.1 BODIES OUTSIDE THE MOEF WITH FORESTRY LINKS

As outlined in Section 3.1 there are other Ministries (and departments) within the Kenyan Government that support forestry initiatives, these are outlined in Table A-1 (note that the list is not exhaustive):

Table A-1 Government entities outside of the MoEF with forestry initiatives/activities

Name of body	Summary of responsibilities
National Climate Change Council	The National Climate Change Council was established under the Climate Change Act and is the body responsible for overall coordination of climate change affairs in Kenya. The Council is chaired by His Excellency, the President of Kenya , with the Cabinet Secretary responsible for Climate Affairs as its Secretary (with Secretariat services provided by the Climate Change Directorate) (GOK, 2016a) (MoEF, 2018b). The Climate Change Directorate reports to the NCCC. At the time of writing, the Council had not been established, as the appointment of the Board members was ongoing. Once operational, the Council will have the following duties: • Ensure mainstreaming of climate change function by national and county Governments. • Approve and oversee the implementation of the National Climate Change Action Plan. • Administer the Climate Change Fund.
Ministry of Tourism and Wildlife	The Ministry has a mandate among others, of developing an adaptation strategy for the tourism sector and managing of National Parks and Game Reserves. The National Parks and Reserves have public forest areas that are the responsibility of the Ministry under KWS to protect. (Ministry of Tourism and Wildlife, 2020)
Kenya Marine and Fisheries Research Institute (KMFRI)	KMFRI is a national research institute vested with responsibilities of research and advise the government on wise use of marine resources, including mangroves. KMFRI coordinated the development of national mangrove management plan; and has spearheaded development of MIKOKO PAMOJA, the first community type project to restore and protect mangroves through sale of carbon credits.
Kenya Wildlife Service (KWS)	KWS is a state corporation with responsibility for the management and administration of national parks and reserves and nature sanctuaries; it has the mandate to conserve and manage wildlife and wildlife resources across all protected areas systems. This includes monitoring forest degradation along wildlife corridors. It was established by an Act of Parliament (Cap 376), now repealed by the Wildlife Conservation and Management Act (2013) and has the ability to enforce related laws and regulations in its area of jurisdiction (KWS, 2020).
National Treasury and Planning	In 2018 the National Treasury prepared the draft Public Finance Management (Climate Change Fund) Regulations, which are currently undergoing consultation and finalisation. The National Treasury will host the country's Climate Change Fund once it gets approved, as established under Section 25 of the Climate Change Act 2016 as a financing mechanism for supporting climate change actions and interventions – both mitigation and adaptation (National Treasury, 2018). Environmental and forestry projects are among those that qualify for funding.
Ministry of Energy and Petroleum (Renewable Energy Directorate)	The Directorate's objective is to promote the development and use of energy technologies from biomass, such as biodiesel, bioethanol, charcoal, fuel wood and solar, wind, tidal waves and biogas. It is also tasked with promoting the use of fast maturing trees for energy production and the establishment of commercial woodlots (MoE, 2018).
National Land Commission	The Commission is mandated to administer public land, whose definition includes "Government forests", as set out under Article 62 (1) (g) of the Constitution. In this role, the Commission conducts research related to land and the use of natural resources such as forests and makes recommendations to appropriate authorities. It also ensures that public land under the management of designated state agencies such as the Kenya Forest Service in the case of Government forests, is sustainably managed for the intended purposes. The Commission's full functions are set out in the Constitution as well as in the National Land Commission Act, 2012.

A.2 OVERVIEW OF LEGISLATION IMPACTING THE FORESTRY SECTOR

The following sections provides a more detailed overview of the legalisation and rules impacting the forestry in sector to what is outlined in section 3.2 of this report.

CONSTITUTION OF KENYA, 2010

As Kenya's overarching law, the Constitution contains critical provisions with a bearing on the country's forest cover. These include:

Article No	Summary
Article 69 (1) (b)	Places an obligation on the State to work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya. The Constitution has been instrumental in ramping up efforts for increased forest cover, significantly having laid out the tree cover target, however currently no definition of 'tree cover' in legislation exists, and there is no systemic data collection to assess the tree cover in the country and monitor performance towards achieving the constitutional target. (MoEF, 2018a)
Article 69 (2)	Places an obligation on all individuals to cooperate with State organs and other persons to protect and conserve the environment.
Article 60	Setting out *inter alia*, sound conservation and protection of ecologically sensitive areas; as well as sustainable and productive management of land resources as a key principle of Kenya's land policy.
Article 61	Highlighting Kenya's land tenure system by making provision for the ownership of land as either public, private or community owned and providing clarity on how forests fit into the land tenure system. For example, under Article 62 (1) (g), public land is defined to include Government forests, and under Article 63 (2) (d) (i), community land is defined to include land lawfully held, managed, or used by specific communities as community forests. Private land can be held either as freehold or leasehold, and community land can be held under either customary; freehold or leasehold tenure. Article 65 sets out a constitutional limitation of land acquisition for non-citizens, whereby they can only acquire leasehold tenure for a maximum of 99 years.
Article 40	Grants the State power to acquire any land, with payment of just compensation in a prompt manner, where such land is required for a public purpose, or in the public interest. Public purposes are defined in section 2 of the Land Act 2012 which also sets up the procedure for compulsory acquisition. The Land Value (Amendment) Act 2019 amended the Land Act, establishing that *"prompt"* means *"within a reasonable time of, and in any case not more than one year after, the taking of possession of the land by the Commission."* This means that the National Land Commission may take possession of land prior to payment of compensation and pay within 12 months, which may be an unreasonably long time to wait for compensation for many landowners, especially where compensation is given at the tail end of the 12 months
	The fourth schedule to the Constitution setting out the National Government's responsibility for protection of the environment and natural resources whilst County Governments are responsible for the implementation of specific national Government policies on natural resources and environmental conservation, which would include forest sector policies. There is however lack of a clear framework for coordination between the 2 levels of Government in the management of forestry resources.
Article 67 (1)	Establishment of institutions that are involved in forestry matters such as the National Land Commission established under Article 67 (1) with authority to administer Government forests, and the Environment and Land Court called for under Article 162(2)(b) of the Constitution, to hear and determine disputes related to environment and the use and occupation of, and title to land. There has been conflict where the National Land Commission has ordered the de-gazettement of Government forest land to enable use by squatters, with resistance from the Kenya Forest Service (Njeru, 2019), and there is need for clarity on the role of the Commission in forest conservation, to ensure a coherent conservation- focused approach to the management of Kenya's forests.

FOREST CONSERVATION AND MANAGEMENT ACT (FCMA), 2016

The FCMA is the main law governing the forestry sector. It was enacted in 2016 to implement forest-related provisions of the 2010 Constitution and its preamble sets out its intention to provide for the development and sustainable management, including conservation and rational utilisation, of all forest resources. The Act:

- Establishes the Kenya Forest Service (KFS) as a semi-autonomous institution overseeing the conservation and sustainable management of forest resources. Its wide functions are set out in Section 8 of the Act and they include inter alia, licensing and permitting, preparation and implementation of management plans, and provision of forestry education, training and capacity building. Whilst KFS has fulfilled many of its functions, there are elements of its mandate it is yet to fulfil such as the provision of incentives to persons for sustainable utilisation of wood and non-wood forest products. (MoEF, 2018a)
- Establishes the Forest Conservation and Management Trust Fund aimed at nurturing, promoting, and supporting innovations and best practices in forest conservation and development. Though Trustees of the Fund were appointed in 2016 under Kenya Gazette Notice 8749, the Fund is not yet operational, and no disbursements have been made under it.
- Provides clarity on the ownership of forest by classifying forests as public, community or private based on the classification of land tenure in the Constitution.
    - Public forests are classified under Section 30 (2) and 31 of the FCMA and vest in and are held by the National Government in trust for the people of Kenya, in accordance with Article 62(2) of the Constitution. The KFS has the mandate to conserve, protect and manage all public forests, whilst County Governments manage all forests on public land defined under Article 62(2) of the Constitution.
    - Private forests are classified under Section 30(4) and 33 of the FCMA and are owned by the registered owner of the land who may hold the registered land under freehold or leasehold tenure, as defined in Article 64 of the Constitution.
    - Community forests are classified under Section 30(4) and 32 of the FCMA. Ownership is vested in the community and responsibility for management is as set out in the Constitution and the Community Land Act, 2016.
- Whereas the FCMA recognises different forms of forest ownership and the benefits of forests for carbon sequestration (for example section 42(1) (f), it does not venture further to set out carbon rights to ensure there is certainty and transparency on ownership of carbon rights, liability in case responsibilities are not being fulfilled, permitted dealings in carbon rights, approval processes for any permitted transactions, and limitations to transactions.
- Provides a variety of options for the management of forest including:
    - Concession Agreements- which are long term agreements issued by KFS for the management of a specified public forest area at a price determined after forest valuation and bidding. This grants an individual or organisation a forest concession which is a right of use in respect to a specific area in a national or county forest by means of a long-term contract, for the purpose of commercial forest management and utilisation. What constitutes "long-term" is however not defined.
    - Joint Management Agreements-whereby a private forest owner, KFS or the County Department responsible for forestry agrees to enter into partnership with other persons for the joint management of a specified forest area, specifying the contribution rights and obligations of each party and setting out the methods of sharing the costs and benefits accruing from that forest.
- Enables community participation in the management and conservation of forests through provision for community forest associations (CFAs) and entry into management agreements between KFS and the CFA. Section 47 (1) confers CFAs with the following forest user rights: collection of medicinal herbs, harvesting of honey, harvesting of timber or fuel wood,

grass harvesting and grazing, collection of forest products for community based industries, ecotourism and recreational activities, scientific and education activities, plantation establishment through non-resident cultivation, contracts to carry out silvicultural operations and development of community wood and non-wood forest based industries.

- Makes provision under Section 54 for tax and fiscal incentives proposed by the Cabinet Secretary for the National Treasury on the recommendation of the Cabinet Secretary for Environment and Forestry to increase investments in forest land use and forest resource utilisation. The potential incentives under the FCMA that the Cabinet Secretary may propose, such as 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 tax have not been granted.
- Sets out offences and penalties under Part IX of the Act, where its sets out maximum sentences and fines. The prescribed sentences and fines are not commensurate to the serious offences committed and compared to its predecessor the Forest Act 2005, the FCMA provides more lenient sentences and fines in all circumstances except in the case of wilful or malicious setting of fire (MoEF, 2018a) .
- Empowers the Cabinet Secretary to make regulations on the recommendation of the Board. There is however a lack of the relevant subsidiary regulations necessary to operationalise the Act.

CLIMATE CHANGE ACT, 2016

This Act provides mechanisms and measures aimed at achieving low carbon climate resilient development. It establishes the National Climate Change Council which may, on recommendation of the Cabinet Secretary and in consultation with relevant Cabinet Secretaries and County Government, impose duties relating to climate change on any public or private entities. The Act also establishes the Climate Change Fund which is a financing mechanism for priority climate change actions and interventions approved by the National Climate Change Council and provides that the Cabinet Secretary responsible for matters relating to climate change may grant incentives to investors involved in activities that seek to eliminate or reduce climate change. The Climate Change Council is however not yet operational, regulations under the Act are yet to be enacted and there are no climate duties that have been imposed nor incentives granted thereunder. Delays in enacting relevant regulations greatly hamper conservation efforts.

WATER ACT, 2016

The Act provides that every water resource is vested in and held by the National Government in trust for the people of Kenya. Water catchment areas are protected public land under the Act and this has helped in protecting forests in Kenya's water towers. The Act establishes the Water Resources Authority that serves as an agent of the National Government in matters regarding water resources and regulates the management and use of water. However, there is potential for conflict over management of forests gazetted both as water catchment areas under the Water Act and as forest reserves under the FCMA. The Water Act also acknowledges the importance for community participation in the management of resources, resulting in the formation of Water Resources Users Associations (WRUAs). The joint existence of associations formed in respect of forests (CFAs) and water (WRUAs) to manage natural resources at the local level leads to duplicity, turf wars and neglect, and there have been calls for merging of the two (UNDP, 2013).

FINANCE ACT, 2020

This Act amended the Value Added Tax Act by revising the exempt VAT status of taxable goods that are purchased locally or imported by manufacturers or importers of clean cooking stoves for direct and exclusive use in the assembly, manufacture or repair of clean cook stoves. Such taxable goods are now subject to VAT at the standard rate of 14%. The clean cook stoves are environment friendly as they produce fewer emissions compared to open fires. The introduction of VAT on these stoves will reduce their affordability to ordinary Kenyans who cannot afford other forms of energy for cooking, with a negative impact on the state of forestry by increasing reliance on wood fuel. The changes to the tax laws under the Finance Act 2020 were largely aimed at cushioning Kenyans from the adverse financial and economic effects of the Covid-19 pandemic and also enable the affordability of

personal protective equipment, however by expanding the items that are subject to VAT, which were previously exempted supplies such as clean cooking stoves, the Act fails to consider the need for forest conservation and a healthy environment.

FINANCE ACT, 2019

This Act amended the Income Tax Act to exempt from withholding tax, interest income accruing from all listed bonds, notes or other similar securities used to raise funds for infrastructure, projects and assets defined under Green Bonds Standards and Guidelines and other social services. This is provided that such bonds, notes or securities have a maturity of at least three years. Green Bond proceeds are used to finance or refinance new or existing projects that generate climate or other environmental benefits, and this could be in the forestry sector as activities that qualify for issuing of Green Bonds include green forestry development, afforestation, nature protection and ecological restoration projects. The challenge has been that:

- The withholding tax exemption became effective on 1 January 2020 and following this Kenya's first green bond worth approximately USD40.5 million was listed for trading on the Nairobi Securities Exchange.
- This incentive was however under threat as the Government attempted to make changes to the taxation landscape, focused largely on dealing with the Covid-19 pandemic, through the Tax Laws (Amendment) Bill, 2020. Under this Bill it was proposed to amend the Income Tax Act to remove the exemption and make interest income from green bonds subject to withholding tax.
- However, the National Assembly rejected this proposal on the basis that the tax exemption had just been recently enacted, and it was important to allow investors time to leverage on it.
- The attempt to withdraw the tax exemption nonetheless creates uncertainty for investors in making clean investments.

THE LAND ACT, 2012

This Act provides for the different forms of land tenure in Kenya. Land tenure is the acts, right or period of holding land. The forms are freehold, leasehold, customary land rights and such forms of partial interests as may be defined under the Act and other law, including but not limited to easements.

