



# KENYA NATIONAL AGROFORESTRY STRATEGY 2021 - 2030



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Other Logos –KEFRI, FAO, Vi Agroforestry, WV, FFSPAK, AWAK, GIZ, KALRO, KFS, World Vision, others – **Ministry to advise on how all logos can be incorporated**

# TABLE of CONTENTS

- ✓ Forward
- ✓ Preface
- ✓ Executive Summary

<b>ACKNOWLEDGEMENTS</b>	4
<b>ACRONYMS/ABBREVIATIONS</b>	4
<b>GLOSSARY/DEFINITIONS</b>	9
<b>Chapter One: Introduction</b>	13
1.1. Background information	13
1.1.1 The Agriculture Sector in Kenya and Role of Agroforestry	13
1.1.2 Defining agroforestry, its evolution and potential for rural development.	15
1.1.3 Benefits and potential of agroforestry to the agriculture sector in Kenya	18
1.1.4 Vision, Mission, goals and Guiding Principles	19
Principles	19
1.1.5 Justification for this strategy	21
1.1.6 Methodology	22
<b>Chapter Two: Situation Analysis</b>	24
2.1 Linkages between agriculture sector, climate change and land degradation including deforestation	24
2.2 Policy and institutional framework	25
2.2.1 Policy, Legal and Regulatory Framework	26
2.2.3 Financing Mechanisms	28
2.3 Knowledge and innovation support system	28
2.3.1. Education, training and human resource capacity development	30
Research	31
2.3.3. Extension, advisory services and communication	32
2.4 Value chain development	33
Agroforestry Ecosystem Services	36
Non-wood product value chains - Livestock fodder	37
Non-wood product value chains - fruits and nuts	38
Non-wood product value chains - Gums and resins, honey and herbal medicine	39
Timber and biomass fuels (charcoal and fuelwood)	41
Tree establishment support system - Seed and seedling production	42
2.5 Gender and social inclusion/exclusion	42
2.3 Strategic Issues	46

<b>Chapter Three: Strategies</b>	49
1. A STRENGTHENED POLICY AND INSTITUTIONAL ENVIRONMENT	49
1.1 Policy, legal and regulatory framework	49
1.2 Institutional Framework	50
1.3 Financing	50
2. A ROBUST KNOWLEDGE AND INNOVATION SUPPORT SYSTEM	51
2.1 Education, training and human resource/capacity development	51
2.2 Research	52
2.3. Extension, advisory services and communication	53
3. AGROFORESTRY VALUE CHAINS DEVELOPED	54
3.1 Agroforestry Ecosystem Services	54
3.2 Non wood products	55
3.3 Timber and biomass fuels (charcoal and fuelwood) value chains	56
3.4 Seed and seedling production	57
4. ENHANCED GENDER AND SOCIAL INCLUSION IN AGROFORESTRY	58
<b>Chapter Four: Strategy Implementation, Monitoring, and Evaluation</b>	62
<b>References</b>	67

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**Suggestion by Francis Nyambariga to dedicate the strategy to the memory of Mehmood Hassan**

**Prof. Hamadi Iddi Boga**

Principal Secretary  
Crop Development and Agriculture Research  
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## ACRONYMS/ABBREVIATIONS

ABS	Access and Benefit Sharing
AF	Agroforestry
AFA	Agriculture and Food Authority
AFEAS	Agroforestry Extension and Advisory Services
AFR100	African Forest Landscape Restoration Initiative
AIDS	Acquired Immunodeficiency Syndrome
ANAPE	African Network for Agriculture, Agroforestry and Natural Resources Education
AgGDP	Agricultural Gross Domestic Product
ARIDSAK	Agroforestry for Integrated Development in Semi-arid Areas of Kenya
ASALs	Arid and Semi-Arid Lands
ASTGS	Agricultural Sector Transformation and Growth Strategy
AWAK	Association of Women in Agriculture in Kenya
CAADP	The Comprehensive Africa Agriculture Development Programme
CBD	Convention on Biological Diversity
CETRAD	Centre for Training and Integrated Research in ASAL Development
CIDPs	County Integrated Development Plan
CoG	Council of Governors
COMESA	Common Market for Eastern and Southern Africa
CPPMU	Central Planning and Project Monitoring Unit
CSA	Climate-Smart Agriculture
CSPs	County Spatial Plans
CTCN	Climate Technology Center and Network
DARP	The Dryland Applied Research and Extension Project
DRSRS	Department of Resource Surveys and Remote Sensing
EAC	East African Community
EAS	Extension and Advisory Services
EMCA	Environmental Management and Coordination Act
FAO	Food and Agriculture Organization of the United Nations
FCMA	Forest Conservation and Management Act of Kenya

FFSPAK	Farm Forestry Smallholder Producers Association of Kenya
FMNR	Farmer Managed Natural Regeneration
F/PMNR	Farmer/pastoralist managed natural regeneration
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEFF	Green Economy Financing Facility
GOK	Government of Kenya
HIV	Human Immunodeficiency Virus
ICT	Information and Communication Technology
ICRAF	International Centre for Research in Agroforestry also World Agroforestry
IEC	Information Educational and Communication
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
ITK	Indigenous Technical Knowledge
KALRO	Kenya Agriculture and Livestock Research Organization
KARI	Kenya Agriculture Research Institute (defunct and now part of KALRO)
KCSAS	Kenya Climate Smart Agriculture Strategy
KEFRI	Kenya Forestry Research Institute
KEPSA	Kenya Private Sector Alliance
KFS	Kenya Forest Service
KIRDI	Kenya Industrial Research and Development Institute
KTDA	Kenya Tea Development Agency
M&E	Monitoring and Evaluation
MoALFC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
MoEF	Ministry of Environment and Forestry
MTPs	Medium Term Development Plans
NACOSTI	National Council for Science and Technology and Innovation
NAMAs	Nationally Appropriate Mitigation Actions
NAP	National Adaptation Plan
NARS	National Agricultural Research System

NATHEPA	The National Traditional Health Practitioners' Association
NCCAP	Kenya National Climate Change Action Plan
NDC	Nationally Determined Contributions
NDE	National Designated Entity
NEMA	National Environment and Management Authority
NIMES	National Integrated Monitoring and Evaluation Systems
NGOs	Non- Governmental Organizations
NRM	Natural Resource Management
NRT	Northern Rangeland Trust
NSAs	Non-State Actors
PES	Payment for Ecosystem Services
PESTLE	Political, Economic, Social, Technology, Legal and Environmental
PPB	Pharmacy and Poisons Board - Kenya
RCMRD	Regional Centre for Mapping of Resources for Development
REDD	Reducing Emissions from Deforestation and Forest Degradation
ROAM	Restoration Opportunities Assessment Methodology
R&D	Research and Development
RMPs	Recommended Management Practices
SDGs	Sustainable Development Goals
SWOT	Strengths, Weaknesses, Opportunities and Threats
TA	Technical Assistance
TIMPs	Technologies Innovations and Management Practices
TIPs	Transition Implementation Plans
TVETs	Technical and Vocational Education and Trainings
UoN	The University of Nairobi
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nation Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VMGs	Vulnerable and Marginalized Groups

## GLOSSARY/DEFINITIONS

**Agroecological zone:** A land resource mapping unit, defined in terms of climate, landform and soils, and/or land cover, and having a specific range of potentials and constraints for land use

**Agroforestry:** A dynamic, ecologically based, natural resource management system that, through the integration of trees in farm-and rangeland, diversifies and sustains smallholder production for increased social, economic and environmental benefits.

**Agroforestry systems:** Are multifunctional systems that can provide a wide range of economic, sociocultural, and environmental benefits.

**Biodiversity:** The total diversity of all organisms and ecosystems at various spatial scales (from genes to entire biomass)- which is integral to a healthy and stable environment.

**Biodiversity conservation:** The protection, upliftment, and management of biodiversity in order to derive sustainable benefits for present and future generations.

**Carbon sequestration:** The process of removing carbon from the atmosphere and depositing it in a reservoir, such as the soil or trees.

**Climate action:** Stepped-up efforts to reduce greenhouse gas emissions and strengthen resilience and adaptive capacity to climate-induced impacts, including climate-related hazards in all countries; integrating climate change measures into national policies, strategies and planning; and improving education, awareness-raising and human and institutional capacity with respect to climate change mitigation, adaptation, impact reduction and early warning.

**Climate change:** A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

**Climate shock:** The realizations of highly unexpected events that cause welfare losses and encompasses i) unexpectedness, ii) size, iii) high damage due to concentration on persons with high vulnerability and low resilience; iv) exogenousness in the source; and v) physical or psychological strain to one or more individuals due to that stress.

**Climate Smart Agriculture:** Agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes greenhouse gases (mitigation), and enhances the achievement of national food security and development goals.

**Climate variability:** The variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate at all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).

**Coping:** The use of available skills, resources, and opportunities to address, manage, and overcome adverse conditions, with the aim of achieving basic functioning in the short to medium term.

**Degraded land:** A land that has lost some degree of its natural productivity due to human-caused processes.

**Desertification:** The persistent degradation of dryland ecosystems by climate change and mainly human activities: unsustainable farming that depletes the nutrients in the soil, mining, overgrazing (animals eat away grasses and erode topsoil with their hooves) and clear-cutting of land, when the tree and plant cover that binds the soil is removed.

**Dissemination:** The interactive process of communicating knowledge to target audiences so that it may be used to lead to change.

**Ecological zone:** A zone or area with broad yet relatively homogeneous natural vegetation formations, similar (not necessarily identical) in physiognomy.

**Ecosystem:** The complex system of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit.

**Ecosystem Services:** Ecological processes or functions that have monetary or non-monetary value to individuals or society at large resulting from their practice of agroforestry and/or other conservation practices. For example, provisioning services (food and medicinal products, bioenergy, timber and fodder), regulating services (microclimate modification, erosion control and soil conservation, mitigation of desertification, carbon sequestration and pest control), supporting services (biodiversity conservation, soil enrichment, crop pollination) and cultural services (recreation, spiritual enrichment and aesthetic experience).

**Environmental risks:** The “actual or potential threat of adverse effects on living organisms and the environment by effluents, emissions, wastes, resource depletion, etc., arising out of an organization's activities.

**Evaluation:** The process of generating evidence on why and how well the outputs, targets and outcomes of an initiative are, or are not, being achieved.

**Financing mechanism:** The way in which a business, organization, or program receives the funding necessary for it to remain operational such as revenue collection, grants or donations, loans, fund-raising among others.

**Food and nutrition security:** A state that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

**Germplasm:** Collection of genetic resources for an organism which can be any plant part used for regeneration such as seeds, cuttings, scions, pollen, and/or symbionts necessary for a plant's survival.

**Greenhouse gases (GHGs):** The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Less prevalent but very powerful greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and Sulphur hexafluoride (SF<sub>6</sub>).

**Gross Domestic Product:** The sum of gross value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the value of the

products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

**Incentives:** Policy instruments that increase the comparative advantage of agroforestry practices and thus stimulate investments in agroforestry. This includes incentives in research and extension, which are important elements in supporting agroforestry development; and, sectoral and macro-economic policies which create much of the general investment climate and heavily influence the economic behavior of individuals and corporations.

**Innovation:** In the context of agroforestry development, an idea, practice, or object that is perceived as new by an individual or other unit of adoption. This may involve some combination of problem/opportunity identification, the introduction, adoption or modification of new ideas relevant to organizational needs, the promotion of these ideas, and the practical implementation of these ideas.

**Land degradation:** An alteration to all aspects of the natural (or biophysical) environment by human actions, to the detriment of vegetation, soils, landforms and water (surface and subsurface, terrestrial land marine) and ecosystem.

**Land Tenure:** The possession or holding of the many rights associated with each parcel of land. Ownership or user rights are not static because such rights can be subdivided or transferred by the holder.

**Landscape:** A social-ecological system that consists of a mosaic of natural and/or human-modified ecosystems, often with a characteristic configuration of topography, vegetation, land use, and settlements that is influenced by the ecological, historical, economic and cultural processes and activities of the area.

**Livelihood:** The methods and means of making a living in the world. The concept revolves around resources such as land/property, crops, food, knowledge, finances, social relationships, and their interrelated connection with the political, economic, and sociocultural characteristics of an individual community. A livelihood consists of capabilities, assets, and activities that are required for living.

**Monitoring:** The set of actions that provide information on where an initiative is at any given time (and over time) relative to planned activities, inputs, outputs, targets and outcomes,

**Nationally Appropriate Mitigation Action:** Any action that reduces GHG emissions in developing countries and is prepared under the umbrella of a national governmental initiative.

**Payment for Environmental Services:** An economic instrument designed to provide positive incentives to users of agricultural land and those involved in coastal or marine management purposely to encourage continued or improved provision of ecosystem services, which in turn, will benefit the whole society.

**REDD+:** An international framework whose name stands for 'reducing emissions from deforestation and forest degradation, the conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks.