- Freehold: This means unlimited right to use and dispose of land in perpetuity subject to the rights of others and the regulatory powers of the national Government, county Government and other relevant state. It gives the owner absolute ownership of the land for life. This means descendants can succeed the owner for as long as the family lineage exists.
- Leasehold: This is the interest in land for a specific period subject to payment of a fee or rent to the grantor. Payment of rates is made to the respective county Governments for services rendered.

PHYSICAL AND LAND USE PLANNING ACT, 2019

This Act provides that every person engaged in physical and land use planning and regulation must ensure that development activities are planned in a manner that integrates economic, social and environmental needs of present and future generations. The Act establishes the National Physical and Land Use Development Plan that provides Kenya's blueprint for environmental conservation, protection, and improvement. The Act requires County Governments to prepare a county physical and land use development plan, and Under Section 56 (f), Counties are empowered to reserve and maintain all the land planned for open spaces, parks, urban forests and green belts in accordance with the approved physical and land use development plans, placing a n important responsibility on County's in conservation.

ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT, ACT NO. 8 OF 1999

This Act establishes the legal and institutional frameworks for environmental management. Specifically, with regards to forest cover, the Act provides for protection of forests and environmental impact assessments (EIAs) of forest related developments. It sets up institutions such as the National Environment Management Authority (NEMA) which exercises general supervision and

co-ordination over all matters relating to the environment and is the principal instrument of Government in the implementation of all policies relating to the environment:

- Section 9(2)(r) of the Act requires NEMA to work with other lead agencies to issue guidelines and prescribe measures to achieve and maintain a tree cover of at least 10% of the land area of Kenya.
- Section 44 of the Act requires that NEMA in consultation with other relevant lead agencies develop, issue and implement regulations, procedures, guidelines and measures for sustainable management of hilltops, hillsides, mountain areas and forests.
- Section 58 of the Act makes Environmental Impact Assessments (EIA) mandatory for certain projects set out in the Second Schedule to the Act, to ensure proposed projects and activities are environmentally sustainable. This includes projects in the following categories:
    - **Urban development-** including establishment of expansion of recreational areas in forest and nature reserves
    - **Forest related activities-** including timber harvesting, clearance of forest areas, reforestation/afforestation with alien species, Introduction of alien species, excisions of gazetted forest whatever purposes, any projects located within forest reserves such as construction of dams or other control structures that flood large areas of relatively undegraded areas.
    - **Natural conservation areas-** including projects located in indigenous forests including those outside of gazetted forests.
- Section 63 empowers NEMA to issue EIA licences upon evaluation of an environmental impact assessment study report where NEMA is satisfied of the adequacy of the report. The licence is issued on such terms and conditions as may be appropriate and necessary to facilitate sustainable development and sound environmental management.
- Whereas the Act and the Environmental (Impact Assessment and Audit) Regulations of 2003 thereunder set out the procedure and principles for EIAs, implementation has fallen short of the required standard (GoK, 2018 April). For example:
    - public participation which is a critical component of the EIA process is inadequately done and there have been reports of local forest communities' not having been consulted during the EIA process.
    - NEMA does not conduct field studies to assess or confirm reports submitted with respect to environmental impact assessment reports regarding the management of forest plantations.
    - Once an EIA license is issued, NEMA does not inspect forest plantation areas to confirm that their management is in line with the conditions of the environmental impact assessment (EIA) license. EIA licence renewals should be tied to compliance
    - NEMA issues EIA licences for developments that do not conform to the National Environment Policy, the National Land Use Policy, the National Spatial Plan or the principles of good environmental stewardship.

WILDLIFE (CONSERVATION AND MANAGEMENT) ACT 2013

This Act provides that the Cabinet Secretary responsible for matters relating to wildlife, may in consultation with the competent authority, by notice in the Gazette declare an area to be a national park, declare an area to be a marine protected area, declare a wetland to be a protected area or publish areas zoned to have wildlife conservation and management as their land use priority. The Act establishes the Kenya Wildlife Service (KWS) under Part II of the Act to co-ordinate and manage wildlife and conservation. There lacks a co-ordination framework between KWS and agencies in the forestry sector such as KFS, which impedes conservation efforts. For example, where KFS grants permits to CFAs to graze in forest areas that are habitats to endangered wildlife, such as the critical endangered mountain bongo antelope, which are protected by KWS (MoEF, 2018a).

FORESTS (PARTICIPATION IN SUSTAINABLE FOREST MANAGEMENT) RULES, 2009

These Rules promote collaboration between Kenya Forest Service, the private sector, the forest communities, and local authorities in the sustainable exploitation of forest resources. Under the rules, KFS may issue authorisations for forestry activities in the form of a permit, timber license, special-use license, contract, joint management agreement or concession agreement of a specified forest area.

In the case of private sector participation, eligibility will include possession of the necessary legal capacity to enter into binding agreements, technical and financial capacity to undertake the forestry activities for which the authorisation is sought. In the case of a foreign investor, compliance with all the laws for the time being in force relating to investment by foreigners will be necessary.

In the case of local communities, KFS may, whenever circumstances make it necessary or appropriate to do so, invite forest associations to participate in the sustainable management of state forests and authorisations may be issued in the form of a community forest management agreement which shall be issued to a forest association to undertake community forestry activities; and a cultivation-permit which shall be issued to members of a forest association to undertake non-resident cultivation.

FOREST (CHARCOAL) RULES, 2009

These Rules regulate the issuance of licences for the production and transportation of charcoal. Under the Rules, all commercial charcoal producers are required to organise themselves and form charcoal producer associations. The associations must develop and implement a Code of Practice for the purposes of self-regulation and must ensure that members implement reforestation conservation plans. The Rules also prohibit production of charcoal from endangered, threatened, and protected plant species. The Rules however do not fully disincentivise production, transport and use of charcoal from unsustainable sources, and draft charcoal regulations have been under development to update the 2009 version in force. Gaps in the Rules include:

- A highly centralised licensing system with applications for licences passing through a forest conservation licensing sub-committee, then a committee and finally to the Board of the KFS who hold the mandate for final approval of all applications.
- The lack of a timeline within which KFS would regularly update a list of endangered, threatened, and protected plant species from which a person shall not produce charcoal.

Lenient penalties, not commensurate to the offences under the Act, for example minimum fines of Ksh10,000 which are far below the commercial value of the produce protected in the Rules.

FOREST HARVESTING RULES, 2009

These Rules regulate how harvesting of timber is done, though penalties set out thereunder for non-compliance are low and not commensurate with the offences. The Rules prohibit the harvesting of timber in state forests, provisional forests, local authority forests or a registered private forest without a valid license. With regards to movement , section 11(1) of the Rules states that a person shall not transport forest produce without a valid licence for produce from State forests or community forests, or, in the case of produce from private land, a proof of origin issued by the owner of the forest from which the timber was felled. In both cases, proof of payment of the prescribed fee must also be produced. There has however been contestation with regards to movement of timber from private forests:

- KFS maintains that a movement permit issued by the County Ecosystem Conservator (issued on production of the certificate of origin which indicates the source and the farm owner) is required, though transporters who buy forest produce from private firms decry the position held by KFS on the basis that the rules do not make this requirement.
- Nonetheless, KFS has issued a notice on "clarification on the use of movement permits to regulate harvesting of trees in the country", to assert that movement permits are required for all transportation of forest produce regardless of the source of forest materials.

- Whilst the use of movement permits is an effective tool to curb heightened illegal cutting of trees for timber and charcoal production, clarity is required under the Forest Harvesting Rules and the drafting should explicitly make such provision. The fourth schedule of the Forests (Fees and Charges) Regulations, 2016 sets out fees payable for certain forest activities including a fee for a timber movement permit and another for a movement permit for non-wood forest products. However, where mandatory, these permits should also be explicitly referenced in the appropriate rules and regulations directly.

AGRICULTURE (FARM FORESTRY) RULES 2009

These Rules apply for the purposes of promoting and maintaining farm forest cover of at least ten per cent of every agricultural land holding, and to preserve and sustain the environment in combating climate change and global warming. Farm forestry is defined in Rule 3 as the practice of managing trees on farms whether singly, in rows, lines, boundaries or in woodlots or private forests. The Rules:

- Provide that the species of trees or varieties planted in farms shall not have adverse effects on water sources, crops, livestock, soil fertility and the neighbourhood, and should not be of invasive nature.
- Make provision for farm forestry compensation whereby a landowner or occupier who suffers damage to his farm forest trees may seek to be assisted by the District Agricultural Committee in valuation of his damaged trees. The Central Agricultural Board shall prepare and publish farm tree compensation guidelines for use in assessing compensation rates and where damage occurs due to undertaking of public utility service, the District Agricultural Committee may upon request carry out damage assessment and forward its report to the requesting party.

There has however been wide-spread non-implementation of the Rules (Chisika, Park, & Yeon, 2020), and challenges include:

- The Rules use "farm forest cover", "farm forestry" and "tree cover" without a definition for forest or tree cover, proving a challenge for monitoring and evaluation.
- The Rules empower an Inspector who is the District Agricultural Officer, to monitor compliance. However, harvesting, processing and movement of the trees on farms is subject to the procedures of the Forest Conservation and Management Act, 2016, in a different administrative regime. This raises the potential for conflicting operating procedures and advice to farmers where the two seats of administration are not aligned.
- There lacks a joint framework for the Ministry of Agriculture, Kenya Forest Service, and County Governments to implement the Rules.

The rules provide under section 8 (3) that every District Agricultural Committee shall undertake measures to plant trees to protect land at risk of degradation in its area of jurisdiction, by undertaking farm forestry activities financed through devolved and any other funds. The rules do not however elaborate on the whether and how these funds would be disbursed to farmers, if at all.

Fisheries Management and Development Act (2016) – Concerns conservation of fish habitat, marine spatial plans as well as promotion of sustainable blue economy.

A.3 NATIONAL CLIMATE CHANGE ACTION PLAN 2018-2022

The second NCCAP, covering the period 2018 – 2022, identifies seven priority climate action areas. The fourth one amongst these is focused on the forestry sector with the objective of increasing tree cover to 10% of total land area and rehabilitating degraded lands, including rangelands. Table A-2 summarises the priority climate change actions within the forestry sector that the Government has identified as necessary to help meet the overarching target These are mainly outlined in strategic objective 4 of the NCCAP, but there is also a forestry focused action in strategic objective 7.

This section provides a more detailed outlook of the climate change adaptation and mitigation actions in the current NCCAP(GOK, 2018a).

Table A-2 Priority actions for the forestry sector outlined in the NCCAP 2018-2022

Action	Expected Results by 30th June 2023	Adaptation/ Mitigation
1. Afforest and reforest degraded and deforested areas in counties *Strategic Objective 4*	An additional 100,000 ha of land afforested or reforested (including agroforestry), aiming to plant one million trees per County per year	**Adaptation:** Reduces exposure to climate change risks and impacts by increasing forest cover. **Mitigation (Absorptions):** GHG emission reduction potential of 2.0 $MtCO_2e$ by 2022 and 4.8 $MtCO_2e$ by 2030
2. Reduce deforestation and forest degradation *Strategic Objective 4*	Deforestation and forest degradation reduced through enhanced protection of additional 100,000 ha of natural forest	**Adaptation:** Reduces exposure to climate change risks and impacts by increasing and protecting forest cover. **Mitigation (Absorptions):** GHG emission reduction of 2.0 $MtCO_2e$ by 2030.
3. Restore degraded forest landscapes *Strategic Objective 4*	Restoration of up to 200,000 ha of forest on degraded landscapes	**Adaptation:** Reduces exposure to climate change risks and impacts by increasing forest cover. **Mitigation (Absorptions):** GHG emission reductions of 5.4 $MtCO_2e$ by 2023 and 13 $MtCO_2e$ by 2030.
4. Promote sustainable timber production on privately-owned land *Strategic Objective 4*	Area under private sector-based commercial and industrial plantations increased from 71,000 ha to at least 121,000 ha	**Mitigation (Absorptions):** GHG emission reductions of 1.0 $MtCO_2e$ by 2030.
5. Conserve land areas for wildlife *Strategic Objective 4*	Conserve 30,000 ha of wildlife habitats Human wildlife conflict reduced by 50% from 2018 baseline	**Adaptation:** Builds resilience by increasing the area for wildlife. Addresses the risk of increased likelihood of human-wildlife conflict as a result of future climate change
Ensure an electricity supply based mainly on renewable energy that is resilient to climate change and promotes energy efficiency *Strategic Objective 7a*	2,405 MW of new renewable energy generations developed, to include: Geothermal, Biomass, Solar and Hydro and Wind power	**Mitigation:** GHG emission reductions of 9.2 $MtCO_2e$ per year by 2022.

Source: (GOK, 2018a)

The total emissions reduction potential of the actions outlined in Table 9-1 is 10.4 $MtCO_2e$ by 2022 and 20.8 $MtCO_2e$ by 2030. In order to deliver these actions, the Government has identified several technologies and measures, which include supporting and enhancing (MoEF, 2019a):

- Community forestry programmes, improving research into degraded lands and appropriate conservation techniques.
- Forest management and planning, protection and conservation programmes.
- Tree nurseries and production of tree seedlings, tree planting, tree genetics, forest management and planning, silvicultural interventions.
- Technologies for community monitoring, forest management tools, development of alternatives to reduce demand for fuel wood, financial innovations including payments through carbon markets.
- Monitoring, Reporting and Verification (MRV) technologies, including remote sensing and global positioning systems, computer tagging and tracking systems.
- Incentives for forest conservation and management, which requires an enabling policy and regulatory environment

To support climate change adaptation and increase resilience in the forestry sector, the Government has identified the following measures to be implemented by 2022 (MoEF, 2019):

- Support the implementation or adoption of sustainable forestry practices that will allow forests to adapt to climate change naturally, through regeneration and tree migration. This can also be supported by human interventions through replanting distributed forests with species of tree varieties that are more adaptive or resilient to changing climatic conditions.
- Improve forest fire management, including raising awareness of the causes, risks and impacts of fires with local communities.
- Distribute forest plantation that can be regenerated with drought tolerant species. This can also be considered for the sustainability and longevity of the timber production in certain areas.

A.4 NATIONAL STRATEGY FOR ACHIEVING AND MAINTAINING OVER 10% TREE COVER BY 2022

The Strategy, as outlined in Table 3-2 provides for a series of interventions to achieve and maintain 10% tree cover by 2022. The Strategy is premised on total seedling production of 1.8 billion over a period of 4 years. The intervention areas include (MoEF, 2019b):

- Rehabilitation of degraded natural forests in gazetted forests and water towers.
- Rehabilitation of degraded water towers and wetlands outside gazetted forests.
- Rehabilitation of degraded mangrove ecosystems.
- Commercial private forests plantations established.
- Industrial forest plantation areas, restocked.
- Rehabilitation of degraded national parks, game reserves and wildlife conservancies.
- Greening of infrastructure (roads, a long railway lines, dams), schools, corporates and Ministries, Departments and Agencies.

Recent activities under this Strategy include:

- Short rains tree planting campaigns – the MoEF in partnership with the Ministry of Education have been coordinating tree planting campaigns during short rains periods (typically October to December) in various counties in Kenya. Through this campaign, the Head of Public Service directed all parastatals to allocate 10% of their Community Social Responsibility budgets for raising of tree seedlings (MoEF, 2018c).
- Establishment of commercial forest plantations on public, private and community lands.
- Promoting bamboo growth.
- Establishment of urban forests and green spaces.
- Restoration of Mau Forest water tower in 2019, with afforestation target of 10 million trees. Additionally, the Government fenced 50km out of the targeted 119km of the forest in order to protect it from encroachment.

NCCAP 2018-2022 alignment: Strategic Objective 4 (mitigation) - Priority Actions: 1, 2, 3 and 5

A.5 MANGROVE ECOSYSTEM MANAGEMENT PLAN (2017-2027)

The World Bank, through the Kenya Coastal Development Project, supported the development of the Mangrove Ecosystem Management Plan (MEMP). The goal of the management plan is to enhance mangrove ecosystem integrity and its contribution to the economy of Kenya through sustainable management and utilisation. Mangrove forests in Kenya are managed by KFS either alone; or with KWS when they fall in a Marine Protected Area. The MEMP outlines the Director of KFS as the overseer of the implementation of the plan, with the establishment of a National Mangrove Management Committee (with a membership of technical experts for mangrove ecosystem relevant disciplines). The committee serves as advisory body to inform Head of Conservancy on the technical issues regarding mangrove management. (KMFRI, 2017).

NCCAP 2018-2022 alignment: Strategic Objective 4 (mitigation) - Priority Actions: 1, 2, 3,4 and 5

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APPENDIX B FURTHER INFORMATION ON MONITORING, REPORTING AND VERIFICATION IN THE FORESTRY SECTOR

The Government of Kenya has set out activities, policies and initiatives aimed at increasing the nation's forest cover and tackling the threat of deforestation. One key component to ensuring the success of interventions is to track their progress. Tracking progress is achieved through a process known as monitoring and measurement, reporting and verification (M&MRV).

B.1 VOLUNTARY GUIDELINES ON NATIONAL FOREST MONITORING

As outlined in section 6.1 of this report, the FAO have developed a guidance note to support in the development and operation of a NFMS, called the **"Voluntary Guidelines on National Forest Monitoring"** (FAO, 2017a).

The aim of FAO's voluntary guidelines is to "assist with the creation and operation of NFMSs". The guidelines include good practice principles and a general framework for establishing an NFMS. They also incorporate a set of decision-support tools for planning and implementing a multi-purpose NFMS grounded in nationally appropriate and scientifically sound practice, taking into consideration domestic information needs and reporting requirements.

Based on FAO voluntary guidelines, a NFMS should aim to respond to the following **technical questions**:

- Where are forests located and what is the extent and composition (area by forest type and ownership, growing stock, biomass, carbon, diversity, site fertility, etc.)?
- What is the status of the forest in terms of quality and vitality? Are there any threats?
- How are forests and tree resources being used? How much is being utilised (e.g. timber harvest)? Is it sustainable?
- Who is benefiting from/depending on forests? And how?
- What changes and trends in the development of different forest characteristics and functions are occurring?
- Can indicators or drivers of these changes be identified?
- What are the relationships between different variables?
- How accurate and precise are the estimates?

Additional questions may arise from specific requirements articulated in other technical literature, exploring the **difference contexts where the NFMS information would be used**, for example:

- Intergovernmental Panel on Climate Change (IPCC) guidelines for national GHG inventories, in particular the 2006 IPCC GL[1]; the 2013 Wetland Supplement[2] and the 2019 Refinement to the 2006 IPCC GL[3];
- United Nations Framework Convention on Climate Change (UNFCCC) COP and/or CMA decisions (refer to section B.3), in particular the ones related to:
  - Warsaw Framework for REDD+[4] (with emphasis on–Decision 11/CP.19 - Modalities for national forest monitoring systems); and
  - Enhanced Transparency Framework (ETF) of action and support under the Paris Agreement[5].

1 Available at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html
2 Available at: https://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html
3 Available at: https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html
4 Available at: https://unfccc.int/topics/land-use/resources/warsaw-framework-for-redd-plus
5 Available at: https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-paris-agreement

While developing and operating the NFMS, countries should take into consideration the **principles** established in the different contexts, where the NFMS information will be used. According to FAO (2017), NFMSs encompass a variety of themes, which can be addressed by different groups of principles.

In terms of NFMS elements, FAO (2017) suggest the following division:

- **Foundation elements:** "refer to the organisational and technical framework conditions within which a NFMS is implemented. They include activities such as the institutionalisation of the NFMS, the development of national capacity and the strengthening of national forest research institutions in the field of forest monitoring, as well as the establishment of national and international partnerships.";
- **Strategic elements:** "refer to organisational and planning actions for data collection activities within a national forest monitoring system. They do not include specific scientific-technical issues. These actions include: the definition of goals, products and variables based on inquiries about information needs; project planning including assignment of responsibilities; networking; the provision of information technology, satellite imagery, measurement devices, means of transport and communication; and recruitment, contractual issues and other matters related to human resources"; and
- **Operational elements:** "refer to actions for the optimisation and definition of technical design elements of field and remote-sensing data collection and analysis, and the use of auxiliary information including approaches for quality assurance and control, the preparation and implementation of data acquisition and, eventually, focused reporting to specific target groups".

Based on the principles, FAO voluntary guidelines presents three main elements for a NFMS and address technical issues related to implementation of each elements. The guideline also presents a variety of planning issues some of which are technical in nature, while others are organisational or strategic. **An assessment tool**[6] is available to help countries to identify capacity gaps and weaknesses and address their real needs in a targeted manner.

B.2 WHAT ARE THE BENEFITS OF M&MRV?

The benefits to a country for investing time and resources in developing an M&MRV system can be broken down across two levels as explained by the Green Growth Institute (Seres, 2017):

- Domestic benefits: Understand key sources and sinks of emissions and removals, design effective mitigation and/or adaptation strategies as part of their NDC or other programs, assess impacts of mitigation and/or adaptation projects and policies, track progress toward climate goals, meet stakeholder demands for public disclosure of GHG information and enhance credibility and promote good governance.
- International benefits: enable countries to meet their international reporting obligations, compare their national mitigation contributions, track emissions/removals trends, build trust in their actions and reported data and unlock new sources of finance to tackle climate change by demonstrating impact and good governance practices.

6 The Tool is free and open to all interested stakeholder; and can be downloaded from: http://www.fao.org/redd/information-resources/publications/en/.

B.3 CURRENT REPORTING AND REVIEW REQUIREMENTS UNDER THE UNFCCC

Currently, countries such as Kenya (a non-Annex I country[7]) are obligated to report internationally under the UNFCCC. These obligations include submitting:

- National Communications (NC), according to the report requirements established by Decision 17/CP8 (UNFCCC, 2002). They should include a summary of:
  - The country's national circumstance, the national GHG inventory,
  - Programmes containing measures to facilitate adequate adaptation to climate change,
  - Programmes containing measures to mitigate climate change
  - Other information considered relevant to the achievement of the objectives of the Convention, and
  - Constraints and gaps, and related financial, technical and capacity needs
- Biennial Update Reports (BUR), according to the report requirements established by Annex III of Decision 2/CP.17 (UNFCCC, 2020a). They should include updates of national Greenhouse Gas (GHG) inventories, including a national inventory report and information on mitigation actions, needs and support received. Such reports provide updates on actions undertaken by a Country to implement the Convention, including the status of its GHG emissions and removals by sinks, as well as on actions to reduce emissions or enhance sinks

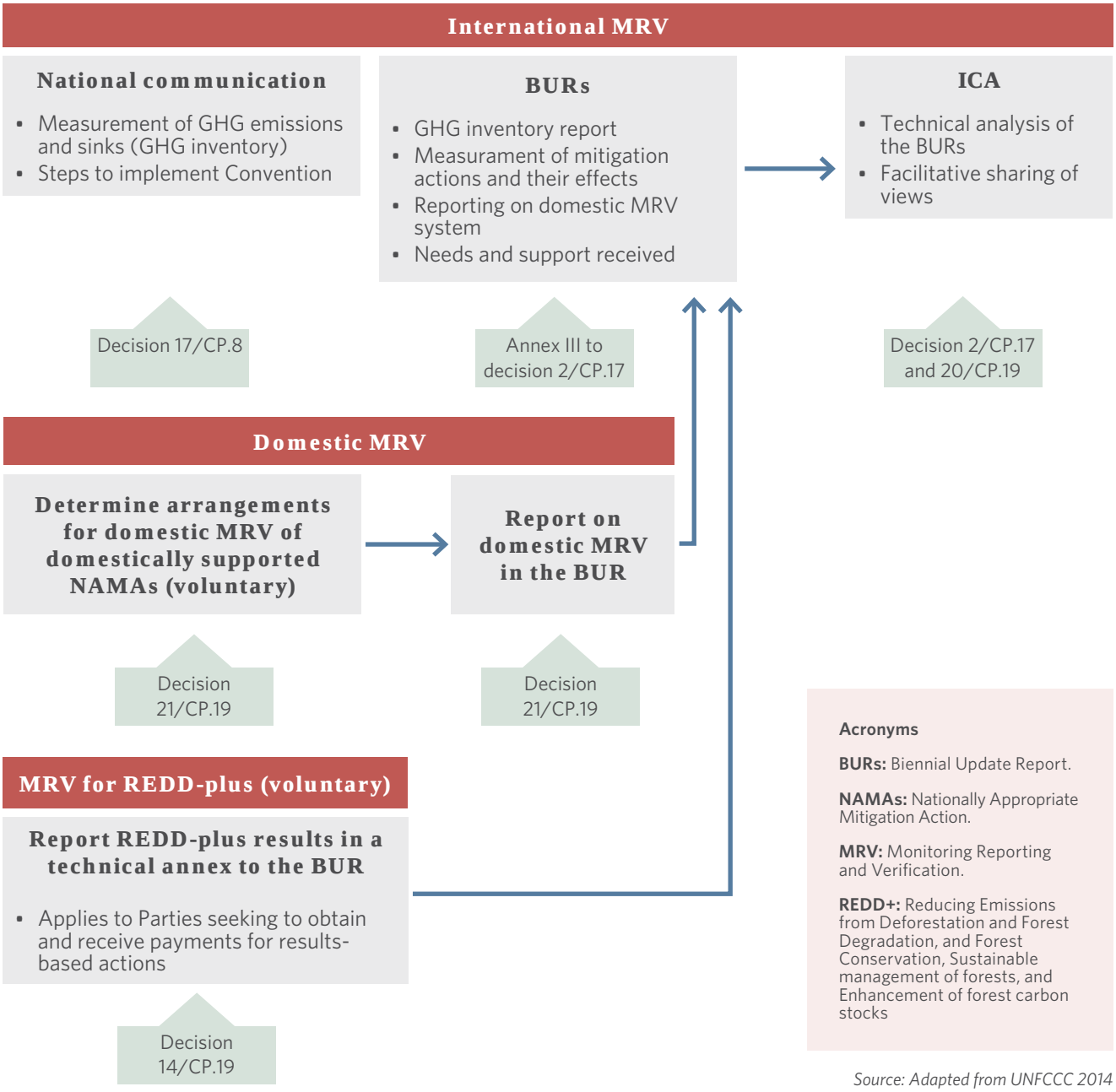
To date, Kenya has submitted two NCs to the UNFCCC. These include a national GHG inventory covering the years 1995, 2000, 2005 and 2010 (GOK, 2015). The country has yet to submit a BUR (UNFCCC, 2020a).

The forestry sector, in both the NC and BUR, is presented as part of the land use, land use change and forestry (LULUCF) sector in the national inventory report of anthropogenic emissions. This report outlines the GHG emissions by sources and removals by sinks, following the IPCC guidelines applicable for countries under the current MRV regime.

7 Non-Annex I countries under the UNFCCC (UNFCCC, 2020c)

Photo by git-stephen-gitau on Pexel

Figure B-1 Key elements of the current MRV framework under the UNFCCC (for non-Annex I countries)



Source: Adapted from UNFCCC 2014

Counties submitting their national inventory report of anthropogenic emissions, should follow the IPCC guidelines, as well as the following:

- Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (hereinafter referred to as the Revised 1996 IPCC Guidelines) - https://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html
- Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories - https://www.ipcc-nggip.iges.or.jp/public/gp/english/ ,
- Good Practice Guidance for Land Use, Land-Use Change and Forestry (hereinafter referred to as the IPCC good practice guidance for LULUCF) - https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html .
- The forestry sector maybe also relevant for the information to be reported on mitigation actions and their effects, particularly in the context of nationally appropriate mitigation actions (NAMAs)[8].

8 Up to data Kenya has not presented any NAMA for registry related to the forestry sector: https://www4.unfccc.int/sites/PublicNAMA/SitePages/Country.aspx?CountryId=90 (visited on October 1, 2020).

REDD+ REPORTING

In addition, a non-Annex I country could, for the purpose of obtaining and receiving results-based finance for **results from the implementation of REDD+ activities,** submit on a voluntary basis:

- Proposals for forest reference emission level (FREL) and/or forest reference level (FRL); and
- Technical annex to the BUR with REDD+ results.

Additional information can be found in Appendix B.3.

In order to obtain and receive **results-based finance for results from the implementation of REDD+ activities,** developing country Parties should have the following in place:

- A national REDD+ strategy or action plan;
- An assessed FREL and/or FRL9;
- A **national forest monitoring system**; and
- A system for providing information on how safeguards are being addressed and respected.