**Resilience:** The ability of a system and its component parts to anticipate, absorb, accommodate and/or recover from the effects of a hazardous event in a timely and efficient manner.

**Social inclusion:** The process of improving the terms of participation in society, particularly for people who are disadvantaged, through enhancing opportunities, access to resources, voice and respect for rights.

**Soil health:** Also referred to as soil quality, is the continued capacity of soil to function as a vital living ecosystem that sustains plants, animals and humans.

**Start-up capital:** The money a business owner needs to start up a new business. This funding helps the business meet its initial costs.

**Subsidy:** The direct or indirect payment to individuals or firms, usually in the form of a cash payment from the government or a targeted tax cut. Subsidy is typically given to remove some type of burden and is often considered to be in the overall interest of the public, given to promote a social good or an economic policy.

**Tree tenure:** The right of owning and using trees. Components of tree tenure include the right to own and inherit trees, the right to plant trees, the right to use trees and the right to cut down and sell trees.

**Value chain:** The entire system of production, processing and marketing of a product, from inception through to the finished product to waste disposal.

**Value chain development:** Focuses on deliberate efforts to create and strengthen win-win relationships between two or more chain actors aiming to result in win-win outcomes that can sustain the relationships over time. In addition, at the heart of VCD, are efforts to strengthen mutually beneficial linkages among value chain actors so that they work together to take advantage of market opportunities.

**Vulnerability:** The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.

## Chapter One: Introduction

### 1.1. Background information

#### 1.1.1 The Agriculture Sector in Kenya and Role of Agroforestry

The agriculture sector, comprising crops, livestock, fisheries, agroforestry and associated services plays a major role in Kenya's economy. The agriculture sector, despite advances in other sectors of the economy, still remains the largest contributor to Kenya's Gross Domestic Product (GDP), directly contributing about 33% and another 27% indirectly through linkages to agro-based industries and the service sector (GOK 2018a). The sector employs more than 40% of the total population and about 70% of the rural population (GOK 2018b). The crops, livestock and fisheries sub-sectors contribute 77.6%, 19.6% and 2.0% of the Agricultural GDP (AgGDP) respectively with forestry contributing about 0.8%. The agricultural sector contributes significantly to Kenya's food security, income generation, employment creation and poverty reduction. The sector contributes 60% of the country's income, accounts for over 65% of total exports, provides 60% of total employment, 18% of which is formal (UNEP 2015). The agriculture sector is mainly dominated by small-holder farmers with most production being carried out on farms averaging 0.2–3 hectares. This small-scale production accounts for over 75% of the total agricultural output and over 70% of marketed agricultural produce (GOK 2018a).

Despite the aforementioned capital, climate risks pose serious threats to Kenya's agricultural development goals. The sector is largely small holder dominated and dependent on rain fed agriculture, which exposes it negatively to climate variability and change and extreme weather events. Increasing inter seasonal variability and declining rainfall in the main rainy season have impacted cereal production in recent years. Recurrent droughts and floods - likely to be exacerbated by increasing temperatures, heavy rainfall events and sea level rise - lead to severe crop and livestock losses, famine and displacement. Poor farmers and pastoralists are disproportionately vulnerable to the effects and impacts of climate change. It is therefore imperative to promote a sustainable and resilient agricultural transformation, mitigating and adapting to climate and other environmental risks (GOK 2018b).

The transformation agenda for Kenya's agriculture sector is anchored in the belief that food and nutrition security will require a vibrant, modern, and commercial oriented agriculture that sustainably supports Kenya's economic, social, and ecological development goals. Key ingredients in driving this transformation agenda are reforms towards a more integrated policy and institutional regime, a vibrant knowledge and innovation support system, and models that promote social inclusion (GoK 2018a). In 2015 the Ministry of Agriculture, Livestock and Fisheries conducted an institution architectural assessment to establish the institutional and policy landscape of the sector. The study found that poor sector coordination had resulted in reduced investments in the agriculture sector both at national and counties level. The Cabinet Secretary resolved to establish a mechanism to enhance coordination in the sector through an inclusive consultation process.

In 2016 the Joint Agricultural Sector Intergovernmental secretariat was asked to review the 2010 Agricultural Sector Development Strategy and design a new Agriculture Transformation and Growth Strategy that is compliant to the 2010 Constitution as well as the CAADP and the associated Malabo Declaration. Hence the development of the Agricultural Sector Transformation and Growth Strategy (ASTGS) in 2019. The ASTGS has three anchors to drive Kenya's 10-year agricultural transformation; (i) increase small-scale farmer, pastoralist and fisherfolk incomes; (ii) increase agricultural output and value add; and, (iii) boost household food resilience. Land degradation and climate change however pose serious threats to this transformation.

Climate change is the variation in global climatic patterns associated with global warming. Human activities such as the use of fossil fuels, deforestation and increased intensification of agriculture contribute to global warming. Agriculture is a major contributor to climate change in Kenya, especially given that it has been a major cause of deforestation. The sector is also a major victim of climate change due to the effects of such extreme events as droughts and floods to sector productivity. Recognizing the threat of climate change to agriculture, Kenya developed the National Adaptation Plan (NAP 2015-2030) and Kenya Climate Smart Agriculture Strategy (KCSAS 2017-2026), which propose a series of adaptation actions in the sector. The actions will lead to increased food and nutritional security and improved livelihoods by enhancing productivity and resilience of the agricultural sector in as low-carbon manner as possible. These climate action documents also appreciate the contribution of agriculture to climate change through greenhouse gas emissions. The objectives of the Kenya Climate-Smart Agriculture Strategy (KCSAS) are to adapt to climate change and build the resilience of agricultural systems while minimizing greenhouse gas emissions.

Agriculture and forestry are among the six sectors for which Nationally Appropriate Mitigation Actions (NAMAs) pathways have been developed in the National Climate Change Action Plan. Selected actions for mitigation include agroforestry and increasing tree cover to 10% of the total land area (GoK, 2012). Kenya aims to abate up to 4.1 MtCO<sub>2</sub>e by 2030 through implementing agroforestry over 281,000 hectares between 2015 and 2030. The NCCAP 2018 to 2022 promises to have increased total area under agroforestry at farm level by 200,000 acres (80,000 hectares). Other NCCAP results within the CSA framework that agroforestry can contribute to include: (i) support reclamation of 60,000 hectares of degraded land; (ii) increase area under integrated soil nutrient management by 250,000 acres (100,000 ha); and (iii) increase area under conservation agriculture to 250,000 acres (100,000 ha) incorporating minimum/no tillage with trees to provide adequate soil cover (GOK 2018b). However, the benefits accruing from agroforestry practices have not been demonstrated well enough to guarantee adoption countrywide, implying that other drivers of adoption need to be pursued.

This strategy aims to create a mechanism that can accelerate adoption of agroforestry and enable many farmers to derive direct as well as resilience benefits.

## 1.1.2 Defining agroforestry, its evolution and potential for rural development.

### Definition

Agroforestry has in the past few decades been defined as the collective terminology for the set of land use practices that involve the deliberate integration of woody perennials (trees, shrubs, palms, and bamboos) and agricultural crops and/or animals, in some form of a temporal sequence or spatial arrangement (Degar and Tewari 2016; Sinclair 1999). In practice, agroforestry combines agriculture and forestry sciences (Stiebert *et al* 2012; Nair, 2007). Whereas these practices are diverse, what they have in common is the deliberate focus on the interactions between trees and agricultural activities and production, on one hand, and between the ensuing economic, ecological, and social (dimensions of sustainability) benefits on the other hand (HLPE 2017; Agroforestry Network 2018). Further, agroforestry is practiced in diverse landscapes: small to large land holdings; farm, range, and forest lands; and can be matched to suit different socio-cultural settings and agroecological zones.

The deliberate focus on the interactions between the three dimensions of sustainability distinguishes agroforestry from other terminologies that describe trees outside forest - such as farm forestry. Farm forestry is primarily concerned with the promotion of commercial growing of trees (e.g. for wood, fruits, and cash crops such as coffee and tea) by farmers on their own land (Otsieno, Musa, and Gilbert 2014). As such, interventions that promote farm forestry tend to employ a commodity focused value chain development perspective (Miller *et al.* 2016), while agroforestry goes broader to incorporate ecological functions including production of multiple ecosystem services. Current definitions therefore see agroforestry as a dynamic practice and science at the interface and interactions between agriculture and forestry, involving farmers, livestock, trees, and forests at multiple scales (Leakey, 2017; FAO 2017). The practice involves *a wide range of trees that are protected, regenerated, planted or managed in agricultural landscapes as they interact with annual crops, livestock, wildlife and humans'* (van Noordwijk *et al.* 2019).

### Classification of agroforestry systems

The most used criteria for classifying agroforestry systems are the structure (in terms of composition and/or arrangement of components), function, ecological zones, and end-use orientation. Based on composition of components, five main agroforestry systems have been identified: (i) agro-silvicultural, where non-woody crops are integrated with trees; (ii) silvo-pastoral, for systems that integrate trees and livestock; (iii) agro-silvopastoral, for systems that integrate crops, livestock, and trees; (iv) entomo-silvicultural, for systems that integrate insects and trees (including specialized systems such as apiculture (trees and bees) and sericulture (silkworms and trees); and, (v) aqua-silvicultural, for systems that integrate fish and trees (Agroforestry Network 2018). On arrangement of components, classification denotes the various time (temporal) and space (spatial) configurations. Functional basis classifies two main categories, productive (e.g. food, fodder, and wood) and protective (e.g. ecosystem/intangible services) functions. Humid/sub humid, semi-arid/arid, and highlands

are the main classifications based on ecological zones. Increasingly, the degree of market-orientation is used to classify agroforestry systems as commercial, intermediate, and subsistence. These diverse criteria are relevant in appraising, designing, and evaluating agroforestry development interventions.

### **Evolution of agroforestry**

Agroforestry is an age-old land use practice that has evolved in different parts of the world since the practice of shifting cultivation in the middle ages in Europe. In the tropics, the cultivation of Brazilian nuts in the Amazon and bananas in African rainforests has been practiced for at least 3000 years (Agroforestry Network 2018). In countries such as Kenya, the *shamba* system (the Kenyan variant of taungya system), introduced in colonial times offered workers the right to cultivate crops in gazetted forests during the early stages of plantation establishment (Kagombe and Gitonga 2005; Witcomb and Dorward 2009). Another dominant practice has been the multi-layered systems of integrating crops, bushes, and trees, in the food production systems of many tropical societies. By the turn of the new millennium, a segment of timber production from farms started emerging as a new agroforestry practice (Agroforestry Network 2018).

Today, agroforestry is a widespread practice globally. Although data on distribution is scanty, recent estimates by ICRAF show that more than 43 percent of all agricultural land had a tree cover exceeding 10 percent by 2010 (HLPE 2017; Zomer et al. 2016). This translates into more than one billion hectares globally. In Sub Saharan Africa (SSA), the proportion of agroforestry is estimated to be 29 percent of agricultural land (Agroforestry Network 2018). According to World Bank (2004) estimates, 1.2 billion people are dependent on agroforestry systems. During the first decade of the 21<sup>st</sup> century, tree cover on agricultural land is estimated to have increased by three and one percent globally and in SSA respectively (Zomer et al. 2014).

From the foregoing, agroforestry is evidently an age-old practice that has evolved over the years. Efforts to formalize agroforestry as an integrated science began with the establishment of the International Council for Agroforestry Research in 1977 (ICRAF; later known as World Agroforestry). ICRAF became the focal point of global efforts to spearhead research and dissemination of agroforestry technologies at a time when some land-management problems were worsening due to monoculture systems dominant in commercial agriculture and forestry. Persistent challenges such as fuelwood and timber shortage, deforestation and land degradation, and climate change, among others, have directed the over four-decades of agroforestry research and development (van Noordwijk et al. 2018). Since the 1980s, a wide range of agroforestry technologies have been adopted by farmers (Nair & Garrity 2012), and tens of higher learning institutions offering courses in agroforestry across the world have emerged. Also, there has been increased investment in agroforestry development by governments, donors, community and non-governmental organizations, with different motives (Scherr 1995).

Despite a growing recognition of the positive (and potential) impact of agroforestry in livelihoods and landscapes, its embedding in policies, legal, and institutional framework has been inadequate. Formalization of the practice in the mainstream agricultural and forestry

knowledge systems and policy, legal, and institutional framework has lagged. This has been attributed to, among others, the diverse pathways and difficult-to-measure characteristics of impacts of agroforestry practices -especially ecological benefits - (Dawson et al. 2013; FAO 2013), and the fragmented, sector specific approach that has dominated agricultural and forestry policies in many countries (Agroforestry Network 2018), and particularly in Kenya (Poulton and Kanyinga 2014). Agroforestry – as a system interacting with multiple sectors – often experiences policy and institutional conflicts and omissions. As a result, human, infrastructural, and institutional (innovation) capacities for scaling agroforestry practices are underdeveloped in most developing countries, especially in Africa (FAO 2013; Scherr and Franzel 2002).