The results-based actions should also be fully measured, reported and verified; through a two-step process:

1. Technical assessment of the proposed FREL and/or FRL in accordance with the procedures and time frames established by the UNFCCC Conference of Parties (COP). The technical assessment process is usually conducted once a year and is coordinated by the UNFCCC secretariat (UNFCCC, 2013);
2. Actual results compared to the assessed FREL are submitted in a technical annex to the BUR of a developing country Party seeking to obtain and receive payments for results-based actions, and these results undergo a separate technical analysis. The LULUCF experts undertaking the technical analysis check whether data and information provided in the technical annex is transparent, consistent, complete and accurate.

Under the current MRV system, only BUR, FREL/FRL and REDD+ results technical annexes are subject to an 'assessment' by UNFCCC technical experts. BURs are subject to an **international consultation and analysis process (ICA)** (UNFCCC, 2020b).

B.4 FUTURE REPORTING AND REVIEW REQUIREMENTS UNDER THE UNFCCC

Article 13 of the Paris Agreement establishes an enhanced transparency framework (ETF), which will be the international MRV framework for Parties to the Paris Agreement. Under the ETF, all Parties are required to submit a Biennial Transparency Report (BTR) that include, in the case of developing countries (UNFCCC, 2019):

I. A national inventory report of anthropogenic emissions by sources and removals by sinks of GHG;

II. Information necessary to track progress in implementing and achieving their NDC;

III. Information on climate change impacts and adaptation; and

IV. Information on financial, technology transfer and capacity-building support needed and received.

The national inventory report and the information necessary to track progress of the NDC will be subject to a **technical expert review (TER)** and a f**acilitative, multilateral consideration of progress (FMCP)** (UNFCCC, 2019). For the FMCP, the information on financial, technology transfer and capacity-building support needed and received will also be considered.

9 The assessment of the FRL for Kenya was completed on 23rd December 2020. https://redd.unfccc.int/submissions.html?country=ken

NATIONAL INVENTORY REPORT OF ANTHROPOGENIC EMISSIONS BY SOURCES AND REMOVALS BY SINKS OF GHG

For the Paris Agreement, the national inventory estimates of anthropogenic GHG emissions (i.e. by sources, and removals by sinks) will have to be calculated and present. This should be undertaken using the **2006 IPCC Guidelines**, as well as all subsequent versions or refinements made to this document including sector/activity supplements, such as the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (UNFCCC, 2019).

Emissions and removals from the LULUCF sector should be estimated using the methodologies described in **Volume 4 of Agriculture, Forestry and Other Land Use (AFOLU)** of the IPCC guidelines. Even though the 2006 IPCC Guidelines presents the methodologies for the agriculture and forestry sectors in one single volume, Parties are still required to report them as two separate sectors: Agriculture and LULUCF (UNFCCC, 2019). See appendix section B.6 for more information. Mangrove and associated blue carbon can be assessed using 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands

INFORMATION NECESSARY TO TRACK PROGRESS MADE IN IMPLEMENTING AND ACHIEVING THE NDC'S GHG EMISSIONS REDUCTION TARGET

Kenya submitted its revised NDC in December 28, 2020; seeking to "to abate its GHG emissions by 32% by 2030 relative to the BAU scenario of 143 $MtCO_2eq$". This includes "emissions from the land use, land-use change and forestry (LULUCF) sector" (GOK, 2020). Specifically, the NDC aims to "make progress towards achieving a tree cover of at least 10% of the land area of Kenya".

According to the enhanced transparency framework (ETF)[10] modalities, procedures and guidelines under the Paris Agreement, Kenya needs to identify the qualitative and/or quantitative indicator(s) to track progress towards the achievement of its NDC (UNFCCC, 2019). For each indicator Kenya shall provide, in the BTR, information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s) and shall update the information in accordance with any recalculation of the GHG inventory, as appropriate It shall also provide the most recent information for each reporting year during the implementation period of its NDC[11]; and compare this with the information provided for the reference point(s), level(s), baseline(s), base year(s) or starting point(s). Complementary information is also required, such as: definitions and a description of each methodology and/or accounting approach used. (UNFCCC, 2018).

Since Kenya's NDC references a target for tree cover area; it is possible that the country may identify indicators related to the LULUCF sector, like for example: "forested land area".

Further information that will be necessary to track NDC progress is related to "mitigation policies and measures, actions and plans", including those with "mitigation co-benefits resulting from adaptation actions and economic diversification plans" (UNFCCC, 2019). Therefore, any mitigation measure related to the LULUCF sector (UNFCCC, 2019) that contributes to the implementation and achievement of the NDC will need to be reported in the BTR.

In addition, under the Paris Agreement, Kenya should provide, to the extent possible, estimates of expected and achieved GHG emission reductions for its mitigation actions, policies and measures. However, each country may use the flexibility provision and not present such information, considering its capacities (UNFCCC, 2019).

Finally, due to the type of Kenya's NDC (i.e. BAU deviation), the country is expected to present projections of GHG emissions and removals (UNFCCC, 2019). See appendix B.6 for more information.

B.5 FLEXIBILITY UNDER THE ENHANCED TRANSPARENCY FRAMEWORK (ETF) OF THE PARIS AGREEMENT

In order to adhere to the principle of common but differentiated responsibilities, despite there being mandatory reporting and review requirements for all parties, the ETF provides flexibility in the implementation of some of the provisions to developing country parties that need it "in light of their capacities" (UNFCCC, 2018).

10 https://unfccc.int/enhanced-transparency-framework
11 Paragraph 68 of Annex to Decision 18/CMA.1.

Developing country parties have to clearly indicated in the BTR, the provision to which flexibility is applied, concisely clarify capacity constraints, noting that some constraints may be relevant to several provisions, and provide self-determined estimated time frames for improvements in relation to those capacity constraints (UNFCCC, 2019). "When a developing country Party applies flexibility provided for in these MPGs, the technical expert review teams shall not review the Party's determination to apply such flexibility or whether the Party possesses the capacity to implement that specific provision without flexibility." (UNFCCC, 2018).

B.6 NATIONAL INVENTORY REPORT OF ANTHROPOGENIC EMISSIONS BY SOURCES AND REMOVALS BY SINKS OF GHG

Reporting requirements related to the LULUCF sector include (UNFCCC, 2019):

- Each Party shall identify key categories for the starting year and the latest reporting year including and excluding land use, land-use change and forestry (LULUCF) categories, using approach 1, for both level and trend assessment, by implementing a key category analysis consistent with the IPCC guidelines. Those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead identify key categories using a threshold no lower than 85 per cent in place of the 95 per cent threshold defined in the IPCC guidelines, allowing a focus on improving fewer categories and prioritising resources (UNFCCC, 2018);
- In the case of a Party addressing the emissions and subsequent removals from natural disturbances on managed lands in its national GHG inventory, that Party shall report information on the approach taken, and how it is consistent with IPCC guidance, as appropriate, and shall indicate if the estimates are indicated in national totals (UNFCCC, 2018); and
- In the case of a Party using an approach to reporting emissions and removals from harvested wood products in accordance with IPCC guidance other than the production approach, that Party shall also provide supplementary information on emissions and removals from harvested wood products estimated using the production approach (UNFCCC, 2018)

APPENDIX C FORESTRY INITIATIVES IN KENYA

The following sections provide a more detailed overview of the activities being implemented or completed within the forest sector in Kenya, sorted according to their main theme or objectives (see Figure 4-1). The tables also aim to map the initiatives against the mitigation priority actions set in NCCAP 2018-2022 (refer to Table A-2 for a summary of the priority actions).

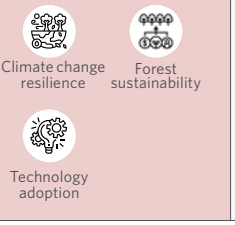
C.1 AFFORESTATION, REFORESTATION AND RESTORATION INITIATIVES

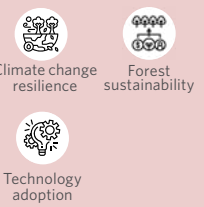
Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Greening Kenya Initiative (2018-2022) 	UN Environment	The initiative is part of Kenya's aim to plant 1.8 billion trees and achieve more than 10% forest cover by 2022. The initiative focuses on growing trees in schools, universities, education centres, farmlands and drylands (UNEP, 2018). **Funding:** *information not available*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
WaTER tower project (2014-2018) 	European Union / European Commission	The programme aimed to provided technical support and funding to the National Government, County Governments and several Government agencies to support in efforts to protect and increasing forest cover in Kenya's water towers – Mt Elgon and Cherangani. The project was suspended following the death of a community member during eviction proceedings by KFS (EU, 2018a). **Funding:** *€ 31 million*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Catalysing Forest and Landscape Rehabilitation for Climate Resilience and Biodiversity Conservation in East Africa (2014 - 2017) 	Government of Germany - International Climate Initiative (IKI	The aim of the project was the restoration of forest ecosystems and natural landscapes in Kenya and Ethiopia. Maps were developed at national and local levels to identify areas with a high potential for restoration. In Kenya, the project resulted in: ▪ 20 community operated forests being established. ▪ 112,331 seedlings planted in the pilot areas by smallholders. ▪ 600 community members trained on various topics including forest restoration, sustainable land use, adaptation and climate change. ▪ Increased water availability for more than 90,000 people in Kipipiri, Naivasha and Nairobi regions (IKI, 2020a). ▪ It was implemented by the Clinton Initiative. **Funding:** *€ 1,517,263.18*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Mau Forest Restoration (2014) 	European Union / European Commission	The aim of this project was to rehabilitate the north western part of the Mau Forest complex where significant degradation of the indigenous forest and conversion into grassland had occurred, due in part to unsustainable patterns of settlement. It also aimed to secure services generated by the flow of the Yala and Nyando Rivers, as well as protecting drinking water downstream and providing water for critical agriculture. (KFS, 2011) Kenya Forest Service delivered this project in partnership with UNEP. This project was a continuation of funding under an earlier agreement with the Government of Kenya. **Funding:** *€ 2 million*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
The International Small Group and Tree Planting Programme (TIST) (2009 – 2014) 	United States of America - USAID	USAID supported the International Small Group and Tree Planting Programme (TIST) in Kenya, through a Global Development Alliance that has benefited more than 55,000 TIST farmers, their families and 18,000 ha of biologically significant land (USAID, 2014). For more information on TIST, an on-going initiative in Kenya. **Funding:** *USD$7.6 million*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Innovative Approaches Towards Rehabilitating Mau Ecosystem (IARME) (July 2012) 	UN Environment	The project was a partnership with the EU that aimed at rehabilitating the Mau Forest complex as part of a wider Government initiative to rehabilitate the forest. It covered several areas including Uasin Gishu, Kericho, North Mau Block and Nandi County. Various components were applied to achieve the restoration and include: • Strengthening capacity of CFAs to raise more indigenous trees for planting. • Planting indigenous trees in the degraded natural forest. (KFS, 2014b) • Establishment of 17 farmer field schools that were managed by communities living adjacent to the forest. **Funding:** *information not available*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

C.2 FOREST CONSERVATION AND SUSTAINABILITY

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Green Zone Development Support Project – Phase 1 (2007-2016) 	African Development Bank (AfDB)	The project was among the initiatives set out in the first NCCAP 2013-2017 (Mitigation objective 3). The goal of the project was to promote regeneration and conservation of forests. The project contributed to rehabilitation and protection of 309,000 ha of degraded forest land translating to 0.54% increase in the national forest cover. The project also increased (by 25%) the annual incomes of 375,912 households (40% female-headed) through direct employment, and income generating activities (AfDB, 2018). Other success factors include (AfDB, 2018): • Actively involving the communities early enough into the project to specify their needs and constraints and contributing to the formulation of concrete interventions. Project ownership by the local authority and beneficiaries who are organised as Community Forest Associations (CFAs). **Funding:** *U.A 25 million*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

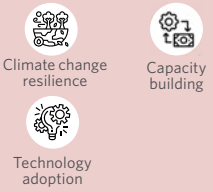
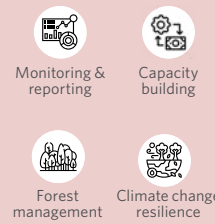
Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Green Zone Development Support Project – Phase 2 (2018-2024) 	African Development Bank (AfDB)	Phase 2 of the project was rolled out in 2018. The project aims to build from Phase 1, by providing new and efficient ways of increasing forest cover, increasing food security, improve community livelihoods through sustainable and inclusive commodity value chain and market development (AfDB, 2020a). It is being implemented in fifteen counties in Kenya namely; Embu, Meru, Machakos, Tharaka-Nithi, Nyeri, Murang'a, Kirinyaga, Kiambu, Nyandarua, Nakuru, Baringo, Kericho, Bomet, Nyamira and Kisii. These counties cover four forest conservancies and three out of five Kenya's water towers including Mt. Kenya, Aberdares, and the Mau complex (AfDB, 2020a). **Funding:** *UA 37.5 million (combined with Phase 1)*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Mikoko Project (Conservation and resilience of Kenya's Mangrove Forests) (2019-December 2020) 	Government of France	Mikoko Project is funded by the French Ministry of European and Foreign Affairs and has an ambition to (CIRAD, 2019): • Improve knowledge for conservation and rehabilitating Kenya's mangrove forests. • Research by identifying the challenges of mangrove management in Kenya. • Training KFS staff with an aim of building capacity and transferring knowledge. **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Forests 2020 (2017 - 2022) 	Government of the United Kingdom	The Forest 2020 project is managed by Ecometrica in partnership with the Universities of Edinburgh and Leicester and Carbomap Ltd. It is funded by the UK Government's Department for Business, Energy and Industrial Strategy's (BEIS) Global Challenges Research Fund (GSRF) (Ecometrica, 2020). The project uses remote sensing data and tools to monitor forest cover and promote climate-smart land use. It is being implemented by KFS in Collaboration with KEFRI in Kwale County. **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 3
Sustainable forest management – supporting Kenya to meet 10% target (2016-2021) 	Government of Japan	Through funding from the Japan International Cooperation Agency (JICA), this programme aims to sustain/improve forestry coverage. It also aims to improve adaptation measures for increasing drought and flood resilience. This is achieved through introducing drought tolerant trees for climate change adaptation, as an example (JICA, 2016). **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
REDD+ Readiness Project (2017- 2020) 	World Bank - Forest Carbon Partnership Facility (FCPF)	The project commenced in 2017 and is expected to end in December 2020. It is being implemented by UNDP through the National Implementation Modality (NIM) with the Ministry of Environment and Forestry. The project is putting in place mechanisms to enable Kenya to reach its overall REDD+ goal to improve livelihoods and wellbeing, conserve biodiversity, contribute to the national aspiration of attaining a minimum 10% forest cover and mitigate climate change for sustainable development (UNDP, 2020d). To achieve this objective the following outcomes are expected by the end of the project period: • An operational national REDD+ Strategy and investment plan; • An operational safeguards information system for REDD+; • Functional multi-stakeholder engagement and capacity building for REDD+; and • Technical support provided for improvement to the National Forest Monitoring System and Forest Reference Level. The project is due to conclude in December 2020. **Funding:** *USD3.9million.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3, 5
Queens Commonwealth Canopy Project (Kenya joined in January 2020 -with no specified end date for this project) 	Government of the United Kingdom	The project is currently at planning and development stage. Mau Forest Complex Water is the only water tower admitted to the Queens Commonwealth Canopy in Kenya. The admission means that the Mau Water Tower will be part of a highly conserved forest. The admission will also heighten efforts to protect, restore and rehabilitate degraded areas while improving the status of the water tower as well as creating alternative livelihood options to the surrounding communities (KWTA, 2020b) and (QCC, 2020). **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Development of Drought Tolerant Trees for Adaptation of Climate Change in Kenya (July 2012-June 2017) **Status: Completed** 	Government of Japan	The project aimed to sustain/ improve forestry coverage and improve adaptation measures to the increasing flood and droughts in the arid parts of Kenya through plantation of indigenous species. Melia volkensii Orchard was launched in 2014 for Kenya's arid and semi-arid regions. The indigenous tree species were propagated by KEFRI with JICA's support (JICA, 2014). **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

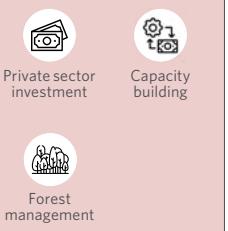
Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Forests Bond (2016) **Status: Completed** 	World Bank International Finance Corporation (IFC)	The Kasigau Corridor REDD+ project covers 500,000 ha of dryland forest in south eastern Kenya that forms a corridor between two National Parks, Tsavo East and Tsavo West. This dryland forest is under intense threat from slash and burn agriculture, as the local population expands. As a result of climate change, agricultural productivity in this already marginal area has decreased significantly. The REDD+ project allows rural farmers to benefit from conserving local forest resources and protecting the Kasigau wildlife migration corridor. In 2016 IFC issued a US$152 million Forests Bond that allowed investors to elect to receive their coupons either as cash or a Verified Carbon Unit (VCU) from the Kasigau Corridor REDD+ project. They could either retire those VCUs or monetise them on the carbon market. (IFC, 2016). Although most investors typically have elected to receive their coupons as cash, a price support mechanism provided by global mining company BHP has ensured the Project continues to receive payment for VCUs. The Bond has therefore supported training and employment for women of the Kasigau Corridor, refurbishment of classrooms at a local school, and the creation of a partnership that harvested and stored rainwater and provided water up to six months a year for a village of more than 10,000 people. **Funding:** *USD152 million bond issuance (part of which used to support the Kasigau project).*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
REDD+ Readiness Grant (2009-2010) **Status: Completed** 	World Bank - Forest Carbon Partnership Facility (FCPF)	The project commenced in 2017 and is expected to end in December 2020. It is being implemented by UNDP through the National Implementation Modality (NIM) with the Ministry of Environment and Forestry. The project is putting in place mechanisms to enable Kenya to reach its overall REDD+ goal to improve livelihoods and wellbeing, conserve biodiversity, contribute to the national aspiration of attaining a minimum 10% forest cover and mitigate climate change for sustainable development (UNDP, 2020d). To achieve this objective the following outcomes are expected by the end of the project period: • An operational national REDD+ Strategy and investment plan; • An operational safeguards information system for REDD+; • Functional multi-stakeholder engagement and capacity building for REDD+; and • Technical support provided for improvement to the National Forest Monitoring System and Forest Reference Level. The project is due to conclude in December 2020. **Funding:** *USD3.9million.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3,5

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Natural Resource Management Project (2007-2015) **Status: Completed** 	World Bank	The objective of the Natural Resource Management Project was to enhance the institutional capacity to manage water and forest resources, reduce the severity of water shocks such as drought, floods and water shortages in river catchments. Key results from the project include (World Bank, 2020b): • 5,524 ha of land brought under forest cover in project intervention areas. • More awareness on participatory forest management has been conducted, with support for development of participatory forest management plans, one in Nyeri and another in Mt Elgon forest zones. • Technical staff from KFS were trained on participatory forest management. • Support was given in implementation of KFS Strategic Plan activities. **Funding:** *USD78 million.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Implementation of Miti Mingi Maisha Bora (2009 – 2014) **Status: Completed** 	Government of Finland	The aim of the programme was to improved forest and woodland management and utilisation practices, and a transformation of policy and institutional arrangements to serve the needs of communities, the private sector, civil society and the Government. It also aimed to reduce poverty by assisting the forest sector to contribute to improving the lives of poorer people, restoring the environment and aiding the economy to recover and grow within the context of Kenya's Vision 2030 (LTSI, 2020).	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Sustainable Management and Conservation of Marine and Coastal Resources in Vanga Kwale County (2010-2012) **Status: Completed** 	Global Environment Facility (GEF)	The project was implemented to sustainably manage the marine and coastal resources found within Vanga, including mangrove forest. The mangrove faces threats including clear cutting, poor agricultural practice and resource-use conflicts. Key achievements from the project include capacity building of the local community members in governance and sustainable management of the mangrove forests (UNDP, 2012). **Funding:** *$37,983.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3,5

C.3 FOREST GOVERNANCE, POLICY AND STRATEGY SUPPORT

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Implementing the National Climate Change Action Plan (2014-2020) 	Government of Germany	The Kenya Climate Change Act 2016 outlined the requirement for a National Climate Change Action Plan (NCCAP) to guide the mainstreaming of climate change at national and county level. GIZ supported the Government's coordination for the NCCAP development, as well as facilitating experience sharing on horizontal and vertical mainstreaming with the CCD and other stakeholders (GIZ, 2014). The second NCCAP is now developed through the assistance of GIZ and other partners. This project is being supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3,4
Development of the Mombasa Mangrove Forest Participatory Management Plan (PFMP) (2015-2019) **Status: Completed** 	Global Environment Facility (GEF)	The development of the PFMP was supported through the UNDP GEF small grants programme. The Plan provides guidance on the management of Mombasa County mangrove resources in line other existing national and county policies. To promote effective management of mangroves, the Plan outlines six proposed programmes including: forest extension, conservation and socio-economic development, protection and security, biodiversity and ecotourism, education, research and monitoring and human resource development (UNDP, 2015). **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Action: 1, 2, 3
Water tower climate change resilience programme (2015 – 2018) 	United States of America - USAID	Implemented by the US Forest Service in partnership with the Ministry of Environment and Natural Resources (now MoEF). The project supported the informed implementation of climate change adaptation and resilience activities in the Mau Forest Complex. The components of the project were: ▪ Capacity building senior Government's officials on the economic valuation of water. ▪ Improving data collection, storage and sharing; advocating greener infrastructure around the Mau Forest complex landscapes; continuing to conduct mapping; increasing engagement with industries such as tea companies and hydropower companies to develop finance mechanisms that recognise the value of the water towers and their stewardships. ▪ Developing monitoring frameworks for socioeconomic and ecological data. Three information reports on the on the effects of climate vulnerability, economic service valuation and monitoring frameworks for the three water towers were developed (USAID, 2019). **Funding:** *USD2.2 million.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

C.4 CAPACITY BUILDING

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Public-Private-People Partnerships to Save Coastal Kenya Forests (2018 – 2022) 	Government of Germany	The project is being supported by the German Government through the International Climate Initiative (IKI) and WWF Germany through WWF Kenya. It aims to establish and build the capacity of public-private-people partnerships for improved forest management. By the year 2024, the project aims to have achieved the following (IKI, 2020b) (WWF, n.d.): • Have at least 30,000 ha of effectively managed forest and mangrove ecosystems in Kwale County. • Support key industries adopting new technologies to increase wood-based energy and water efficiency and have taken other measures to reduce their ecological footprint. • Improve knowledge management and monitoring of forestry project results and impacts. **Funding:** *€ 3.1 million*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3,4
Low Emission Climate Resilience Development Project (LECRD) (2014-2020) 	United States of America - USAID	The Project's objective is to strengthen capacity for low emission development in Kenya, build national and county institutions capacity to better coordinate climate change activities and climate finance, enhance decision making for increased resilience to climate change impacts and promote climate smart technologies and business opportunities. The estimated end date of the project is December 2020 (UNDP, 2020e). **Funding:** *USD $10,111,439*	Strategic Objective 4 (mitigation) Priority Action: 3
Adaptation for Smallholder Agriculture Programme (ASAP) (2015-2022) 	International Fund for Agricultural Development (IFAD)	ASAP is IFAD's programme for channelling climate and environmental finance to smallholder farmers. ASAP funds activities that focus on (IFAD, 2015): • Policy engagements to achieve international climate change commitments and national adaptation priorities. • Climate risk assessment. • Natural resource management and governance. • Private-sector engagement to strengthen their participation in climate change adaptation and mitigation activities. **Funding:** *$300 million.*	

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
System for Land-based Emissions Estimation in Kenya (SLEEK) (2013-2019) **Status: Completed**  Capacity building  Improved community livelihood  GHG emission mapping from land uses	Government of Australia	SLEEK was managed by the Ministry of Environment and Natural Resources (now MoEF) with technical support from the Clinton Climate Initiative (MoEF, 2016a). The programme supported the GOK by building a highly integrated system which (Australian Government, 2020): • Compiled GHG emission information from Kenya's land use sector. • Supported in the reporting and verification of GHG emissions to support REDD+ readiness activities and United Nations Framework Convention on Climate Change reporting requirements and; be relevant for land use planning and decision making in Kenya's forestry, agriculture and food security sectors. • The project also identified that most of the population in Kenya depend on forest resources for their livelihoods, leading to the increased rates of deforestation and degradation of forests. A recommendation from the project included identifying a viable alternative or incentive to shift the dependence of forest resources. **Funding:** *USD $13 million.*	Strategic Objective 4 (mitigation) Priority Action: 3
Improving Capacity in Forest Resources Assessment in Kenya (2013-2015) **Status: Completed**  Private sector investment  Policy & Governance  Monitoring & reporting	Government of Finland and Government of Kenya	Funded by the GOK and Finland and implemented in 2013 to 2015 by KEFRI, KFS and Department of Resources Surveys and Remote Sensing. The objective was to improve the capacity of the partner agencies in forest resource assessment; strengthen both human and technological capabilities to collect and manage data, analyse data correctly and disseminate forest information. The project focused on sampling forest cover using Remote Sensing technologies in areas of Kericho, Londiani and the Aberdares to improve understanding of forest characteristics (KEFRI, 2016b). The output of the project was the development of a field manual for undertaking Light Detection and Ranging (LiDAR) Assisted Estimation of Forest Resources in Kenya. **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Strengthening the Agency of Indigenous People as Vital Actors and Decision-Makers in Proper Implementation of REDD+ (2009-2012 and 2013-2015) **Status: Completed**  Private sector investment  Policy & Governance  Conservation	Norway (NICFI / Norad)	The project objectives were to enhance the capabilities of indigenous people and women to effectively engage in REDD+ decision-making, design, implementation and monitoring and evaluation processes at sub-national, national and global levels to ensure that reduced emissions from increasing carbon sequestration of tropical forests could be achieved (NORAD, 2013). **Funding:** *€ 3.4 million*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

C.5 ENHANCING PRIVATE SECTOR ENGAGEMENT IN THE FORESTRY SECTOR

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Focus on increasing productivity and private sector participation (2016-2019) **Status: Completed** 		This project focused on collaboration between the private sector and KFS to increase forest productivity, strengthen forest governance and attract investment in forests. It focused on small and medium-sized enterprises (SMEs), and sought to identify those with the potential to develop sustainable and well-governed business practices to increase job opportunities. The project covered the entire timber value chain from plantation establishment to final timber processing. The support was channelled through institutions representing forestry sector SMEs (GoF, 2017). **Funding:** *€ 6 million (2016 – 2019)*	Strategic Objective 4 (mitigation) Priority Actions: 4
Kasigau REDD+ Project 		The company works with the support of the local community established the Rukinga Wildlife Sanctuary in 1998, covering 80,000 acres, to mitigate deforestation and human-wildlife conflict. The project has now expanded to over 500,000 ha, to become the Kasigau Corridor REDD Project which will generate offset credits of 1 million tons of CO_2 emissions per year for the next 30 years. It is located in south eastern Kenya, between two national parks - Tsavo East and Tsavo West (Wildlife Works, 2020). As noted above, this project is supported by investors in the IFC Forest Bond. The carbon credits from forestry are invested back into development projects in the area – schools, scholarships, dams and other water projects, as well as the establishment of local businesses. The project also aims to provide local communities with alternative income streams to substitute poaching and clear-cutting forests for agriculture (i.e. jobs developing eco-friendly products, or in protecting the forest); the project also works with local farmers to relocate cattle to protect and conserve the forest (Wildlife Works, 2020) (Verra, 2019). **Funding:** *information not available*	Strategic Objective 4 (mitigation) Priority Action: 4
Moringa Fund; equity Investment to Combine Agroforestry and Agricultural Activities. (2013 - unknown) **Status: Completed** 	International Fund for Agricultural Development (IFAD)	Proparco is supporting the Moringa Investment Fund, which finances projects combining forest plantation and agricultural activities. The combination of forestry and agricultural components creates economic, biological and social synergies. The combination of a variety of crops contributes to improving soil fertility and reducing groundwater pollution and erosion. It also provides local populations with a livelihood and diversified sources of income. In addition, the Moringa projects allows up to 20 million tonnes equivalent CO_2 to be stored. (Proparco, 2013) **Funding:** *information not available*	Strategic Objective 4 (mitigation) Priority Actions: 1