Other generic barriers to scaling of agroforestry practices include land and tree tenure insecurities that are disproportionately faced by women and youth, limited incentives to invest in ecosystem services, and underdeveloped value chains: in terms of access to improved inputs (especially planting materials), support services (including extension, financing models, infrastructure, and favorable regulations), and markets for high value tree products (Agroforestry Network 2018; FAO 2013; Msuya and Kideghesho 2012). The potential of agroforestry in contributing to sustainable development is increasingly attracting attention in the policy arena, however.

Agroforestry is acknowledged in several international policy fora and conventions for its relevance in advancing climate change adaptation and mitigation actions, climate-smart agriculture, restoration of degraded landscapes, controlling desertification and provisioning of multiple ecosystem services. Such fora and conventions include the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC), 2011 Conference of Parties (COP-17), United Nations Convention to Combat Desertification (UNCCD), The 2015 Paris Agreement, African Forest Landscape Restoration Initiative (AFR100), and the Sustainable Development Goals 2030 (SDGs) framework (FAO 2013; Mumina and Bourne, 2020). Agroforestry contributes to several SDGs but significantly to: i) SDG 1 - End extreme poverty; ii) SDG 2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture; iii) SDG 13 - combating climate change and its impacts; and iv) SDG 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, forests, combat desertification, land degradation and halt biodiversity loss (Wanjira and Muriuki 2020; Agroforestry Network 2018).

At country level, efforts to mainstream agroforestry more coherently in national policies, legal, and institutional frameworks are on the increase. Recently, countries like India (2014) and Nepal (2018) have pioneered the enactment of an overarching national policy framework on agroforestry (World Agroforestry 2018). Others like Ethiopia (2019) and Rwanda (2018) have formulated national agroforestry development strategies and action plans (Federal Democratic Republic of Ethiopia 2019; Government of Rwanda 2018).

### **1.1.3 Benefits and potential of agroforestry to the agriculture sector in Kenya**

In most rural households in Kenya, incomes are seasonal in relation to the farming cycle (David, 1997), making farmers who wholly rely on annual crops for their livelihoods and sustenance vulnerable and exposed. Agroforestry can raise the income levels of rural households by providing profitable market products or enabling the household to obtain products that they would otherwise buy (Jamnadass et al. 2013; Dawson et al. 2013). Agroforestry systems provide opportunities for participation in various enterprises like tree nurseries, timber production and sale, fruit, fodder, fuelwood and any other products that can be commercialized. Trees serve as a 'savings account' and 'safety-net' and in some ways act as a rural insurance system for the poor smallholder farming families who are highly vulnerable and subject to unexpected expenditures (Kallio 2013). Income may also increase because of increased production in other agricultural enterprises supported by agroforestry, which enables households to sell surplus.

With climate change a major threat to a huge proportion of the farming populations (Verchot et al. 2004), agroforestry provides a strong buffer for farmers against climate extremes (Thorlakson & Neufeldt 2012), while performing wider roles that directly support local production (Leakey 2010). These services include soil, spring, stream and watershed protection; animal and plant biodiversity conservation; and, carbon sequestration and storage; all of which ultimately affect food and nutritional security (Garrity 2004). In smallholder agroforestry in the tropics, potential carbon sequestration rates have been estimated to range from 1.5 to 3.5 Mg C ha<sup>-1</sup> yr<sup>-1</sup> (Montagnini & Nair 2004). Therefore, incentivizing individual farmers to preserve and reinforce functions that extend beyond their farms by payments for ecosystem services such as carbon credits (Roshetko et al. 2007) may provide another source of income for farmers, diversify their agricultural portfolio and mitigate against climate change through GHGs emission reduction.

As background documents to this strategy, recent review of the status of Agroforestry in Kenya by World Agroforestry (Wanjira and Muriuki 2020) elucidates the key agroforestry development initiatives and their impacts and highlights outstanding challenges and opportunities for scaling in Kenya. The review outlines evidence of contribution of past agroforestry initiatives to improvements in soil productivity and biodiversity, food and nutrition security, incomes and livelihoods, climate change mitigation and adaptation, ecosystem services, and gender outcomes. Further, the review on policy and institutional aspects anchoring agroforestry in Kenya by Mumina and Bourne (2020) identifies policy issues and gaps, and inadequate coordination framework as among the major disincentives to scaling of agroforestry in Kenya. Another policy review by Vi-Agroforestry echoes the need for strengthening the current policy, legal, and institutional framework for agroforestry in Kenya (Katothya 2020).

Through an appraisal of other multi sectoral policy frameworks in Kenya (i.e the case studies of Environment and climate change), these review studies identify unique (potential) benefits of enacting an overarching national policy framework on agroforestry in the long run. A further recommendation is the formulation of a national agroforestry strategy as a viable pathway in that it offers intermediate results – to the coordination challenges – while securing

the commitment for enacting a national agroforestry policy (Katothya 2020). These recommendations informed the preparation of this strategy.

### **1.1.4 Vision, Mission, goals and Guiding Principles**

#### **Vision**

Robust agroforestry practices that enhance sustainable productivity, climate resilience, environmental health and social inclusivity in Kenya's agricultural landscapes and value chains.

#### **Mission**

To scale up agroforestry in Kenya through policy mainstreaming and coordination, knowledge creation and management, and strengthening of value chains and incentives systems while embedding social inclusion.

#### **Overall goal**

The goal of this strategy is to restore productive capacity and build resilience of the agricultural resource base while contributing to climate change adaptation and mitigation through enhanced agroforestry practices in Kenya.

### **3.2 Specific objectives**

1. To improve resourcing and coordination of agroforestry development in the country through harmonization of the institutional framework at both national and county levels and establishment of robust partnerships.
2. To enhance competence and coordination in agroforestry knowledge creation, management and communication system for adoption of context-appropriate agroforestry practices at scale.
3. To incentivize investment in agroforestry through strengthening of agroforestry-based value chains and enhancing appreciation of multiple agroforestry services.
4. To create an enabling environment for enhanced participation of women, youth and marginalized groups in agroforestry-based value chains.
5. To develop a national-wide participatory monitoring, evaluation and learning framework to track agroforestry development/practices in the country.

### **Principles**

1. **Innovation and creativity in context:** This strategy appreciates the complexity of the agriculture sector both in the biophysical and socio-economic contexts. Different knowledge systems exist in different areas and with different stakeholders (including indigenous technical knowledge) which can be harnessed to enable many locally adaptable innovations and matching of appropriate species to sites (right tree for the right place) while aiming at optimal species and genetic diversity.

2. **Multi-dimensional:** Agroforestry is a dynamic practice and science at the interface and interactions between agriculture and forestry, involving farmers, livestock, trees, and forests at multiple scales. The practice is complex and involves components of different gestation periods, multiplicity of stakeholders as well as implications at various levels – local to global. Planning for and practice of agroforestry should therefore consider short-, medium- and long-term dimensions, social-cultural aspects as well as intra- and intergenerational equity.
3. **Good governance to ensure proper enforcement and compliance with laws and policies:** This strategy aims at mainstreaming of agroforestry in policies, legislations, and plans in order to create an enabling environment for investment by various value chain actors across scale. Investment is foreseen to be catalyzed when enabling sectors are prioritized in budget processes and there is accountability in governance processes coupled with enforcement of the facilitative legal infrastructure.
4. **Inclusivity, participation and capacity development:** This strategy will promote public participation and inclusivity of smallholder farmers, pastoralists, indigenous communities and other marginalized groups (i.e., the youth, women, poor farmers, the elderly, and PWDs) to encourage ownership and promote transparency and social accountability. Capacity development at all levels is therefore necessary to capture value and win-win at the landscape negotiation space.
5. **Partnership and coordination:** This strategy will promote intersectoral coordination while recognizing the distinctiveness and interdependence of the two levels of government in Kenya and their roles in policy formulation and support to farmers. The strategy appreciates the role of multisectoral partnerships including public-private partnerships, and inclusion of non-state actors in the development process; aiming at synergy in line with SDG 17 aspirations.
6. **Socio-economic focus for sustainable livelihoods:** This considers the role of market-based incentives in promoting productive land use and management as well as investment at all levels in agroforestry-based value chains. The strategy is premised on the green growth paradigm, involving economic incentives and proper valuation of ecosystem services (including biodiversity), equity, intellectual property and innovative value chain financing at all levels.
7. **Sustainable land management and climate resilience:** The strategy will endeavor to promote land degradation neutrality while encouraging sustainable land management (SLM) and agricultural intensification. It appreciates the role of buffers, trade-offs and spin-offs in management of agricultural landscapes to ensure sustainable resource flows including water, nutrients and genes while mitigating against climate change and attaining environmental sustainability.
8. **Support to attainment of county and national commitments and international conventions:** While various levels of government have specific commitments, Kenya has signed up to many international conventions, protocols and agreements

including those related to climate change, combating desertification, land restoration, biodiversity conservation and sustainable development. This strategy seeks to promote attainment of targets associated with such agreements while equally benefiting equitably from investments arising from such agreements as the Malabo declaration, GEF, GCF etc. Leveraging on these commitments, financing innovations will be enhanced across scale and include private sector entities.

### **1.1.5 Justification for this strategy**

Kenya's agricultural sector is highly dependent on the natural resource capital which is highly impacted by land degradation. This degradation continues to increase the vulnerability of farmers, majority of whom are smallholder producers making them less adaptable to shocks. Soil fertility in areas of high precipitation is inherently low with acidity as a key constraint, while soil erosion is barely managed. All this is exacerbated by the climate crisis, which threatens the ability of farmers to cope especially when key value chains underperform.

Agroforestry has been demonstrated to increase farmers' adaptive capacity by diversifying the enterprise base for smallholders while buffering the flow of ecosystem services necessary for sustained productivity and mitigating against climate change. Despite agricultural productivity suffering the biggest losses from land degradation and climate change, the sector is also the leading driver of land degradation and contributes significantly to climate change. Forests are lost at the agricultural frontier resulting in reduction of their provisioning capacity, while unsustainable livestock production practices degrade land and contribute to greenhouse gases in various ways.

Kenya has committed to firm targets in several international conventions and pointed out agroforestry as a key plank in delivery of the targets. This includes meeting 60% of the carbon reduction targets of the agriculture sector in NCCAP/NDC. Agroforestry has also been identified as a primary pathway to delivering land restoration in croplands through the ROAM methodology that identified opportunities to restore 5.1 million hectares of degraded land by 2030. Under the strategic plan for biodiversity (2011 – 2020) Kenya has pledged to review and enact statutes and regulations and take up measures to ensure that ecosystems are restored and maintained for sustenance of ecosystem services (MENR 2016). Empirical evidence abounds on the potential of agroforestry to enhance diversity of flora and fauna in farmlands and create corridors for geneflows across landscapes. While most of these agreements are domiciled within the ministry responsible for environment and forestry, it is recognized that agriculture, controlling over 90% of land, is the dominant sector in terms of land use in Kenya. It is therefore necessary that planning in the agriculture sector internalizes agroforestry investments so as to climate-proof the sector and reverse land degradation for sustainable intensification of agricultural production.

In 2009, the ministry of agriculture introduced agriculture farm forestry rules aimed at ensuring that each farm has at least 10% tree cover. In a review of 36 policy documents for an assessment on policy and institutional support for agroforestry, only *the Agriculture/Farm*

*Forestry Rules of 2009* was found to be highly relevant to agroforestry (*in the sense that promoting agroforestry is its primary objective*). However, this document is a subsidiary legislation to the repealed Agriculture Act Cap 318 and therefore stands revoked following the enactment of AFFA Act of 2013, thus calling for a specific strategy that promotes attainment of tree cover on farmlands to accelerate momentum.

Agroforestry falls under both the agricultural and forestry sectors, which may impede sufficient resource allocation for supporting farmers to benefit from tree growing. This strategy therefore creates a pathway through which a bridge between the two ministries as well as related sectors (land, energy, water etc.) can be created for agroforestry investment. A policy framework that creates an institutional home for agroforestry through inter-ministerial collaboration is the ultimate goal and this strategy aims to begin that journey by outlining actions that will strengthen investments by the ministry of agriculture in agroforestry. Intergovernmental coordination will therein support farmer advisory and other investments across the agroforestry value chains, including at the county level. The strategy is timed for implementation during the **UN Decade on Ecosystem Restoration 2021-2030** which will place Kenya ahead in the agenda of “*Preventing, halting and reversing the degradation of ecosystems*” (UN/RES/73/284).