C.6 SUSTAINABLE LIVELIHOODS IMPROVEMENT

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Darwin Initiative Round 24 (April 2018-March 2021)  Conservation  Policy & Governance	Government of the United Kingdom	The project aims to secure globally important biodiversity and local livelihoods in Kenya. This will be achieved through gazettement of 8,404 ha community conservation area. The project is expected to also improve the livelihoods around Yala Delta by strengthening producer cooperatives such as papyrus growers. Previous project activities have also been undertaken in Kenya under this project including Conservation and Sustainable Management of Kenya's Marine and Coastal Resources, which was implemented from 2009 to 2012. The project established a Community Forest Association in the mangrove areas of Vanga and Jimbo in the Coastal region (UK Government, 2020). **Funding:** *€ 341,971 (2019-2022)*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3
Forest and Farm Facility (2012-2017) **Status: Completed**  Capacity building  Afforestation  Sustainable livelihood promotion	FAO	Farm Forest Facility (FFF) worked with ICRAF, CIFOR and KFS to provide support for knowledge, policy options and engagements for more sustainable wood fuel value chains. FFF works closely with forests and forest producers' organisations to strengthen their capacity to link sustainable management of forests and farms to secure markets and enterprises that depend on maintaining diverse and complex mosaic of land use (FAO, 2020c). Achievements from the project include: ▪ 46-65% jump in average incomes for hundreds of thousands of forest and farm producers through strengthened Forest and Farm Producer Organisations (FFPOs), due to support from FFF. ▪ Tender for tree seedlings worth $70,000 secured by Nakuru County Tree Nurseries Association to supply NEMA and the County Government of Nakuru. ▪ Community Tree Nursery Growers Association of Kenya established in 2017 by 1000 tree nursery operators in 20 counties. ▪ Lessons learned from the project include; an approach that engages strong or emerging federations of community forest smallholders and helps to deliver better business and policy outcomes. ▪ Success was seen in business mentoring women in Kenya, where FFF supported FF SPAK in identifying 21 leaders among women entrepreneurs for business training. **Funding:** *Multi-donor funding from SIDA USD $8.2 million, Finland € 4.2 million and BMZ.*	Strategic Objective 4 (mitigation) Priority Action: 1, 2, 3
Promoting Sustainable Livelihoods in Kenya's Mau Forest Complex. (2010-2012) **Status: Completed**  Capacity building  Sustainable livelihood promotion  Afforestation	FAO	The post-election violence experienced in Kenya in 2007/08 led to a deterioration of forest resources, threatening livelihoods, food security water supplies and tourism. In response, the Government of Kenya sought technical assistance of FAO to help KFS improve the watershed (Mau Forest Complex) and promote sustainable livelihood activities. In 2010, FAO launched a 2-year programme that enabled 24 farmer field schools to be set up with members of the CFAs who trained more than 800 people on viable ways to earn a living while protecting forest resources. (FAO, 2020d) **Funding:** *information not available.*	Strategic Objective 4 (mitigation) Priority Actions: 1,2,3

C.7 IMPROVING FORESTRY OPERATIONS EFFICIENCY AND PROMOTING SUSTAINABLE ALTERNATIVE FUELSSECTOR

Programme/ Project	Donor / Implementing Actors	Details on the initiative (where possible: amount of funding allocated)	NCCAP 2018-2022 alignment
Sustainable charcoal production using improved technologies (2016) **Status: Completed** Capacity building; Technology adoption	UNDP	In partnership with the KFS and KEFRI training was given to charcoal producers in charcoal producing counties to adopt new and more energy efficient technologies that in addition to conserving the environment are cheap and easy to implement such as vertical drum kiln (UNDP, 2016). **Funding:** *USD $3.9 million.*	Strategic Objective 4 (mitigation) Priority Action: 2 Strategic Objective 7a

C.8 NGO AND RESEARCH INSTITUTIONS ACTIVE IN THE FORESTRY SECTOR

There are a number of civil society organisations, not-for-profit organisations and research institutions active in the forestry sector. Additional information on the activities and initiatives they are undertaking, including a high-level overview of the area of focus within the forestry sector, is highlighted in Table C-1.

Table C-1 CSO, NGO and research institutions active in the forestry sector

Name of organisation and action	Overview of work
Worldwide Fund for Nature (WWF) – Kenya Conservation; Afforestation	Policy support is managed by WWF internationally with local WWF resources focusing predominantly at local level in Kenya. The organisation's model is to redirect funding to local partners for implementation. For instance, redirecting funding for project implementation in Mau Forest by Forest Action Network. Other projects implemented by WWF include (WWF, 2020a): ▪ Advocating for sustainable conservation of the Mijikenda Kaya Forests – WWF is working with the Council of Kaya Elders and Coastal Conservation Unit of National Museums of Kenya to sustainably conserve the Mijikenda sacred forests in Kwale and Kilifi counties. ▪ Afforestation and reforestation initiatives in the Naivasha Basin - the programme has a carbon credit component and is supporting small holder farmers within the basin to promote creation of new forest farmlands. ▪ Public- Private-People Partnerships to save Coastal Kenya Forests - the programme entails restoration of the degraded mangrove forest sites while ensuring that communities benefit from the resources. It involves stakeholders from the Government, private sector and local communities. The project is supported by the Government of Germany with a total budget of 3.1 million Euros.
Chyulu Hills Conservation Trust (CHCT)/ Conservation International / Maasai Wilderness Conservation Trust (MWCT) / Four group ranch communities Conservation	The Chyulu Hills REDD+ Project aims to protect the Chyulu Hills landscape, the forests, woodlands, savannahs, wetlands and springs, whilst providing habitats for local wildlife. It covers 410,000ha and aims to generate 18 million tCO_2e over next 30 years; approximately 600K Verified Carbon Units (VCU) per year. The REDD+ Project is managed by the CHCT and is a coalition of Government, community and non-profit partners including the Kenya Wildlife Service, Kenya Forest Service, four community group ranches, Maasai Wilderness Conservation Trust, Big Life Foundation and the David Sheldrick Wildlife Trust. Conservation International will continue to serve as a technical advisor and help market the credits to corporations and individuals (AWF, 2020) (MWCT, 2016) (Conservation International, 2017a).

Name of organisation and action	Overview of work
TIST Programme  Afforestation  Improved community livelihood	The International Small Group and Tree Planting Programme (TIST) enables smallholders to earn carbon pre-payments from trees they plant and maintain on their own land, and the programme guarantees farmers 70% of the of the profits from the sale of carbon credits on the voluntary market. It has been active in Kenya since 2004 in 17 counties and has supported 72,810 small group members (TIST, 2020).
Gatsby Africa (2016)  Forestry market developments	The Kenya Commercial Forestry Programme started in 2016 and sought to close the wood supply gap through the development of commercial forestry opportunities. The programme aimed to develop a globally competitive commercial forestry sector through a series of interventions along the value chain and in supportive markets; it partnered with different stakeholders to (Gatsby, 2020b): • Improve returns for commercial growers of all size. • Enhance profitability and employment in wood processing. • Secure the sustainable supply collaborative research and critical commercial support services
Centre for International Forestry Research (CIFOR)  Reasearch  Valuation of water towers  Awareness raising	The Water Towers Climate Change Resilience Programme was launched in 2015 by US Forest Service and supported by CIFOR. The aim of the project was to enhance climate change adaptive capacity and resilience of Kenya's water towers ecosystem. The main objectives of the project were categorised into five primary research: • Climate change vulnerability assessment • Ecosystem services valuation • Socioeconomic and ecological monitoring framework • Capacity building • Climate change resilience strategy The programme is focused on the Mau Forest, Cherangani Hills and Mt. Elgon ecosystems, three of the five largest water tower ecosystems in Kenya. In partnership with KEFRI, research findings from the project indicate that the Total Economic Value of the three water towers is $3.4 billion annually. Key ecosystem services provided by the water towers were classified into regulating, provisioning, cultural and support services. Recommendations from the project include (CIFOR, 2018): • Local communities understand the value of water towers ecosystems; challenges come primarily from the unavailability of incentives to utilise for improved livelihoods, which would reduce pressure on forests. • The key to preserving the three water towers in part lies in communicating their immense value to policy makers including county Government officials.
IDH, through the Initiative for Sustainable Landscapes (ISLA Kenya)  Capacity building  Climate change resilience	The programme aims to restore and conserve 60,000ha of the forest by 2030. Focus is on the South West Mau Forest – developing models for team farms, private sector and forestry sector. The Mau Forest Block is ecologically and economically critical for Kenya and parts of East Africa. The project builds on the interest of tea factories in the area and others to conserve the forest for its microclimate, and of the GOK to improve community livelihoods. Lessons learned from the project include. (IDH, 2017): • Partnering with local communities that live around the forest and depend on it for their livelihoods. This is key for the continuation and success of the programme. • Getting buy-in from county and national Government, and better engagement with the public sector is important as they support in monitoring illegal forest activities.
International Union for Conservation of Nature (IUCN)  Afforestation	The Restoration Initiative: The programme brings collective strengths of IUCN, FAO and UNEP together with ten Asian and African countries to bridge the gap between restoration and ambition and tangible progress on the ground. In Kenya two restoration activities in Naivasha are implemented by WWF-which is a project partner using different restoration approaches (IUCN, 2020). • At the first project site, communities living near degraded forests were afforded an opportunity to farm on the public lands. In return for access, the communities are responsible for nurturing tree seedlings that, when mature will help transform the degraded lands. • At the second project site an innovative payment for ecosystem services programme has been set up to finance restoration at the Naivasha Basin.

Name of organisation and action	Overview of work
Association for Coastal Ecosystem Services  Afforestation  Sustainable livelihood promotion	Mikoko Pamoja (which means mangroves together) is a community-led mangrove conservation and restoration project based in Kwale County. Its aim is to provide long-term incentives for mangrove protection and restoration through community involvement and benefit schemes. This project is the first community-based project of this kind in the world to successfully trade mangrove carbon credits. The communities take an active role in the management, protection and replanting of the surrounding mangroves. To alleviate pressure on the natural resource, a community plantation was established as an alternative source of timber and firewood. Other income generating activities such as bee-keeping and eco-tourism were also developed (Plan Vivo Foundation, 2020).
The Kenya Forest Working Group (KFWG)  Conservation  Policy & Governance	KFWG is an association of individuals and organisations (Government and non-government, local, national and international) concerned with forest conservation and management. It is a sub-committee of the East Africa Wildlife Society. Its goal is to improve the status of Kenya's forest and increase the benefits from them through sound management and conservation practices. Activities currently being undertaken by KFWG include forest sector reforms, working with other organisations towards the finalisation and endorsement of Forest Policy and participatory forest management (KFWG, 2018).
The International Council for Research in Agroforestry (ICRAF)  Capacity building  Agroforestry	Accelerating Adoption of Agroforestry in Western Kenya Project (ICRAF, 2018) - The project was implemented in parts of Kisumu and Kericho Counties which form the Nyando River Basin. It innovatively scaled up the asset-based community driven development approach in combination with best practices in agroforestry and agriculture. Achievements from the project include training of farmers from 24 project groups in various practices and value-chains in four agricultural sub-sectors: agroforestry, coffee, poultry and horticulture.
Rhino Ark  Conservation	Rhino Ark was established as a charitable trust to help save Kenya's Black Rhino (Diceros bicornis) population in the Aberdare ecosystem. Rhino Ark's formation is specifically to assist the KWS to build an electric fence along sections of the Aberdare National Park along its eastern boundary, which has the highest concentration of wildlife and borders directly onto farmlands. ▪ The Aberdare Fence Project: a 400 km fence used as a conservation tool to help resolve multiple challenges facing the Aberdare forest. The challenges include poaching, snaring, illegal logging, charcoal burning and forest encroachment. The fence construction began in 1989 and was completed in 2009. The fence has helped preserve the population of the black rhino even though their numbers have decreased. (Rhino Ark, 2020a) ▪ Mt. Kenya Fence Project: Mt. Kenya ecosystem is a critical water catchment for the entire country and an important wildlife conservation area. Rhino Ark has partnered with KWS, KFS, Mount Kenya Trust, Space for Giants, British Army Training Unit Kenya and GoK to implement the project. The purpose of the Mt. Kenya Electric Fence is to bring harmony with between nature and the neighbouring communities as to protect the ecosystem. (Rhino Ark, 2020b) ▪ Eburu Fence Project: Mau Eburu forest constitutes a diversity of both flora and fauna. However, illegal logging and charcoal burning are problems that have critically depleted the forest cover. Rhino Ark made a long-term commitment to address the conservation challenges facing the Eburu ecosystem under a public-private partnership initiative with Government agencies such as KWS and KFS and with key support from the Kenyan corporate sector, including from the M-PESA Foundation and Finlays. Construction of the electric fence was completed in 2014 (Rhino Ark, 2020c).
The Greenbelt Movement (GBM)  Capacity building  Awareness raising  Conservation  Afforestation	Founded in 1977 by Nobel Peace Prize winner, the late Professor Wangari Maathai, GBM has planted over 51 million trees in Kenya. The organisation works at grassroot, national and international levels to promote environmental conservation. Using a water-based approach to restore degraded watersheds of key water catchments to improve their functions and improve the livelihoods of the local communities, is an example of a project implemented. More than 51 million trees have been planted in watershed areas of Mt. Kenya, the Aberdares and the Mau complex, supported by GBM (GBM, 2020).

Name of organisation and action	Overview of work
Green Towns Initiative (GTI)	GTI is a Community Based Organisation established in 2016 to promote healthy living through forestry and water conservation. The organisation has restored streams and rivers in Bomet County through planting indigenous bamboo and native trees along riverbanks. It is also involved in afforestation programs in schools (GTI, 2019).
Hivos Energy efficiency Reduced deforestation	The national biomass briquette programme aims to stimulate the emergence and development of a market-oriented biomass briquette sector in Kenya. The programme seeks to establish a sustainable briquette manufacturing sector by developing a supply chain ranging from products to standards. This will help reduce the widespread consumption of non-monetised traditional biomass energy (Hivos, 2018).
East Africa Wildlife Society (EAWLS) Capacity building Awareness raising Conservation Policy & Governance	EAWLS works in four broad sectors including forestry, wetlands, marine and wildlife. In the forestry sector, the organisation engages with the Government to ensure all policies and laws are implemented while strengthening community institutions such as Community Forest Associations (CFAs) to be more involved in decision making with matters regarding forestry and conservation. EAWLS also established the Kenya Forest Working Group forum, drafting the Forest Act 2015, supported in establishment of CFAs and mapped illegal timber trade between Kenya and Tanzania pushing both Governments to set structures to stern this (EAWLS, 2019).
Kenya Wildlife Conservancies Association (KWCA) Conservation Afforestation	Conservancies are local conservation areas established to protect wildlife on either private or community lands. The KWCA was created in 2013 to provide a national umbrella association for these diverse, nascent local conservancies, drawing them together into a grassroots movement and creating links to national policy-making processes. Conservancy areas also include forests that are protected under the umbrella organisation (KWCA, 2019).