### **1.1.6 Methodology**

The development of the Kenya National Agroforestry Strategy 2021 - 2030 was a multi-stakeholder process involving a wide spectrum of actors across the agroforestry institutional ecosystem. The Ministry of Agriculture, Livestock, Fisheries and Cooperatives (MoALFC) initiated the process after recognizing the importance of agroforestry in meeting land restoration as well as climate change adaptation and mitigation aspirations. MoALFC submitted a technical assistance (TA) request to the Climate Technology Center and Network (CTCN) which was approved, and World Agroforestry (ICRAF) appointed by CTCN to support delivery of the request. ICRAF adopted the following approach in implementing the technical assistance:

1. Formation of a technical committee to steer the process especially by identifying the stakeholders for consultation through snowballing and ensuring that the process fits purpose.
2. Preparation of background documents from literature as well as questionnaires gathering data from the farming community that guided the development of thematic sections.
3. Facilitating stakeholder engagement processes through strategy pillar groups that were endorsed by the committee and which consisted of experts drawn from a wide stakeholder base.
4. Closer engagement with MoALFC and KEFRI in a joint secretariat as well as CTCN and the NDE.
5. Consultations with stakeholders across the country on issues pertinent to their context and feedback on the strategic issues collated by the pillar groups.

Kenya has a rich agroforestry research and development history involving several pilot projects by various partners. A tree planting culture is also vibrant in several parts of the

country which implies a rich knowledge base at the community level, albeit hampered by a myriad of drivers of tree cover loss in both forests and farmlands. Several legislative actions and strategic documents also exist that support an agroforestry promotion agenda. Review of materials that resulted from all this capital, and a national stakeholder mapping process conducted in 2018 identified four critical pillars for a national agroforestry strategy namely: – (i) A strengthened policy and institutional environment; (ii) An integrated/robust knowledge and innovation support system; (iii) Developed value chains; and, (iv) Enhanced gender and social inclusion. Stakeholder engagement was based on these pillars, with pillar groups disaggregating into even more focused sub-pillars to mine information from background documents and grey literature. A questionnaire was also sent to farmer organizations in various parts of the country to collate issues pertinent to them and the solicited information included in the pillar group discussions.

Data and information gathered were analyzed using three major tools. Firstly, a current situation analysis was generated for each pillar, taking stock of key progress, major achievements and outstanding and emerging challenges. Secondly, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis was accomplished building from sub-pillar level. Thirdly, the PESTEL (pays attention to political, economic, social, technological, environmental, and legal aspects when evaluating internal and external factors) analytical lens was integrated in the analyses of the current situation and the SWOT. These three analytical tools guided the identification of strategic objectives and strategic actions. Further, considering this is the first national agroforestry strategy in the history of the Republic of Kenya, the results of these analytical tools laid the philosophy upon which the values, principles, vision and mission of this strategy are derived.

The zero draft strategy prepared from these pillar group meetings and analyses was presented to three separate consultation forums for feedback from the entire agroforestry stakeholder base. The first forum involved a virtual workshop on 11th December 2020 involving state and non-state actors who included representatives of governmental MDAs, non-governmental organizations, community-based organizations, religious organizations, and women and youth groups. The second virtual workshop on 14th December 2020 involved County Executive Committee members for agriculture from 22 counties and environment from 18 counties across the country. Concurrently with these two workshops, physical workshops were held with community groups across 12 counties in the Lake Victoria Regional Block of counties, facilitated by Vi Agroforestry and Wildlife Clubs of Kenya (WCK). WCK later facilitated workshops with community representatives in 17 other counties across the country in January 2021. Feedback from these workshops was incorporated into the draft strategy before submission to the SWAG.

## Chapter Two: Situation Analysis

### **2.1 Linkages between agriculture sector, climate change and land degradation including deforestation**

In Kenya, agricultural expansion is a major driver of deforestation and land degradation, and emitter of greenhouse gases. Most people live in medium to high potential agro-ecological zones that are suitable for both crop production and tree growing including forestry development (GOK 2016). Livestock production is undertaken in all the agroecological zones where agroforestry is also practiced, although 70 percent of national livestock herd is reared in ASAL regions. Livestock farming systems have tended to be largely extensive, involving the clearing of forests and grasslands to open land for grazing, which results in increased emission of greenhouse gases (GOK 2017). Projected increase in population and urbanization is expected to put more pressure on land and natural resources to keep pace with growing demand for agri-food products. For example, it is projected that by 2050 there will be 54 million rural residents expected to produce agricultural outputs for their own consumption, for export and for feeding another 43 million urban residents (GOK 2016).

Increasingly, the agricultural sector in Kenya is highly vulnerable to extreme weather events, climatic shocks, climatic changes and variability. It is estimated that drought, a major climatic hazard in Kenya has become more and more frequent and between 2008 and 2011, caused losses of KSh. 699.3 billion (72.2% of total losses) and KSh. 121.1 billion (12.5% of total losses) in the livestock and crops sectors respectively (GOK 2018). With the deteriorating climatic conditions, the annual growth rate of agricultural “value added” products have been on the decline. Extended periods of drought, increase in incidences of flooding and invasive pests such as fall army worm and locusts have negatively impacted on livelihood opportunities and community resilience in these areas leading to undesirable coping strategies that damage the environment and impair household nutritional status, further undermining long-term food security (GOK 2018).

An increasing number of government policy and strategy documents recognize tree-based interventions in agricultural landscapes as viable and attractive options in addressing deforestation and land degradation. However, an overarching policy and strategy framework to incentivize adoption of agroforestry practices in Kenya is yet to be enacted. To contribute to addressing this gap, stakeholder consultations processes facilitated by CTCN and World Agroforestry identified four key elements or pillars of a national agroforestry development strategy: i) a strengthened policy and institutional framework; ii), a robust knowledge and innovation support system, iii) resilient value chains that offer market incentives for farmers and private sector investments in agroforestry development; and, iv) a socially inclusive agroforestry system that is attractive and gainful to men, women and youth of diverse endowments. Following is a brief description of the state of play around these four pillars as well as SWOT analysis developed through the consultations, culminating in identification of strategic issues that inform strategic planning for the pillars.

## 2.2 Policy and institutional framework

Overall, Kenya's overarching development policy frameworks are supportive of agroforestry or planting of trees in farmland as a tool for achieving national sustainable development aspirations including food and nutrition security, incomes and related livelihood outcomes, and climate change, environmental and social resilience.

Firstly, the Constitution of Kenya 2010 provides the ground for the enactment of policies, legislation and strategies that guarantee ***the rights of citizens to a clean and healthy environment*** (Article 42) (GoK 2010). This makes achieving a national level threshold of 10% tree cover a constitutional provision (Article 69 (1) (b)). Consequently, Article 72 requires parliament to enact the requisite legislation to operationalize these provisions. Secondly, Vision 2030 and accompanying Medium Term Development Plans (MTPs) commit to ***transforming Kenya into a middle-income country with high quality of life in a clean and safe environment***. Thirdly, sustainable development is an underlying principle under the Vision 2030's economic pillar and commits to an enabling environment for sustainable exploitation of the productive sectors of the Kenyan economy, especially those linked to land use such as agriculture, livestock, and forestry. Fourthly, environment quality is among the eight social sectors identified under the social pillar in the Vision 2030 blueprint. The vision for the environment is a ***'A people living in a clean, secure and sustainable environment'***. Farmland and dryland tree planting are identified as flagship projects under the social pillar. This is a recognition of the latent potential offered by farmlands and drylands in improving tree cover in Kenya.

Two other major dynamics shaping the unfolding policy and institutional landscape are the devolved system of governance and the ongoing shift from fragmented to an integrative approach to policy and institutional reforms for enhanced coordination and harmonization. The fourth schedule of the Constitution details the distribution of functions between the national and county governments, under the devolved governance system, with some functions relevant to promotion of agroforestry being devolved to county governments. They include the task of implementing national policies related to the agricultural sector (crops, fisheries and livestock) and some specific policies related to natural resources and environmental conservation such as farm forestry<sup>1</sup> and forestry extension. Given its multi sectoral nature, the potential for agroforestry development is greatly hampered in a fragmented policy regime. It is therefore of concern that Kenya lacks an overarching policy, strategy document, action plan, and an institutional home for coordinating agroforestry development. Particularly, the repealing of the Agriculture (Farm Forestry) Rules 2009 has deepened the void in the governance of agroforestry.

A review of other multi-sectoral policy and institutional frameworks, such as the case for environment and climate change, suggest key potential benefits, in the long run, of enacting an overarching framework for agroforestry. They include: i) anchoring the mainstreaming of multi-sectoral issues across different government ministries in a more binding manner; ii) providing for establishment of institutional arrangement for enhancing coordination and oversight (e.g. NEMA for Environment and National Climate Change Council for climate change); iii) providing for mechanisms for mobilizing resources (such as climate change fund,

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<sup>1</sup> *The practice of managing trees on farms whether singly, in rows, lines, boundaries, or woodlots or private forests (according to forest Act of 2005 (GOK, 2005b))*

forest conservation and management fund and trust fund under EMCA Act 2015); and iv) commitments to address social exclusion concerns. Further, a review of pioneer countries that have enacted a national agroforestry policy framework, such as India and Nepal, reveals the formulation of a national agroforestry action plan or strategy as a common pathway. An action plan or strategy offers intermediate results – to the coordination challenges – while securing the commitment for a national agroforestry policy in the long run.

In summary, although adequate institutional mechanisms to promote agroforestry exist, there is low coordination and interactions among the various actors and stakeholders that promote agroforestry in Kenya. Most importantly, the function of promoting agroforestry has been traditionally domiciled within the Ministry responsible for Environment and Forestry (MoEF) due to the ministry’s rich forestry repository. However, farmlands where most of agroforestry is practiced are the domain of the ministry responsible for Agriculture and Livestock (MoALFC). In addition, farmers organizations (FOs) around the concept of trees-on-farm are relatively nascent and weak. A joint coordinating mechanism between the two ministries and related sectors such as land, energy, water and others, as well as county governments and FOs is needed to steer implementation of an effective agroforestry programme in the country.

Following is the SWOT analysis on the policy and institutional framework as outlined through the stakeholder engagement process. Three sub-pillars were considered as below:

1. Policy, legal and regulatory framework
2. Institutional framework
3. Financing mechanisms

## 2.2.1 Policy, Legal and Regulatory Framework

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Kenya’s 2010 Constitution and Vision 2030 requires that at least 10% tree cover be achieved and maintained on all the land area of Kenya.</li> <li>● The existence of a new draft Forest Policy 2019, Energy Acts 2019 and EMCA Act.</li> <li>● Forest Conservation and Management Act 2016.</li> <li>● Constitutional requirements for multi-stakeholder participation in formulating policies and legal instruments.</li> <li>● Enabling social and political environment for promoting agroforestry in a multi sectoral setting.</li> <li>● The MOEF has a National Strategy for Achieving and Maintaining Over 10% Tree Cover by 2022.</li> <li>● Kenya National Climate Change Action Plan (NCCAP) 2018-20 promotes agroforestry.</li> </ul>	<ul style="list-style-type: none"> <li>● Lack of specific policy, regulations and strategy for agroforestry development.</li> <li>● Limited alignment of existing Agroforestry related Policies and Acts such as Agricultural Sector Transformation and Growth Strategy (2019 – 2029), Forest Conservation and Management Act and the Constitution 2010.</li> <li>● Lack of recognition of agroforestry in the national accounting system.</li> <li>● Weak enforcement and compliance of existing laws and regulations.</li> <li>● The role of agroforestry is not adequately acknowledged or mainstreamed in Kenya’s development policies and legislations.</li> <li>● Subsidy systems and incentives favor monocultural agriculture over agroforestry and agroecological approaches.</li> </ul>

## External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>Existence of international conventions, treaties and agreements, which have been signed and ratified by Kenya.</li> <li>Transition Implementation Plans (TIPs) framework to provide for a smooth transfer of identified forestry functions that were previously implemented by the Kenya Forestry Service (KFS) to county governments.</li> </ul>	<ul style="list-style-type: none"> <li>Conflicting interests among actors and lack of clarity of devolved/shared functions.</li> <li>Poor implementation and compliance with international conventions, treaties and agreements.</li> </ul>

## 2.2.2 Institutional Framework

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>Different institutions at global, national, county levels address agroforestry as well as multinational and private sector institutions.</li> <li>Presence of institutions involved in promoting agroforestry development in the country e.g. KEFRI, KALRO, KFS, ICRAF, Vi Agroforestry, CARE, World Vision, others.</li> <li>Emerging farmers organizations focusing on the promotion of trees-on-farms including national apex organizations such as Farm Forestry Smallholder Producers' Association of Kenya FF-SPAK (registered 2013) and regional affiliates (eg., Western Tree Planters Association (WETPA), South Coast Forest Owners Association (SCOFOA), Kisii Tree Planters Association (KTPA).</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate coordination among the various actors and stakeholders that develop and promote agroforestry.</li> <li>Inadequate skills/capacity and advisory services.</li> <li>Lack of a joint platform for sharing agroforestry knowledge and information.</li> <li>Weak coordination and institutional framework in enforcement of the existing laws and regulations.</li> <li>Limited financial resources, capacity, knowledge and policy support to institutions.</li> <li>Horizontal coordination among farmers around tree-based commodities is nascent and weak.</li> </ul>

## External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>Availability of other coordination mechanisms to learn from both within Kenya and other countries.</li> </ul>	<ul style="list-style-type: none"> <li>Conflicting interests among actors and lack of clarity of devolved/shared functions.</li> <li>Agroforestry activities are carried out in isolation by various actors and institutions.</li> </ul>

### 2.2.3 Financing Mechanisms

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>• Provision of financing such as grants and subsidies to support agroforestry programs and projects by government agencies.</li> <li>• Good returns realized from agroforestry encourages private investment.</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate access to sustainable credit facilities for agroforestry investment by farmers.</li> <li>• Insufficient resources for implementation of programmes in agroforestry as well as robust monitoring systems.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• Existence of global funding instruments such as UNFCCC's Special Climate Change Fund, GCF and the Adaptation Fund under the Kyoto Protocol, Global Environment Facility (GEF)'s Least Developed Countries Fund, REDD+ and other facilities linked to the UNCCD.</li> <li>• Private-public partnerships providing blended finance and performance-based financing opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>• Bureaucratic process and procedures in accessing donor funding.</li> <li>• Global crises such as conflicts and pandemics could shift funding priorities.</li> </ul>

## 2.3 Knowledge and innovation support system

In Kenya, just like in many other countries across the globe, the formalization of agroforestry knowledge system has evolved with time, and often lagged the practice. Kenya's agroforestry knowledge and innovation system can be viewed through three subsystems which also inform the sub-pillars for this pillar: (i) Education and training; (ii) Research and innovation; and, (iii) Extension and advisory services. Overall, the interactions between the three subsystems are not adequately institutionalized.

In terms of **education and training**, agroforestry could only be found as a topic or course unit in forestry, environmental studies, natural resources management, agriculture, and other related disciplines from early 1980s through to late 1990s. This limited deeper research, knowledge, and training in agroforestry. Nevertheless, greater milestones have been made in the last three decades that have seen agroforestry curricula developed (Kilewe et al., 1989), mainly through the initiatives of African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE)<sup>2</sup>, in collaboration with education stakeholders in the country. Today, several universities in Kenya are offering at least a bachelor's degree course in Agroforestry thereby continuing to **produce more professionals** that can steer agroforestry at various scales and sectors. Some of these universities include University of Eldoret, University of Embu, University of Kabianga, Kenyatta University, Maasai Mara University and South Eastern Kenya University, among others.

<sup>2</sup> Previously the acronym ANAFE stood for African Network for Agroforestry Education

In terms of **Research and innovation**, a lot of investment has been put on agroforestry research for close to four decades, especially in humid areas of Kenya. These efforts include research on ecosystem goods and services associated with agroforestry such as soil fertility, nitrogen fixation and carbon storage, payment for ecosystem services (PES) (Nzyoka 2012), water and soil conservation aspects; tree-crop interactions and planting configurations; social-economic aspects; gender and social inclusion; policy environment, and others. Research in agroforestry is bolstered by the country's rich capacity in agroforestry through several research institutions boasting a pool of professionals that can help promote and test agroforestry technologies in the country's different contexts and regions. These include KEFRI, KALRO, ICRAF, Vi Agroforestry, KFS and Universities. However, most of agroforestry research in Kenya has hitherto been inclined towards biophysical aspects with limited focus on institutional, socio-cultural, and economic dimensions of an agroforestry system. As a result, research outputs on important areas such as agroforestry value chains, institutional innovations for financing, and economic and social viability of agroforestry enterprises, are not commensurate with the relevance of these topics in achieving a full promise of agroforestry.

**Extension and advisory services (EAS)** – The evolving EAS subsystem for agroforestry in Kenya mirrors the pluralistic landscape shaping EAS in the agriculture and forestry sectors. They include public sector actors at national and county levels, NGOs and international organizations, farmers organizations, and private sectors players. There are yet no clearly documented professional standards and guidelines for agroforestry EAS and most advisors tend to be graduates of agricultural or forestry related sciences, albeit that a cadre of graduates specializing in agroforestry is growing. Some of the methodologies applied to promote agroforestry development include farmer Field schools, on farm demonstrations and participatory learning and action approaches. The major challenge is lack of an institutional framework for coordinating agroforestry development in Kenya. Most EAS programs are project based and therefore tend to be short-lived. In addition, consultation workshops organized by Vi Agroforestry and Wildlife Clubs of Kenya (WCK) with farmers and farmers organizations partners across the country suggested knowledge/technology transfer as the dominant approach embraced by AFEAS. This implies there might be a scope to embrace other EAS approaches such as a promotion of collective projects and decision-support in order to support farmers address complex problems that might hinder scaling of AF practices - such as value addition and value capture and access to certified planting materials.

Following is the SWOT analysis on the knowledge and innovation support system as outlined through the stakeholder engagement process focusing on the three knowledge and innovation subsystems.

### 2.3.1. Education, training and human resource capacity development

#### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>The existence of universities, colleges and training institutions that train professionals in agroforestry.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of standardization of curricula in agroforestry education nationally and regionally.</li> <li>Lack of innovative approaches to integrate the science and practice of agroforestry.</li> <li>Limited documentation of formal support to education and training in agroforestry.</li> <li>Inadequate centers for training farmers on agroforestry techniques.</li> <li>Inadequate knowledge on agroforestry value chains for training package formulation.</li> <li>Inadequate quantitative data to demonstrate /determine agroforestry's socio-economic and conservation benefits, etc.</li> <li>Little emphasis on knowledge and information needs assessment.</li> <li>Lack of sufficient infrastructure/ incentives e.g. government-sponsored internships to interest youth in agroforestry training.</li> </ul>

#### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>The existence of African Network for Agroforestry Education (ANAFE) promotes the institutionalization of Agroforestry (AF) in education programs in universities and technical colleges.</li> <li>Support by NGOs and international organizations to Agro-sylvo pastoral technologies for pastoralists among others.</li> </ul>	<ul style="list-style-type: none"> <li>A number of cultural beliefs and traditional practices hinder agroforestry development.</li> <li>Institutional conflicts for example where some agroforestry centers were transferred to the Ministry of Energy creating implementation conflicts.</li> <li>Poor distinction of agroforestry from boundary disciplines, hence hindering targeted training.</li> </ul>

## Research

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Accumulated knowledge and experience in agroforestry research provides a solid base for information sharing between NARS and stakeholders which supports future research and development activities.</li> <li>● NARS, for example, KEFRI, KALRO, KIRDI, etc, are strong and well established in terms of human and physical capacity to effectively implement research nationally and even take regional leadership in some of the R&amp;D themes in agroforestry.</li> <li>● Existence of international research organizations to broker access of innovations across international borders.</li> </ul>	<ul style="list-style-type: none"> <li>● No clear policy and legislation on agroforestry research.</li> <li>● Agroforestry research topics are not prioritized nationally.</li> <li>● Inadequate research capacity to innovate and align agroforestry systems to climate change.</li> <li>● Inadequate innovations in developing seed sources, seed supply chain and support systems.</li> <li>● Weak research-extension-farmer linkages and low adoption rate of technologies by farmers.</li> <li>● Research in agroforestry technologies for ASALs lags behind.</li> <li>● Lack of clear succession plans for highly experienced personnel in research institutions who are retiring.</li> <li>● Little investment by research institutions in participatory impact assessment (involving partners/ stakeholders) of the research process and outputs.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Increasing investment in participatory and collaborative approaches in agroforestry research.</li> <li>● Presence of established international research institutions, NGOs and private research firms in Kenya.</li> <li>● Piloted coordination mechanisms such as Kenya National Agroforestry Steering Committee (created and hosted by NACOSTI predecessor (National Council for Science and Technology) in 1999) which can be reactivated and better resourced including with the right level of people and incentives.</li> <li>● NARS collaborative initiatives that can be more efficiently utilized in scaling, for example, ARIDSAK Project (KALRO/ KEFRI/ICRAF) in Kibwezi, and DARP (KEFRI/UoN/KARI/ICRAF at Katumani).</li> <li>● Geographical locations and spread of institutional centers that can be capitalized on to further adaptive research in agroforestry topics that directly benefit specific regions.</li> <li>● ICT innovations that can supplement existing dissemination products in addressing client needs.</li> <li>● Wide appreciation of agroforestry as creating a bridge for achieving many sustainable development goals and international development agenda.</li> <li>● Agroforestry research can effectively integrate various aspects including natural resource management in farming systems, commodity research for income generation and enhancing livelihoods of smallholder farmers and socio-cultural set up of the smallholder production systems.</li> </ul>	<ul style="list-style-type: none"> <li>● Declining trends in development partner funding especially to support long gestation research programs.</li> <li>● Political instability and ethnic conflicts in some regions of the country and general resource use conflicts hamper scaling efforts.</li> <li>● Lack of an appropriate mechanism for economic valuation of forests, trees on farms and in the landscapes, etc.</li> <li>● COVID 19, HIV/AIDS and other looming pandemics/disasters shift research priorities.</li> <li>● Negative cultural practices such as taboo for women to plant trees threaten adoption of technologies at scale.</li> <li>● Differences in perception of importance of agroforestry across institutions.</li> </ul>

### 2.3.3. Extension, advisory services and communication

#### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Several actors involved in providing Agroforestry extension and advisory services (AFEAS) in Kenya.</li> <li>● Existing relevant policies, strategies, legislations and plans.</li> <li>● The role of knowledge, information and technology is well articulated in policies, legislations and strategies including: ASTGS (2019-2029), Science, Technology and Innovation Act, (2013), the Kenya Communications Act of 1998, National ICT Policy (2006), and Vision 2030, among others.</li> <li>● Existence of substantial knowledge base from past agroforestry related research.</li> <li>● Increasing number of AFEAS providers and funders who recognize and prioritize social inclusion (e.g., youth, women, or marginalized farming communities) in targeting of AFEAS clients.</li> </ul>	<ul style="list-style-type: none"> <li>● No clear policy and strategy on agroforestry extension resulting in poor facilitation and support, both technical and financial.</li> <li>● Ratio of extension providers to farmers is very low (1:2000) exacerbated at county level by retirement of highly experienced staff.</li> <li>● Inadequate digital platforms.</li> <li>● Poor technical and financial facilitation and support.</li> <li>● Inadequate harmonization and policy streamlining from national to county governments.</li> <li>● Inappropriate models for agroforestry in terms of research-extension-farmer linkages.</li> <li>● Poor delivery approaches of agroforestry technologies (e.g., knowledge/technology transfer as the dominant EAS approach).</li> <li>● Low enforcement and compliance to policies and legislations.</li> <li>● Weak institutional capacity and linkages for the dissemination of existing technologies in research organizations.</li> <li>● Low adoptability of some agroforestry technologies to natural resource systems at the farm level.</li> <li>● Inadequate innovations in seed source, supply chain and support systems.</li> <li>● Most technologies have not been interpreted into local languages.</li> <li>● Lack of robust knowledge management and communication strategies for agroforestry research and development.</li> <li>● Insufficient research on the structure of farmer communication patterns.</li> <li>● Lack of collaborative monitoring and evaluation to assess flow of information and adoption of agroforestry practices.</li> <li>● Lack of outreach frameworks for timely information dissemination of agroforestry Technologies Innovations and Management Practices (TIMPs).</li> </ul>

## External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Opportunities for, and willingness to invest in agroforestry products, value addition and linkages to markets.</li> <li>● Donor supported programmes in agroforestry.</li> <li>● Involvement of youth in agroforestry.</li> <li>● Increase in digital infrastructure and digital literacy capacity.</li> <li>● Collaborative mechanisms amongst agroforestry R&amp;D organizations and alliances for agroforestry scaling.</li> <li>● Community-based and mass media channels for communication to farmers.</li> </ul>	<ul style="list-style-type: none"> <li>● Insecurity in ASAL areas.</li> <li>● Climate change dynamics upset agroforestry technology frameworks.</li> <li>● Disasters and calamities.</li> <li>● Dissemination of wrong information to farmers through informal social networks.</li> </ul>

## 2.4 Value chain development

Agroforestry supports a wide range of value chains involving diverse products and ecosystem services, and across different agro-ecological zones in Kenya. However, compared to crop and livestock sectors, farm tree-based value chains are underdeveloped, yet market-based incentives offer a strategic entry point for stimulating adoption and scaling of agroforestry practices in the Country. In particular, coordination among farmers is observed to be nascent and restricted to basic functions. The main value chains for development include wood and non-wood biomass products, ecosystem/agroforestry services, and planting materials (germplasm).

Main value chains	Main products/services
Wood biomass	Timber, Biomass energy
Non-wood biomass	Medicinal plants, Fruits and Nuts, Gum and Resins, Honey, Livestock feed services
Agroforestry services	Amenity, health and recreation; Biodiversity conservation, carbon sequestration, soil enrichment and health, water and infrastructure.
Planting materials	Tree seeds, seedlings, scions and ornamental plants

Kenya is projected to experience growing demand for wood biomass products such as timber and energy. To meet this demand, the farmland supply segment is expected to play a major role. This will require addressing the key constraining factors, leveraging on enablers and tapping emerging opportunities. Areas to pay attention to include devising more favorable marketing regulations; access to improved inputs - especially quality germplasm and planting materials, extension and advisory; financing and other support services; adoption of efficient processing technologies and products; enabling youth engagement; and mitigating effects

and impacts of climate change. Indeed, the growing demand for biomass energy has been associated with a worrying trend on tree cover depletion and forest degradation.