Photo byPhoto by KFS

C.9 PRIVATE SECTOR ACTIVE IN THE FORESTRY SECTOR

In Kenya, 77% of natural forests are community or privately owned, with the remainder gazetted forests, owned by the Government (MENR, 2013). There is the potential for greater private sector involvement, predominantly with respect to forests on farms and private plantations.

Table C-2 outlines some of the private sector organisations involved in the forestry sector that either have a mandate to protect and conserve forests in Kenya or are undertaking activities as part of their standard business operations .[12]

Table C-2 Private bodies involved in the forestry sector (directly or indirectly)

Area of focus	Name of organisation	Brief description
Electricity/ steam Production using wood	**Cummings Cogeneration**	The power plant at Baringo County was commissioned to use Prosopis juliflora, a weedy tree species found in the arid area to produce 30MW of power through gasification technology. The company has organised the local communities to supply the tree species to the factory from their own farms as the company estimates that it will require 240,000 tonnes of Prosopis wood per year (Cheboiwo, Mutta, Kiprop, & Gattama, 2018).
Sustainable charcoal	**Sanivation**	A United States start up that is trying to reduce wood harvesting for fuelwood and promote sustainable bricks from human waste and biomass. The company has a waste-to-energy plant in Naivasha which has a capacity to serve 10,000 people and produce 230 tons of fuel per month. Sanivation has partnered with Naivasha Water and Sewerage Company to scale up the existing plant to intake all the existing faecal sludge from Naivasha. It seeks to expand to include industry (Sanivation, 2020).
	Envirofit	Envirofit cooking stove is an efficient/"clean" cookstove, aiming to burn hotter and cleaner compared to traditional cooking methods; it also reducing the amount of charcoal or wood used during cooking. Envirofit states it has saved 64 million from deforestation and prevented emission of 27.2 $MtCO_2e$. (Envirofit, 2020)
	BURN	The company invented Jikokoa cook stove. The design of the cook stove enables charcoal to burn more efficiently and for longer thus using less charcoal. BURN states that the stoves save 60% of charcoal use compared to a standard stove (BURN, 2020).
	LeJan Energy Limited	The company manufactures biomass briquettes from sawdust and sells them to the industrial market. The sawdust is collected from the industries of sawmilling, pulp plant and paper and wood processing. LeJan/ KCIC states it has recycled 4 million kilograms of biomass waste and mitigated 3,000 tonnes of carbon dioxide through reduced deforestation of over 93,000 trees (KCIC, 2019).
Sustainable land-use	**Danone**	Livelihoods Fund Project: The project was launched in 2016 and ends in 2026. It is a partnership with Brookside Dairy and is being implemented in Mt. Elgon region, where poor farming practices, uncontrolled grazing and soil erosion have a direct impact on the ecosystem of Lake Victoria. The project tackles environmental degradation, and sustainable supply chains. It involves 30,000 farmers and aims at restoring 20,000 ha through a reduction in soil erosion from agroforestry. Farmers are trained on sustainable land management in order to adapt to the impacts of climate change, reduce greenhouse gas emissions and increase farm food productivity. A goal of the project is to sequester 1 million tonnes of carbon dioxide over the ten years period (Vi Agroforestry, 2019).
	Timsales Ltd	Timsales is a wood-based industrial complex that manufactures plywood, fibreboards, block boards and timber. The company is assisting the GOK in an afforestation programme in Nakuru County. Additionally, the industry has established its own tree nursery at the head office in Elburgon where it has planted pine and cypress seedlings. The afforestation programme also receives support from KEFRI who provides seeds for the programme (Timsales, 2020).
	Rainforest Alliance Kenya	They provide certification that a product or ingredient was produced using methods that support the three pillars of sustainability: social, economic, and environmental. Independent, third-party auditors are critical to the integrity of the certification program. They evaluate farmers against requirements in all three areas before awarding or renewing certification (Rainforest Alliance, 2021)

12 This table may not include all private sector support focusing on sustainable practices in the forestry sector; it includes the list of initiatives identified during a literature review and stakeholder consultation process. Please therefore note that this list is not exhaustive.

Area of focus	Name of organisation	Brief description
Sustainable wood fuel	**Unilever**	The Trees 2000 Project was launched by Unilever and has contributed around 850,000 trees to the Kenya's landscape. Seven tree nurseries were established to grow indigenous seedlings around the tea estates and in the surrounding communities (KFS, 2014c). The Trees4Ever Programme in Kenya states it has grown 1,800 ha of eucalyptus trees and 1,400 ha of indigenous trees within its Kericho tea estate. The tea company further uses 126,000 cubic metres of firewood annually as a source of fuel for its operations. Despite the hydrological impacts of the eucalyptus tree species (such as drying up springs and reducing the soil moisture content) it is the preferred wood fuel source by the industries given its shorter yield times to reach maturity (Unilever, 2015).
	Finlays	Commercial forest plantations are grown at Finlays' tea estates to supply renewable energy to the tea factory. The forestry divisions at all Finlays factories are equipped with GPS technologies to ensure the high quality of its forests. Finlays Kenya has also helped in protecting the Mau Eburu Forest and supported Rhino Ark in fencing the Aberdare ecosystem (Finlays, 2020).
	Makomboki Tea Factory	The tea factory is moving away from wood fuel to more affordable and renewable sources such as briquettes. The tea factory feeds its boilers with briquettes of macadamia, cashew and rice husks mixed with sawdust, which releases fewer carbon emissions, thus reducing the reliance on timber as a fuel source (ICRAF, 2015).
	Kakuzi PLC	The agricultural company manages its indigenous forest within its estate which is monitored against a forestry management plan. There are 1,282ha of eucalyptus of which 905 ha are commercial plantation and 377 ha are reserved for non-commercial timber (Kakuzi, 2012).
	New Kenya Cooperatives Creameries Limited (NKCC) / Olivado Company / Kenya Industrial Research and Development Institute/ Tropical Power Company	NKCC, the milk processing company received funding from GEF to develop boilers that use organic waste and biomass to produce steam which in turn is used to chill milk using absorption technology. It supported Timber Treatment Biomass projects in the four NKCC factories - Nyahururu, Sotik, Dandora and Eldoret. Previously, the company used diesel furnaces. Timber waste is used in heating the boilers. The project also supported three other sites (MoEF, 2013): • Olivado Company - Murang'a • Kenya Industrial Research and Development Institute - Biogas Laboratory • Tropical Power Company - Naivasha
	British America Tobacco	The company has an afforestation programme which started in 1978 and targets to plant 1.5 million trees annually. Since its inception, the afforestation programme has delivered 50 million surviving trees. The company also has a farmer sustainability monitoring app that monitors wood fuel usage (BAT, 2020).
Other Projects	**Cargill Kenya Ltd**	The private company partnered with Friends of Karura Forest on a project aimed at restoring the forest by removing alien invasive species (Cargill, 2020).

Area of focus	Name of organisation	Brief description
Afforestation / Reforestation	**Asante Capital EPZ**	Asante Capital EPZ was a sustainable agroforestry company established in 2015 owned by the Asante Kenya Foundation, a US foundation that provided financial and managerial support to social businesses in Kenya (Moringa, 2018). Asante Capital EPZ was a Kenyan tropical tree plantation business producing veneer and briquettes; it was also an agri-business producing ginger and Moringa for food and essential oil raw material supplier. It had 277 ha of farms located in Kwale districts where it grew eucalyptus, silver oak and develops pilot agroforestry plots. The foundation also offered farmers training, access to new market opportunities to sell wood and other crops which positively impacted farmers' revenue structure, as well as providing financing (Asante Capital, 2020). Moringa invested into Asante to finance the construction of veneer processing facility and for the expansion of agroforestry farms, therefore supporting the establishment of a veneer value chain. To optimise resources and support a zero-waste approach, Asante used low-quality wood to produce briquettes. In addition, Asante formed an out-grower scheme to secure its supply and develop an inclusive business (Moringa, 2018).
	Komaza	A private sector initiative that encourages tree plantations on unused farmland. Located in the coastal region, Kilifi County. Komaza has planted 2 million trees with over 6,000 farmers. It has developed a micro-forestry model with the goal of becoming Africa's largest forestry company. Komaza partners with rural farmers to plant woodlots that Komaza manages collectively as a "virtual plantation." Farmers contribute land and labour and are paid a fair price for harvested trees. Komaza provides training, planting inputs, maintenance support, harvesting services, and a guaranteed market for its wood processing and sales operations. By leveraging farmer land and labour, Komaza can access effectively limitless land and plant trees for far less than big plantations (Komaza, n.d).
	LafargeHolcim	A partnership between KenGen Foundation, Bamburi Cement and Better Globe Forestry launched phase four of the Green Schools Initiative Challenge. The afforestation initiative has over 300 schools participating in the competition with an aim of mitigating climate change as well as providing sustainable wood fuel as an alternative income opportunity for local communities. The project aims at greening over 500 acres of semi-arid counties of Embu, Kitui and Machakos (LafargeHolcim, 2020).
	Safaricom PLC	Safaricom is among the leading telecommunications company in Kenya. In 2017 the company announced its aspiration to become a net zero carbon emitting company by 2050. Among the strategies taken to achieve this, the company partnered with KFS to plant a forest of 1 million indigenous trees over a period of 5 years. The project is expected to offset over 300,000 tonnes of carbon once the trees have grown to maturity (Safaricom, 2019).
	Better Globe Forestry (BGF)	The company's vision is to plant as many trees as there are people in the planet and finance the vision. Most afforestation programmes are done in the arid and semi-arid regions of Africa. The company, in collaboration with KEFRI has pioneered the use of an indigenous mahogany species, Melia volkensii on an industrial scale. The company's plantations are divided in two; classic tree plantations on eased land and trees planted with partner-farmers on their land, with wide spacing to allow intercropping with food crops. Additionally, the BGF has a forestry magazine which serves as a networking platform for forestry professionals (Better Globe Forestry Ltd, n.d).
	Kenya Breweries Limited	The Mt. Kenya Forest provides water to key national parks and local residential areas, as well as being important for hydropower generation. The forest is under the threat of deforestation which has impacted negatively on the quality and quantity of water to the people downstream. In partnership with Nature Kenya, Kenya Breweries launched the Kijani initiative in 2018 which managed the restoration of 250 ha of Mt. Kenya Forest starting from the area around Naro Moru (EABL, 2020). The initiative aims to increase the forest cover to protect the water resource in the area and improve the lives of the people living around the project area through working with 5 CFAs.

C.10 INDUSTRY ASSOCIATIONS ACTIVE IN THE FORESTRY SECTOR

There are also several industry associations involved in the forestry sector in Kenya, examples of which are shown in the Table C-3 below. Please note that the list is not exhaustive.

Table C.3 Industry Associations in the Forestry Work

Area of focus	Name of Industry Association	Brief description
Reforestation	**Kenya Tea Development Agency (KTDA)**	KTDA has partnered with KFS in North Rift regions of Kenya on a reforestation programme of the Mau Forest which is a key Water Tower under threat. Additionally, each KTDA managed factory is working towards establishing wood fuel plantations that will provide a sustainable source of firewood for boilers. The factories are adopting fast-growing trees, which is a mid-term to long-term investment plan and will eventually see all managed factories become self-sufficient in wood fuel supply. Tree planting seen as a way of providing a sustainable and inexpensive source of wood fuel by ensuring regeneration of cleared forests. The tea factories managed by KTDA include Chelal Tea Factory, Toror Tea Factory, Tegat Tea Factory, Kapkatet Tea Factory, Omul Tea Factory and Litein Tea Factory among others (KTDA, 2020).
Afforestation	**Timber Manufacturers Association (TMA)**	The TMA partners with KFS on afforestation projects; mainly through establishing tree seedlings. TMA has established a tree nursery in Londiani Kenya that produced 2.5 million indigenous seedlings. The tree species are mostly pine and Cyprus. The seedlings are for commercial purpose. The seeds for the nursery are sourced from KEFRI and are nurtured by KFS which gives technical advice. Once the seedlings have matured and become ready for planting, they are then given back to KFS. In the onset of the rainy seasons the Kenya Forest Service is able to distribute the seedlings for planting to different counties (KFS, 2017b).
Afforestation and reforestation	**Charcoal Producer Associations (CPAs)**	CPA control and produce charcoal in a sustainable way. The CPAs are required to have a tree nursery with a capacity of at least 25,000 seedlings. The function of the CPAs includes (FAO, 2009) and (KFS, 2013a): ▪ Facilitate sustainable production of charcoal by its members ▪ Ensure that its members implement the reforestation conservation plans ▪ Develop and implement a Code of Practice for the purposes of self-regulation ▪ Assist the Service in enforcing the provisions of the Act relating to sustainable charcoal production, transportation and marketing.
Forest conservation; afforestation, reforestation.	**Community Forest Associations (CFA)**	CFAs manage public forests and are the legal entities through which communities undertake Participatory Forest Management in Kenya and have an opportunity to participate in forest conservation committees. They formulate and implement forest programmes at the community level and protect sacred groves and protected trees such as the Mugumo Fig Tree. CFAs also assist KFS in enforcing forest laws relating to illegal harvesting of forest produce (KFS, 2015).
Afforestation	**Kenya Wood Preservers Association**	The association offers technical assistance to farmers to form groups of pole wood growers that use best management practices to meet the desired pole specifications for selling.
Bamboo Conservation	**Bamboo Association of Kenya**	The Association advocates for the mainstreaming of bamboo in the national and county Government's socio-economic development plans. The mission of the association is to be a leading association in promoting bamboo products and services in the country (BAK, 2020).

C.11 LIST OF FORESTRY PROJECTS

The following table provides the names of the forestry projects listed in Figure 4-2. The project number is part of the key for the map.