The main non-wood products include fruits and nuts, gums and resins, medicinal and aromatic products, and apiculture products while the tree nursery enterprise is at the foundation of most value chains. Fruits and nuts value chains have attracted interest due to their contribution to food and nutrition security, adaptability to different agro-ecological zones, and existence of an elaborate institutional infrastructure coordinated under the AFA /MoALFC. However, investments in R&D have been minimal, while participatory domestication opportunities are rarely exploited, especially on indigenous species, value addition and product diversification.

Gum and resins are produced by many types of plants such as gum Arabic and gum Talha. They therefore offer a potential for complementing efforts to increase the tree cover in drier regions of the country, improve livelihoods and move community members away from degrading practices such as cutting trees for charcoal. However, promotional efforts have focused on plants that are commercially exploited. Recently, efforts to integrate gum and resins in ASAL-based agroforestry systems, such as pilots by FAO and World Vision, have been reported. The Acacia Operation Project led by FAO (2004-2007) piloted plantation production of *Acacia senegal* var. *kerensis* in ASAL counties of Samburu and Marsabit. A major challenge reported was the destruction of pilot sites by domestic and wild animals. In another Acacia project, Better Globe Forestry, is estimated to have planted 1,000 *Acacia senegal* trees in collaboration with farmers in Eastern region - Kiambere and Mwingi - by 2011. Farmer managed natural regeneration (FMNR) is a technique that has been piloted by World Vision to boost regeneration of *Acacia senegal* trees in counties such as Baringo. This technique promotes the growth of trees from already existing stumps or naturally occurring seeds. Overall, the main challenges facing Gum and resins value chain development are limitations in product standardization and in accessing quality germplasm.

Kenya's rich plant diversity of an estimated 7,500 plant species found within a wide range of habitats is a huge medicinal product stock but is reported to be on the decline due to natural and anthropogenic factors. Trading in medicinal plant products constitutes an important source of income for practitioners' households - especially in Nairobi and Mombasa (where it is the sole source of income for 60 percent of practitioners). However, documentation of trading of wild harvested medicinal plant materials is poor in Kenya. Also, inefficient processing technologies are associated with high wastage and quality and health safety concerns. The National Traditional Health Practitioners' Association (NATHEPA) is yet to gain official recognition from the Ministry of Health, which renders the enabling environment for advancing medicinal plant value chains as largely more constraining than enabling. Particularly, lack of incentives for private production of medicinal plant materials poses huge risks of unsustainable exploitation and degradation of natural habitats.

With an estimated production of 100,000 tonnes of honey per year, Apiculture is a major contributor to rural development and national GDP in Kenya. Besides honey production, bees play an important role in agriculture and forestry through pollination and foraging for nectar collection from plants. Apiculture is practiced in all parts of Kenya but is more established in Coastal, Rift Valley, Eastern and Mount Kenya regions of Kenya. However, traditional beekeeping practices contribute 80 percent of honey production in the country. Currently, the National Beekeeping Policy Framework governs various efforts aimed at developing the

subsector. The major challenges facing honey value chains have been highlighted as: fragmented and poorly coordinated producers; poor and ecologically unsustainable production practices; limited investments in modern processing; poor regulatory framework for ensuring product quality and safety; and, socio-cultural norms that hinder women involvement in apiculture management.

Tree nurseries have become a key enterprise in Kenya's forestry and agroforestry sector in both rural and urban areas, in response to increasing demand for planting materials. The tree nursery enterprise is contributing to household incomes and employment. Informal tree nursery operators appear to have advantage over institutional players because of their proximity to farmers and end users. However, lack of adequate mechanisms to regulate the tree nursery value chains and build capacity of community based tree nursery operators has led to widespread concerns about poor quality of planting materials.

Regarding ecosystem services, awareness, and appreciation of benefits of ecosystem services of agroforestry systems has been low, albeit on the increase. This appreciation is associated with increase in attempts to pilot test Payment for Environmental Services (PES) initiatives in Kenya; and tree-based enterprises offering amenity, physical health, and recreational services.

Majority of stakeholders mapped during consultation processes for this strategy indicated their involvement in activities aimed at stimulating market incentives for agroforestry development. A major gap pointed out is the need to strengthen quantitative data to demonstrate/ determine agroforestry's socio-economic and conservation benefits. Following is the SWOT analysis on agroforestry value chain development as outlined through the stakeholder engagement process. Four sub-pillars were considered as below:

1. Ecosystems services by agroforestry
2. Non wood products value chains (livestock fodder; fruits and nuts; gums and resins; medicinal products; and, honey)
3. Timber and biomass fuels (charcoal and fuelwood)
4. Tree establishment systems – seed and seedlings production systems



## Agroforestry Ecosystem Services

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Support from both National and County governments as well as partners and investors.</li> <li>● Existence of Agriculture (Farm Forest Rules) 2009 and Draft National Forest Policy, 2019; AFA Act and ASTGS</li> <li>● Agroforestry emphasized as a climate change mitigation pathway in NCCAP 2018-2022</li> </ul>	<ul style="list-style-type: none"> <li>● Emphasis on mono-cultural practices reduces species diversity.</li> <li>● Decrease in species richness and abundance along the transition curve from natural forests through exotic timber plantations to agroforestry systems</li> <li>● Limited adoption of Recommended Management Practices (RMPs) by resource poor farmers.</li> <li>● Species shift along the slopes due to climate change.</li> <li>● Undervaluing of soil carbon making farmers vulnerable.</li> <li>● Inadequate incentives for farmers to engage in carbon trading.</li> <li>● Low appreciation of indigenous species and natural regeneration approaches.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Constant increases in appreciation of recreational forest areas, ecotourism sites, cable games, physical exercises and recreational facilities.</li> <li>● Indigenous agroforestry knowledge and practices can be harnessed for conservation of tree diversity.</li> <li>● Enterprise diversification through multi-canopy agroforestry contributes to biodiversity conservation.</li> <li>● Market innovations for payment for ecosystem services, carbon credits, etc</li> </ul>	<ul style="list-style-type: none"> <li>● Social cultural issues where women and youth are denied rights to decide on use of land.</li> <li>● Conflict in sharing of benefits from agroforestry practiced on communal land.</li> <li>● Rising human population and urbanization threaten the distribution of species owing to changing land use and cultural practices</li> <li>● Disappearing wetlands due to human activities</li> <li>● Farmers' preference for fast maturing but ecologically destructive tree species such as Eucalyptus.</li> </ul>

## Non-wood product value chains - Livestock fodder

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Existence of National Livestock Policy 2012, Draft Livestock Bill, Draft Rangeland and Pastoralism Strategy, Kenya Climate Smart Agriculture strategy and implementation plan and Community Land Act 2016.</li> <li>● The existence of Participatory Rangeland and Grassland Assessment Methodology aiming to enhance rangeland health.</li> <li>● ASAL Policy (2012) linked to devolution which covers issues specific to ASALs.</li> <li>● The Kenya constitution 2010 Schedule 4</li> <li>● Increased adoption of fodder trees/shrubs by dairy farmers.</li> </ul>	<ul style="list-style-type: none"> <li>● Declining livestock production and productivity.</li> <li>● Greenhouse gases emission due to clearing of forests and grassland for livestock grazing.</li> <li>● Overstocking of livestock and poor grazing management causes soil erosion and environment degradation.</li> <li>● The ruminant feeds available to farmers are of low quality and low digestibility.</li> <li>● Inadequate allocation of funds by the counties.</li> <li>● Limited array of tested woody fodder species.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Willingness of donor support for programs to promote establishment of livestock feeds and markets; natural resource management; establishment of fodder trees; Pastoral Livelihoods Resilience.</li> <li>● Enabling environment</li> <li>● Availability of land.</li> <li>● Awareness creation by the Constitution, people know more about their rights on use of community land.</li> </ul>	<ul style="list-style-type: none"> <li>● Agro-ecological and ecosystem shifts leading to alteration in fodder quality and quantity.</li> <li>● Insecurity and conflict in pastoral areas.</li> <li>● Invasive species e.g. <i>Prosopis</i> cause degradation of pasture resources and reduce abundance of fodder tree species.</li> <li>● Haphazard settlement and water sources/encroachment on the forest or private land.</li> <li>● Increased frequency and magnitude of droughts and floods causing livestock productivity losses and deaths.</li> </ul>

## Non-wood product value chains - fruits and nuts

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Importance of fruits and nuts recognized in National Food and Nutrition Security policy, Agricultural Sector Transformation and growth Strategy (ASTGS) - 2019-2029, Big Four Agenda pillar on Food and nutrition security, Manufacturing and Health for all, KALRO Strategic Plan (2017-2021), Kenya Climate Smart Agriculture Strategy, KEBS and others.</li> <li>● Good will from communities associated with the income.</li> <li>● High demand, market available.</li> <li>● Creation of Fruits and Nuts Directorate under AFA to support the value chain.</li> </ul>	<ul style="list-style-type: none"> <li>● Limited investments in R&amp;D for fruits and nuts including domestication of indigenous species.</li> <li>● Low value addition/processing.</li> <li>● Low prices for fruits and nuts associated with un-developed markets.</li> <li>● Diversity of fruit and nut species is limited while environmental degradation including clearing of forests and natural vegetation destroys genetic resources.</li> <li>● Agro-chemical sprays like insecticides, fungicides, and herbicides destroy fruit quality especially for export.</li> <li>● Weak linkage between producers and finance institutions for credit provision.</li> <li>● Climatic variabilities such as seasonality of rainfall and temperature affect production.</li> <li>● Poor marketing infrastructure, organization and information creates high transaction costs.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● There is unexploited potential across the value chains for generation of household incomes and economic development in the country.</li> <li>● A wide array of fruits/nut species that are proven as important for nutrition security, including indigenous species that can be domesticated.</li> <li>● Thriving international trade.</li> <li>● Support from county governments including establishment of processing facilities.</li> </ul>	<ul style="list-style-type: none"> <li>● Not highly prioritized in development policies and strategies as compared to other value chains.</li> <li>● Fragmentation of land.</li> <li>● Emerging pests and diseases requiring use of chemicals in integrated agroforestry production systems.</li> <li>● Unethical marketing practices and associated pricing mechanisms.</li> <li>● Climate change.</li> </ul>

## Non-wood product value chains - Gums and resins, honey and herbal medicine

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● The National Forest policy and National Forest Programme recognizes the role of Non-Wood Forest products in the Kenyan economy.</li> <li>● The existence of a draft regulation on gums and resins awaiting gazette.</li> <li>● Kenya Pharmacy and Poisons Board (PPB) has guidelines for accreditation of herbal and complimentary products.</li> <li>● Trade secrets protection through KIPI.</li> <li>● Vast experiences and extensive indigenous knowledge base on herbal remedies.</li> <li>● The existence of a national beekeeping policy framework.</li> </ul>	<ul style="list-style-type: none"> <li>● Lack of clear policies, strategies, and incentives on development of gums and resins.</li> <li>● Lack of standards for production of gums &amp; resins products.</li> <li>● Lack of safety, standardized mode of preparation of medicinal remedies (like in China and India), quality standards and efficacy of traditional remedies.</li> <li>● Poor marketing infrastructure/ organization and inadequate information on prices, product flow, processing, and marketing options.</li> <li>● Inadequate germplasm (in both quality and quantity).</li> <li>● Waning traditional governance means inadequate protection, conservation and production at grassroots.</li> <li>● Few initiatives promote domestication and cultivation of medicinal plants and important species for gums and resins such as <i>Acacia senegal var. kerensis</i>.</li> <li>● In situ and Circa situ (on farm) mechanisms have not been fully exploited to conserve existing plant diversity.</li> <li>● Inadequate knowledge on ecology &amp; production of priority species.</li> <li>● Inadequate capacity to produce &amp; market including lack of aggregation (cooperatives/associations) to pool resources and product volumes.</li> <li>● Lack of data and statistics on material collected from the wild and traded.</li> <li>● Poor harvesting techniques and storage conditions of the remaining plants/parts of plants in the wild.</li> <li>● Incidences of fungal infection (Aflatoxin and Fumonisin) of herbal medicine products.</li> <li>● Inadequate knowledge and misidentification of herbal plants by practitioners.</li> <li>● Insecurity hindering access to some of the collection sites.</li> <li>● Adulteration of herbal medicine products.</li> <li>● Lack of toxicology, pharmacokinetic and pharmacodynamic data for herbal medicine.</li> <li>● Lack of official recognition of indigenous Kenyan medicine and its practitioners (NATHEPA's) work by the Ministry of Health.</li> <li>● Inadequate knowledge and skill on bee behavior, general apiculture and identification of plants that attract bees.</li> <li>● Use of traditional technology with poor production quantities and quality.</li> <li>● Agro-chemical sprays like insecticides, fungicides, and herbicides poisoning bee colonies.</li> <li>● Limited start-up capital and financing options (including insurance) to invest in modern equipment for commercial production.</li> <li>● Lack of business plans for honey production.</li> <li>● Climatic variability such as seasonality of rainfall and temperature affects bee keeping and other products.</li> <li>● Social and cultural factors hinder women from performing apiary management practices.</li> <li>● Low intake of honey by consumers due to dismal knowledge of honey's properties, benefits and uses.</li> </ul>