Table C-11 Complete

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
1	**Centre for International Forestry Research (CIFOR)**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Cherangani Hills	Active	Centre for International Forestry Research (CIFOR)
2	**International Tree Foundation**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Cherangani	Active	International Tree Foundation
3	**WaTER Tower Project**	Afforestation, Reforestation and Restoration	Cherangani Hills	Complete	European Commission
4	**Kenya Agricultural Carbon Project**	Afforestation, Reforestation and Restoration	Kitale	Complete	Vi Agroforestry and World Bank
5	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Trans Nzoia	Complete	AfDB
6	**International Tree Foundation**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Mount Elgon	Active	International Tree Foundation
7	**WaTER Tower Project**	Afforestation, Reforestation and Restoration	Mount Elgon	Complete	European Commission
8	**Centre for International Forestry Research (CIFOR)**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Mount Elgon	Active	Centre for International Forestry Research (CIFOR)
9	**Natural Resource Management Project**	Forest Conservation and Sustainability	Mount Elgon	Complete	World Bank
10	**Kenya Agricultural Carbon Project**	Afforestation, Reforestation and Restoration	Sirisia	Complete	Vi Agroforestry and World Bank
11	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Elgeyo-Marakwet	Complete	AfDB
12	**Farmer Managed Natural Regeneration**	Afforestation, Reforestation and Restoration	Baringo	Active	Australian Aid, World Agroforestry Center and
13	**REDD+ Readiness Grant**	Forest Conservation and Sustainability	Elgeyo Marakwet	Complete	UNDP
14	**Kenya Agricultural Carbon Project**	Afforestation, Reforestation and Restoration	Bumala	Complete	Vi Agroforestry and World Bank
15	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Kakamega	Complete	AfDB

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
16	**World Agroforestry Center**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Kakamega	Active	World Agroforestry Center
17	**International Tree Foundation**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Kakamega	Active	International Tree Foundation
18	**Innovative Approaches Towards Rehabilitating Mau Ecosystem (IARME)**	Afforestation, Reforestation and Restoration	Nandi County	Complete	European Union / WWF-Kenya / KWTA
19	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Nandi	Complete	AfDB
20	**The International Small Group and Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration	Nandi	Complete	USAID
21	**Innovative Approaches Towards Rehabilitating Mau Ecosystem (IARME)**	Afforestation, Reforestation and Restoration	Uasin Gishu	Complete	European Union / WWF-Kenya / KWTA
22	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Baringo	Active	AfDB
23	**The International Small Group Tree Planting Programme**	REDD -agroforestry carbon projects. Standards Pan-Vivo	Pan-Vivo	Approved	USAID
24	**Kenya Agricultural Carbon Project**	REDD -agroforestry carbon projects. Standards VCS	Nyanza	Approved	Vi Agroforestry and World Bank
25	**Kenya Agricultural Carbon Project**	Afforestation, Reforestation and Restoration (REDD -agroforestry carbon projects. Standards VCS)	Kisumu	Complete	Vi Agroforestry and World Bank
26	**Kenya Agricultural Carbon Project**	Afforestation, Reforestation and Restoration	Bondo	Complete	Vi Agroforestry and World Bank
27	**Kenya Agricultural Carbon Project**	Afforestation, Reforestation and Restoration	Kombewa	Complete	Vi Agroforestry and World Bank
28	**World Agroforestry Center**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Kisumu	Active	World Agroforestry Center
29	**International Tree Foundation**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Kisumu	Active	International Tree Foundation

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
30	**Improving Capacity in Forest Assessment in Kenya**	Capacity Building	Kericho	Complete	Government of Finland and Government of
31	**Innovative Approaches Towards Rehabilitating Mau Ecosystem (IARME)**	Afforestation, Reforestation and Restoration	Kericho	Complete	European Union / WWF-Kenya / KWTA
32	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Kericho	Active	AfDB
33	**Innovative Approaches Towards Rehabilitating Mau Ecosystem (IARME)**	Afforestation, Reforestation and Restoration	North Mau Forest Block	Complete	European Union / WWF-Kenya / KWTA
34	**Promoting Sustainable Livelihoods in Kenya's Mau Forest Complex**	Sustainable Livelihoods Improvement	Mau Forest	Complete	FAO
35	**Mau Forest Restoration**	Afforestation, Reforestation and Restoration	Mau Forest	Complete	European Union
36	**Green Belt Movement**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Mau Forest	Active	Green Belt Movement
37	**IDH, through the Initiative for Sustainable Landscapes (ISLA Kenya)**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	South West Mau Forest	Active	IDH
38	**Queen's Commonwealth Canopy Project**	Forest Conservation and Sustainability	Mau Forest	Active	Queen's Commonwealth Canopy Project
39	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Nakuru	Active	AfDB
40	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Nakuru	Complete	AfDB
41	**The International Small Group Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration (REDD -agroforestry carbon projects. Standards Pan-Vivo)	Nanyuki	Complete	USAID
42	**Naibunga Rangeland Project**	Afforestation, Reforestation and Restoration	Laikipia	Active	Northern Rangeland Trust
43	**The International Small Group and Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration	Meru	Complete	USAID

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
44	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Meru	Active	AfDB
45	**TIST Programme**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Meru	Active	USAID
46	**Green Belt Movement**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Mount Kenya	Active	Green Belt Movement
47	**The International Small Group Tree Planting Programme**	REDD -agroforestry carbon projects. Standards Pan-Vivo	Pan-Vivo	Approved	USAID
48	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Tharaka-Nithi	Active	AfDB
49	**Adaptation for Smallholder Agriculture Program (ASAP)**	Capacity Building	Tharaka-Nithi	Active	IFAD
50	**The International Small Group and Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration	Nyamira	Complete	USAID
51	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Nyamira	Active	AfDB
52	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Kisii	Active	AfDB
53	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Bomet	Active	AfDB
54	**Water Tower Climate Change Resilience Project**	Governance Policy and Strategy Support	Mau Forest Complex	Complete	CIFOR
55	**Catalysing Forest and Landscape Rehabilitation for Climate Resilience and Biodiversity Conservation in East Africa**	Afforestation, Reforestation and Restoration	Kipipiri	Complete	International Climate Initiative
56	**PELIS-Geta Forest PELIS Programme**	Afforestation, Reforestation and Restoration	Nyandarua	Complete	Not Available
57	**Improving Capacity in Forest Assessment in Kenya**	Capacity Building	Aberdares	Complete	Government of Finland and Government of Kenya

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
58	**Green Belt Movement**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Aberdares	Active	Green Belt Movement
59	**Natural Resource Management Project**	Forest Conservation and Sustainability	Nyeri	Complete	World Bank
60	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Nyeri	Complete	AfDB
61	**The International Small Group Tree Planting Programme**	REDD -agroforestry carbon projects. Standards Pan-Vivo	Pan-Vivo	Approved	USAID
62	**Green Zone Development Support Project Phase**	Forest Conservation and Sustainability	Kirinyaga	Active	AfDB
63	**Green Zone Development Support Project Phase 1**	Forest Conservation and Sustainability	Embu	Complete	AfDB
64	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Embu	Active	AfDB
65	**The International Small Group and Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration	Embu	Complete	USAID
66	**The International Small Group Tree Planting Programme**	REDD -agroforestry carbon projects. Standards Pan-Vivo	Pan-Vivo	Approved	
67	**WildlifeFund for Nature**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Naivasha	Active	WWF Kenya
68	**Catalysing Forest and Landscape Rehabilitation for Climate Resilience and Biodiversity Conservation in East Africa**	Afforestation, Reforestation and Restoration	Naivasha	Complete	International Climate Initiative
69	**International Union for Conservation of Nature (IUCN**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Lake Naivasha	Active	International Union for Conservation of Nature (IUCN)
70	**Tupande Pamoja Initiative (KENVO)**	Afforestation, Reforestation and Restoration	Kikuyu Escarpment	Active	Not Available
71	**Bathi River Rehabilitation**	Afforestation, Reforestation and Restoration	Kijabe	Active	Not Available
72	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Muranga	Active	AfDB

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
73	**The International Small Group and Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration	Muranga	Complete	USAID
74	**The International Small Group Tree Planting Programme**	REDD -agroforestry carbon projects. Standards Pan-Vivo	Pan-Vivo	Approved	USAID
75	**Natural Resource Management Project**	Forest Conservation and Sustainability	Mwea	Complete	World Bank
76	**REDD+ Readiness Grant**	Forest Conservation and Sustainability	Narok	Complete	UNDP
77	**WildlifeFund for Nature**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Narok	Active	WWF Kenya
78	**Kenya Smallholder Coffee Carbon Project**	REDD -agroforestry carbon projects. Standards VCS and CCB	Kiambu	Approved	Not Available
79	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Kiambu	Active	AfDB
80	**REDD+ Readiness Grant**	Forest Conservation and Sustainability	Nairobi	Complete	UNDP
81	**Kenya Forest Working Group**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	National	Active	Kenya Forest Working Group
82	**Gatsby Africa**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	National	Active	Gatsby Africa
83	**Greening Kenya Initiative**	Afforestation, Reforestation and Restoration	National	Active	Government of Kenya
84	**Horizon 2020-innovation and transition pathways for climate mitigation (TRANSrisk) Research study - Kenya: Charcoal and Geothermal Sector**	Improving Forestry Operations Efficiency and Promoting Sustainable Alternative Fuels	National	Complete	European Union
85	**Improving Efficiency in Forestry Operations and Forest Product Processing in Kenya: A Viable REDD+ Policy and Measure**	Improving Forestry Operations Efficiency and Promoting Sustainable Alternative Fuels	National	Complete	UNEP
86	**Sustainable Forest Management-supporting Kenya to meet 10% target**	Forest Conservation and Sustainability	National	Active	Government of Japan

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
87	**REDD+ Readiness Project**	Forest Conservation and Sustainability	National	Active	UNDP
88	**Implementation of Miti Mingi Maisha Bora**	Forest Conservation and Sustainability	National	Complete	Government of Finland
89	**Implementation of the National Climate Change Action Plan**	Governance Policy and Strategy Support	National	Active	Government of Germany
90	**Low Emission Climate Resilience Development Project (LECRD)**	Governance Policy and Strategy Support	National	Active	USAID
91	**System for Land-Based Emission Estimation in Kenya (SLEEK)**	Capacity Building	National	Complete	Government of Australia
92	**Forest Recovery Policy and Strategies**	Governance Policy and Strategy Support	National	Complete	UNDP
93	**Support to the National Committee of Farm Forest Smallholder Producers Association of Kenya (FFSPAK)**	Capacity Building	National	Active	Government of Sweden
94	**Focus on increasing productivity and private sector participation**	Enhancing Private Sector Engagement in the Forestry Sector	National	Complete	Government of Finland
95	**Moringa Fund; Equity investment to combine agroforestry and agricultural activities**	Enhancing Private Sector Engagement in the Forestry Sector	National	Active	Moringa Fund
96	**Developing of Drought Tolerant Trees for Adaptation of Climate Change in Kenya**	Forest Conservation and Sustainability	Machakos	Complete	Government of Japan
97	**Green Zone Development Support Project Phase 2**	Forest Conservation and Sustainability	Machakos	Active	AfDB
98	**Adaptation for Smallholder Agriculture Program (ASAP)**	Capacity Building	Machakos	Active	IFAD
99	**Developing of Drought Tolerant Trees for Adaptation of Climate Change in Kenya**	Forest Conservation and Sustainability	Kitui	Complete	Government of Japan
100	**Adaptation for Smallholder Agriculture Program (ASAP)**	Capacity Building	Kitui	Active	IFAD
101	**Adaptation for Smallholder Agriculture Program (ASAP)**	Capacity Building	Makueni	Active	IFAD

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
102	**World Agroforestry Center**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Makueni County	Active	
103	**Nature Kenya**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Tana River	Active	
104	**Darwin Initiative Round 24**	Sustainable Livelihoods Improvement	Tana River	Active	Government of the United Kingdom
105	**Developing of Drought Tolerant Trees for Adaptation of Climate Change in Kenya**	Forest Conservation and Sustainability	Tana River	Complete	Government of Japan
106	**World Agroforestry Center**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Tana River	Active	
107	**Darwin Initiative Round 24**	Sustainable Livelihoods Improvement	Lamu	Active	Government of the United Kingdom
108	**Mikoko Project (Conservation and resilience of Kenya's Mangrove Forest)**	Forest Conservation and Sustainability	Lamu	Active	Government of France
109	**Maasai Wilderness Conservation Trust**	NGOs, CSOs, Research Institutions Active in the Forestry Sector	Chyulu Hills	Active	Maasai Wilderness Conservation Trust and Conservation International
110	**Tree flights Kenya**	REDD -forestry carbon projects. Standards OTC	Kilifi	Approved	Treeflights Kenya / Tree Nation
111	**The International Small Group and Tree Planting Programme (TIST)**	Afforestation, Reforestation and Restoration	Taita Taveta	Complete	USAID
112	**Adaptation for Smallholder Agriculture Program (ASAP)**	Capacity Building	Taita Taveta	Active	IFAD
113	**REDD+ Readiness Grant**	Forest Conservation and Sustainability	Taita Taveta	Complete	UNDP
114	**Forest Bond**	Forest Conservation and Sustainability	Kasigau Corridor	Complete	IFC and World Bank
115	**Kasigau Corridor REDD project**	REDD -forestry carbon projects. Standards VCS	Kasigau Corridor	Approved	Wildlife Works
116	**Komaza Forestry**	Afforestation, Reforestation and Restoration	Kilifi	Active	Komaza Ltd.
117	**Development of the Mombasa Mangrove Forest Participatory Management Plan**	Governance Policy and Strategy Support	Mombasa	Complete	Global Environment Facility

Project No	Project Name	Project Type	Location	Status as of December '20	Details on the implementator / funder
118	**Forest 2020**	Forest Conservation and Sustainability	Kwale County	Active	GEF
119	**Public-Private-People Partnerships to Save Coastal Kenya Forests**	Capacity Building	Kwale County	Active	WWF Kenya
120	**Sustainable charcoal production using improved technologies**	Improving Forestry Operations Efficiency and Promoting Sustainable Alternative Fuels	Kwale County	Complete	UNDP
121	**Adaptation for Smallholder Agriculture Program (ASAP)**	Capacity Building	Kwale	Active	IFAD
122	**Sustainable Management and Conservation of Marine and Coastal Resources**	Forest Conservation and Sustainability	Vanga, Kwale County	Complete	GEF
123	**Improved management of mangroves in Lamu County**	Forest Conservation, restoration of degraded area, capacitation of CFA	Lamu	Ongoing	KMFRI, TNC
124	**Mangrove and climate change: incorporating mangroves into Kenya's Nationally Determined Contributions**	Stock surveys, mapping, carbon assessment	Lamu	Ongoing	KMFRI, PEW Charitable Trust
125	**Vanga Blue Carbon Project**	Mangrove carbon offset	Vanga	Ongoing	KMFRI, PEW Charitable Trust

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