## External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Gums and resins production promoted in several ASAL Counties in Kenya with Kitui and Meru having potential if developed.</li> <li>● Support by development partners and NGOs to grow <i>Acacia senegal</i> on trial plantations and through FMNR practices.</li> <li>● International market demand.</li> <li>● Emerging of modern technologies in bee keeping activities and other non-wood value chains.</li> <li>● Rich plant diversity within a range of habitats with an estimated 7,500 plant species growing naturally in the country.</li> <li>● Wide opportunity for research and innovation.</li> </ul>	<ul style="list-style-type: none"> <li>● Bio-piracy of herbal medicine.</li> <li>● Degradation of natural habitats (forests and woodlands) due to desertification privatization, land grabbing and population pressure causes genetic erosion.</li> </ul>



## Timber and biomass fuels (charcoal and fuelwood)

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● The Energy Act, 2019 and Bioenergy strategy 2020.</li> <li>● Government subsidies e.g. VAT and custom duty exemption on raw materials towards efficient stove production.</li> <li>● Government commitment to the development of the energy sector.</li> <li>● Revised Forest Policy 2020, FCMA 2016 and Charcoal Rules of 2009.</li> <li>● Fast growing tree species able to provide biomass in a short rotation.</li> <li>● High demand for timber, poles and other lumber products.</li> </ul>	<ul style="list-style-type: none"> <li>● Uncoordinated approach in policy formulation and implementation by the relevant ministries and agencies.</li> <li>● Inadequate legal and institutional framework and weak enforcement of existing laws.</li> <li>● Low uptake of innovations such as efficient biomass production and utilization technologies and afforestation programs.</li> <li>● Inadequate user and practitioner’s awareness and poor user convenience, socio-cultural bias.</li> <li>● Low financial and technical capacity (especially on quality tree management practices and sustainable production).</li> <li>● Inadequate data on biomass production and consumption.</li> <li>● Infestation of pests and diseases on trees in the farms.</li> <li>● Low uptake of modern technologies for extraction and processing.</li> <li>● Poor site species matching.</li> <li>● Weak research (such as tree breeding).</li> <li>● Unfavorable regulations on harvesting and marketing.</li> <li>● Inadequate incentives to enhance production of wood and wood products in the private sector.</li> <li>● Inadequate access to credit facilities by farmers.</li> <li>● Poor quality of germplasm and silvicultural practices resulting in low quality wood.</li> <li>● Weak organization of producers – both timber and fuelwood – results in less gains.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● The government (Ministry of Energy) and development partners support projects on efficient and suitable use of Biomass.</li> <li>● Energy Act 2019 and incentives (subsidies).</li> <li>● Widespread awareness on energy, conservation for sustainability concerns.</li> <li>● Unmet demand for timber products.</li> <li>● Availability of donors to support commercial tree farming.</li> <li>● Consumptive management of prosopis and other invasive tree species can reduce energy gap.</li> </ul>	<ul style="list-style-type: none"> <li>● Competing interests over land use between biomass production, food production and other commercial uses.</li> <li>● Increase in population and urbanization.</li> <li>● Climate change effects and impacts.</li> <li>● Alternative sources of energy (e.g. Bamburi invested in casuarina but now is switching to coal) and alternatives products to timber.</li> <li>● Deforestation and land degradation.</li> <li>● Negative climate change impacts (weather conditions, drought, rainfall variability).</li> <li>● Emergence of new challenges due to climate change (diseases, insect pests, weeds).</li> <li>● Competing sourcing of wood from other countries.</li> </ul>

## Tree establishment support system - Seed and seedling production

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● Enforcement of national horticulture policy in 2012 offered interventions for production, support services, marketing in the local and regional markets.</li> <li>● High diversity of adaptable tree species.</li> <li>● Combination of production of tree seedlings and ornamental plants sustains nursery enterprises.</li> <li>● Presence of Kenya Forest Seed Centre and various tree seed production stands and fruit tree mother blocks.</li> </ul>	<ul style="list-style-type: none"> <li>● Inadequate financial instruments, incentives and subsidies.</li> <li>● Inadequate technical knowledge on production and value addition.</li> <li>● Inaccessibility to quality/certified germplasm.</li> <li>● Unregulated local seed collection leads to inbreeding.</li> <li>● Lack of structured market and undeveloped value chains limit the growth of the tree nursery industry.</li> <li>● Insufficient research on alternative production materials due to the ban of polythene bags.</li> <li>● Mushrooming of vendors.</li> <li>● Poor organization of producers limits growth in quality and market gains.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Increased demand and proliferation of tree nurseries across the country especially in urban areas.</li> <li>● The emerging enterprise in ornamental plants for income and employment creation.</li> <li>● Related trade both local, regional, and international.</li> <li>● Support by projects, programs and other initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>● Informal seed vendors appear to have competitive advantage over established institutions hence the challenge to quality control.</li> <li>● Lack of competitiveness.</li> <li>● Water scarcity.</li> </ul>

## 2.5 Gender and social inclusion/exclusion

The concept of social exclusion is concerned with the marginalization of certain groups of disadvantaged people when participating in development processes and/or accessing opportunities and outcomes arising from such processes. In Kenya marginalized groups include people living with disabilities (PWD), with chronic ailments such as HIV and Aids, indigenous communities living within the forest, youths, children, women, elderly people (both men and women), and single headed households. Agriculture and environment related extracurricular activities have been the dominant approach in promoting agroforestry practices among the school going children in Kenya. However, the longstanding negative attitude towards agriculture among the youth is reported to have constrained this approach. Other constraining factors are weak integration of agroforestry discipline in basic education curriculum and the dilemma posed by anti-child labor laws when reinforcing agroforestry practices at home.

Regarding the elderly population, aged men and women have over the years practiced agroforestry and contributed to enriching the knowledge system. However, this stream of indigenous knowledge has not been adequately documented or passed on to generations. The issue of the rights of the Indigenous Peoples (IPs) and marginalized communities to exploit agroforestry opportunities stimulated by forest-based resources has attracted a lot of interests in the scholarly, development, and policy arena in Kenya. The provision for communities to form Community Forest Associations (CFA) grants opportunity to IPs to access forest-based resources and services. However, the capacity of IPs to self-organize has been observed to be usually low. Among all the marginalized groups identified above, PWD appears to be the least recognized and involved in agroforestry discourse and practice in Kenya.

Land and tree tenure insecurity has been highlighted as a major barrier in efforts to enhance the engagement of women and youth in adoption and scaling of agroforestry practices (Landesa 2014; Gafeer 2014; CropCare Technologies 2016). While Kenya has undertaken pro-women land law reforms in the recent past, it has been observed that customary norms still dominate access and control over land. Generally, attempts to generalize social inclusion/exclusion issues are hampered, on one hand, by inadequate data and on the other, by the context-specific nature of agroforestry systems. However, generic trends and patterns on the engagement of men, women, and youth in agroforestry activities can be distilled from existing literature. Women and men play different roles and responsibilities in farmlands (Kiptot & Franzel 2011) and make different decisions regarding use of land (Bourne et al. 2015; Villamor et al. 2015). Women and men have different preferences for trees, whereas men would be more interested in commercial types of trees, women would be more inclined to products for subsistence use such as firewood, soil fertility improvements, fruits and fodder (Kiptot & Franzel 2012). Women are also often responsible for managing trees especially at the early stages of establishment (Franzel et al. 2002; Nyeko et al. 2004). Other generic gender-based constraints faced by women include limitations in accessing institutions and support services such as agroforestry extension, improved inputs and planting materials, financing, and membership in farmer groups (Kiptot and Franzel 2011; Jost et al. 2016; Gripenberg et al. 2014).

The Kenyan youth population (18-35 years) constituted 29 percent of the total population in 2019 (KNBS 2019), but their involvement in agroforestry is still very low (Hughes et al. 2018). According to the World Bank (2014), only 10% of the youths are participating in agriculture, although most of them (92%) reside in rural areas. Studies in central Kenya found that middle aged and young farmers were planting trees on farms to meet income and other household needs like fuelwood, timber, construction poles, and land boundary marking. Projected demand for wood products was cited as a positive market signal stimulating tree planting and retention for future needs (Oeba et al. 2012). A study by World Agroforestry in Kitui, showed that younger women and men, in general, preferred species that were more marketable, although there were specific differences. Women preferred species which are sold in small quantities such as papaya (*Carica papaya*), chocolate berry (*Vitex payos*), guava (*Psidium guajava*) and tamarind (*Tamarindus indica*), (Paez-Valencia 2019), since men were not interested in them.

A study by the Millennium Village Project in Siaya County found that youths were less interested in attending agroforestry training as they preferred investments in activities that yield quick returns (Kipkemboi et al. 2020). An observation by Vi Agroforestry in Kitale shows that youth fared poorly in improvement in knowledge about agroforestry as most were not able to participate in training provided by organizations (Gripenberg et al. 2014). A survey in Migori by World Vision found out that young female farmers felt that they had limited knowledge about tree planting and site species matching techniques. Sources for such information and knowledge were observed to be costly and not freely accessible. Other factors found to negatively influence youth engagement in agroforestry practices include land succession debacles and high costs of inputs for establishing a tree plantation (CropCare Technologies 2016).

In spite of the foregoing, youth is a heterogeneous category and a dynamic concept. The demographic group is influenced by other intersectional factors such as age cohorts, gender, education, household and social networks, and location specific contexts that shape the opportunity space available (IFAD 2019). For example, a study by Gatsby's Kenya Commercial Forestry programme found that urban-based young male professionals were increasingly investing in commercial tree growing as a safer way to secure land (Citation). Also, applying a value chain perspective broadens the scope for youth and women engagement beyond the farmland to include opportunities in provision of support services such as inputs, planting materials, establishment and management services, and advisory; to processing, transportation, distribution and retailing of tree products. In addition, consultation with farmers suggests that there are transformative or progressive practices (social innovations) taking place in the communities addressing the land and tree tenure insecurity that especially hinders youth and women from participating and benefiting from AF equitably. These bottom-up social innovations are not adequately researched or documented yet they can provide insights in designing interventions.

Following is the SWOT analysis on the Gender and social inclusion/exclusion as outlined through the stakeholder engagement process.

### Internal factors/Environments

STRENGTH	WEAKNESS
<ul style="list-style-type: none"> <li>● The National Policy on Gender and Development adopts gender mainstreaming and empowerment of women.</li> <li>● The Constitution of Kenya (2010) requires that not more than two thirds of members of elective public bodies and public service employees can be of the same gender and encourages equitable sharing of benefits among both men and women.</li> <li>● National Forest Programme 2016-2030 recognizes gender and rights of vulnerable and marginalized people as part of emerging issues which is critical especially when domesticating international commitments into forest policies.</li> </ul>	<ul style="list-style-type: none"> <li>● Gender inequality and inadequate inclusivity of women, youth and other vulnerable groups (VMGs) such as people living with disabilities; people living with HIV and AIDs and people recovering from alcohol and drug abuse in the society in agroforestry activities, ownership, control and access to land, capital, properties, assets and financial resources such as credit.</li> <li>● Inadequate extension/advisory services offered to women and youth and other VMGs.</li> <li>● Youth lack knowledge in agroforestry and often do not participate in training programs.</li> <li>● Female farmers and youth have limited access to markets and to tree planting techniques and variety choices.</li> <li>● Lack of inclusion of women and youth in designing and implementing adaptation strategies and policies.</li> <li>● Lack of clear strategy that supports inclusive agroforestry approaches that addresses barriers to gender and social inclusion.</li> <li>● Mechanization and nature of tools in agroforestry are discriminatory against women and the elderly.</li> <li>● Poor access to land especially by women and youth for agroforestry investment.</li> </ul>

### External Factors/Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>● Agroforestry has the potential to offer substantial benefits to women and other marginalized groups.</li> <li>● Donors and NGOs support programmes that mainstream gender issues in agroforestry activities.</li> <li>● Emerging bottom-up social innovations addressing land and tree tenure insecurity experienced by youth and women.</li> </ul>	<ul style="list-style-type: none"> <li>● Socio-cultural barriers, beliefs and negative gender stereotypes that limit women in decision making, tree ownership and land inheritance.</li> <li>● Youth mind set and perception about agroforestry as labor intensive practice and an activity for the old, uneducated and poor.</li> <li>● Social conflicts in agroforestry groups due to economic interests by some members and governance issues.</li> </ul>

## 2.3 Strategic Issues

The situation analysis (current status, SWOT, PESTLE and causal analysis) helped to determine strategic issues that will inform the strategic focus for investment in agroforestry by MoALFC and partners. The following strategic issues were identified for the four pillars.

Sub-pillar	Label	Strategic issue
<b>1. A strengthened policy and institutional environment</b>		
1.1 Policy, legal and regulatory framework	1.1.1	Lack of an overarching enabling policy and legal framework for agroforestry development.
	1.1.2	Inadequate and ineffective incentives for promotion of agroforestry.
1.2 Institutional framework	1.2.1	Lack of an institutional framework and political support to enhance coordination of agroforestry development in the country.
	1.2.2	Inadequate institutional capacity to support agroforestry development.
1.3 Financing mechanisms	1.3.1	Inadequate resources for implementation of agroforestry programs.
<b>2. An integrated and robust knowledge and innovation support system</b>		
2.1 Education and training	2.1.1	Lack of professional standards and low capacity to guide the delivery and regulation of agroforestry advisory to practitioners.
	2.1.2	Inadequate infrastructure for wide ranging research, linked to education and training - such as laboratories, land as well as human and financial resource limitations.
	2.1.3	Weak linkages between the art (practice, including indigenous and tacit knowledge held by farmers and communities) and science of agroforestry.
2.2 Research	2.2.1	Research for development agenda not adequately driven by the needs of core value chain actors (weak customer focus).

	2.2.2	Inadequate research at the nexus between agroforestry and other emerging issues - such as climate change, value chains, institutional innovations addressing social exclusion concerns.
	2.2.3	Low investment in participatory learning, monitoring and evaluation weakens momentum for agroforestry innovation.
2.3 Extension, advisory services and communication	2.3.1	Weak capacity in extension and advisory services in agroforestry.
	2.3.2	Poor tapping of innovative communication technologies to advance sharing of agroforestry information.
<b>3. Agroforestry value chains developed</b>		
3.1 Agroforestry Ecosystem Services	3.1.1	Limited appreciation of agroforestry ecosystem services.
3.2 Non wood products	3.2.1	Declining livestock productivity due to low quality fodder and pasture.
	3.2.2	Limited investment in the productivity and marketing of fruits, nuts, and honey.
	3.2.3	Limited investment in the productivity and marketing of herbal medicine, gums and resins.
3.3 Timber and biomass fuels (charcoal and fuelwood)	3.3.1	Unsustainable production and use of wood/biomass energy products from farms.
	3.3.2	Unsupportive and uncoordinated enabling environment for wood and biomass value chains.
3.4 Seed and seedling production	3.4.1	Under-developed tree seeds and seedlings supply systems - (i.e., certification and regulation almost lacking, subsidies crowding out private sector and market-based mechanisms, reliance on own and wild collection among farmers)
<b>4. Enhanced gender, youth and social inclusion</b>		
	4.1.1	Gender, youth and vulnerable groups-based constraints in access to agroforestry information and advisory services.

4.1 Gender, youth and social inclusion	4.1.2	Gender, youth and vulnerable groups-based constraints in access and control over benefits of agroforestry-based value chains development and markets.
	4.1.3	Land and tree tenure (ownership, access and use rights) system not sufficiently supportive of women and youth investment
	4.1.4	Gender, youth and vulnerable groups-based constraints in access to financial services.
	4.1.5	Knowledge and evidence gaps on social inclusion/exclusion questions.

## Chapter Three: Strategies

### 1. A STRENGTHENED POLICY AND INSTITUTIONAL ENVIRONMENT

#### 1.1 Policy, legal and regulatory framework

**Strategic issue 1.1.1: Lack of an enabling policy and legal framework for agroforestry development.**

**Strategic Objective 1.1.1:** To create an overarching enabling policy and legal framework for agroforestry development.

##### Strategies

- Carry out an impact assessment of Agriculture (Farm Forestry) Rules 2009 and the Charcoal Rules 2009 (in a participatory manner) and draw lessons learned.
- Conduct a detailed risk assessment of the legal system to inform successful policy development and strategy implementation.
- Mainstream agroforestry in existing and relevant policies, strategies and Acts.
- Formulate and develop overarching policy and specific regulations on agroforestry through a participatory process.
- Review and align existing agroforestry related Policies, Acts and Strategies (E.g ASTGS, Forest Conservation and management Act) to the Constitution of Kenya (2010).
- Ratify, adopt and domesticate international conventions, treaties and agreements that support agroforestry.
- Promote innovative land and tree tenure arrangements that enhance security for men, women, and youth farmers to invest in the long-term agroforestry systems.

**Strategic issue 1.1.2: Inadequate and ineffective incentives for agroforestry promotion.**

**Strategic Objective 1.1.2:** To devise effective fiscal and non-fiscal incentives to enhance adoption of agroforestry.

##### Strategies

- Review agriculture policies and associated incentive/subsidy systems to ensure they are not conflicting with/restricting agroforestry development and make recommendations.
- Integrate robust economic and social incentives (such as input subsidies, access to credit and markets, tax cuts etc.) for promoting agroforestry and sustainable harvesting of tree products in the revised farm forestry rules/regulations and Agricultural policy (e.g. tree cover as a criteria for accessing social services).
- Integrate valuation and payment for ecosystem services (PES) relevant to access and benefit sharing (ABS) policies and legal frameworks.

## **1.2 Institutional Framework**

**Strategic issue 1.2.1: Lack of an overarching institutional framework to enhance coordination of agroforestry development in the country.**

**Strategic Objective 1.2.1:** To improve coordination of agroforestry development in the country through harmonization of the institutional framework at the national and county levels with strategic involvement of non-state actors.

### **Strategies**

- Review and harmonize the mandates of agroforestry-related institutions to ensure proper coordination and coherence.
- Support counties to develop policies and strategies to implement agroforestry programs.
- Establish an innovative intersectoral and multi-stakeholder platform to enhance collaboration between governmental and non-governmental stakeholders.
- Strengthen farmers organizations and networks for promoting trees-on-farms with resource conflict management and resolution mechanisms embedded therein.

**Strategic issue 1.2.2: Inadequate capacity and resources to support agroforestry development.**

**Strategic Objective 1.2.2:** To build capacity of key institutions and stakeholders in order to support agroforestry development.

### **Strategies**

- Support counties to integrate agroforestry into CIDPs and county spatial plans (CSPs) that support attainment of at least 10% tree cover in the county.
- Implement the Maputo declaration by allocating 10% of both national and county government budgets to agriculture, with agroforestry explicitly included, to enable investment in advisory services among others.

## **1.3 Financing**

**Strategic issue 1.3.1: Inadequate resources for implementation of agroforestry programs.**

**Strategic Objective 1.3.1:** To mobilize and allocate adequate resources sustainably for implementation of agroforestry programmes.

### **Strategies**

- Enhance smallholder farmer access to finance and credit facilities.
- Enhance budgetary support for agroforestry activities at national and county levels.

- Create Payments for Ecosystem Services (PES) as a way to incentivize land users to properly manage and conserve their natural environment thus ensuring the flow of ecosystem services.
- Advocate for establishment of tax incentives for PES by the national government.
- Promote public-private partnerships in sustainable agroforestry value chains including in existing regional markets such as COMESA, EAC and others.
- Promote global financing for agroforestry through alignment to SDGs and related international initiatives e.g. GEF, GCF, REDD+ while maintaining /enhancing good relations with development partners and donors.

## **2. A ROBUST KNOWLEDGE AND INNOVATION SUPPORT SYSTEM**

### **2.1 Education, training and human resource/capacity development**

**Strategic Objective 2.1.1: Lack of professional standards and low capacity to guide delivery and regulation of agroforestry advisory to practitioners.**

**Strategic Objective 2.1.1:** To enhance professional standards for development and regulation of agroforestry advisors and practitioners.

#### **Strategies:**

- Undertake training and capacity needs assessment.
- Advocate for policy to mainstream the science and practice of agroforestry in curriculum delivery by education and training institutions including TVETs.
- Develop and/or harmonize curriculum on agroforestry for farmers, schools, universities and training colleges to appreciate evolving context.
- Develop Information and Educational Communication materials [IEC] (advisories) on agroforestry.
- Enhance agroforestry training in existing farmer training infrastructure and establishing new training centers where necessary.
- Strengthen capacity, including retooling, of personnel (lecturers, researchers, extension personnel, farmers and other stakeholders) for effective delivery of agroforestry research, development and education/training in evolving context.
- Develop innovative ways of delivering agroforestry training and education in response to emerging issues including e-learning, social and electronic media seminars and fellowship programs.

**Strategic issue 2.3.2. Inadequate infrastructure for wide ranging research and training such as laboratories, land as well as human and financial resources.**

**Strategic Objective 2.3.2:** To enhance infrastructure for agroforestry training and research.

**Strategies:**

- Undertake infrastructural capacity assessments to identify gaps and opportunities for synergistic work.
- Enhance institutional collaboration to more efficiently utilize available resources in agroforestry R&D delivery e.g. ARIDSAK (KALRO/KEFRI/ICRAF) in Kibwezi, DARP (KEFRI/Uni of Nbi/KARI/ICRAF at Katumani which have been success stories.
- Promote place-based research approach for agroforestry to encourage institutions to capitalize on their physical locations while collaborating with others for technical support.

## **2.2 Research**

**Strategic issue 2.2.1: Research for development agenda not adequately driven by the needs of core value chain actors (weak customer focus).**

**Strategic Objective 2.2.1:** To improve engagement of stakeholders beyond public institutions (including farmers organizations, development partners and private sector) in research and development in agroforestry.

**Strategies**

- Invest in participatory research including action research through collaborative projects that bring together specializations of institutions and context framing.
- Conduct social inclusion/exclusion research to address land tenure and benefit sharing issues at household level.
- Incorporate Indigenous Technical Knowledge (ITK) in research and development in order to add value to current practices by communities.
- Promote learning from farmer experiences in pilot projects and traditional uses of trees to refine technologies for upscaling, including in pastoralist communities.
- Apply ICT to emerging areas such as product development, marketing, policy briefs, technology to better address stakeholder/client needs.

**Strategic Objective 2.2.2: Inadequate information on emerging issues such as agroforestry and climate change.**

**Strategic Objective 2.2.3:** To conduct research on emerging/topical issues at the nexus of agroforestry and sustainable development.

**Strategies**

- Promote a paradigm shift towards agroforestry for poverty alleviation, health and income-generation (high-value trees/crops and income-generating production systems).
- Promote agroforestry for sustainable intensification of production of key staple foods with environmental resilience.
- Establish long term trials to study the evolving climate-tree nexus in the long-term including tree breeding, species-site matching, modelling optimum tree cover in context and germplasm monitoring.
- Invest in longitudinal studies to capture changing trends and value chain actor preferences in relation to agroforestry.
- Study emerging disease and pests with documentation, information sharing and investigation of sustainable solutions.
- Investigate new approaches for tree regeneration such as FMNR and seed balling for contextual fit such as in pastoralists regions.

**Strategic issue 2.2.4: Low investment in participatory learning, monitoring and evaluation weakens momentum for agroforestry innovation.**

**Strategic Objective 2.2.4:** To strengthen participatory learning, monitoring and evaluation.

#### **Strategies**

- Harmonize differences in Institutional perception of importance of agroforestry and related concepts such as tree cover and land restoration.
- Streamline relations in the NARS system so as to create synergies between actors in the national efforts to develop AF.
- Institutionalize research impact assessment through the development of appropriate indicators involving all partners/stakeholders in the regions where AF programmes have been rolled out.
- Revitalize and incentivize the Kenya National AF/NRM Steering Committee with the right mix of people across the stakeholder spectrum.

### **2.3. Extension, advisory services and communication**

**Strategic Issue 2.3.1: Weak capacity in extension and advisory services in agroforestry.**

**Strategic Objective 2.3.1:** To strengthen capacity of extension and advisory personnel in agroforestry.

#### **Strategies**

- Strengthen research-extension-farmer linkages for effective innovation and dissemination of technologies.
- Develop agroforestry extension training materials (including in local languages).
- Build capacity of agroforestry advisors including village-based advisors (incorporating capacity to address social exclusion risks and market access challenges).

- Mobilize adequate resources to improve extension and advisory services (including capacity to embrace other EAS approaches beyond technology and knowledge transfer such as IT platforms, and toll-free numbers).
- Create knowledge networks at grassroots level (including benchmarking) to increase awareness on the value of agroforestry.

**Strategic issue 2.3.2: Poor tapping of innovative communication technologies to advance sharing of agroforestry information.**

**Strategic Objective 2.3.2:** To improve packaging of agroforestry knowledge and diversify dissemination pathways.

- Promote effective packaging of agroforestry best practices innovation and information including use of non-conventional approaches.
- Develop appropriate digital platforms for example print, electronic (tv, radio, videos, mobile apps) and social media (including webinars), for accessing agroforestry related information and knowledge including in local languages.
- Enhance appropriate conventional platforms for accessing agroforestry related information and knowledge for example demonstrations, field days, agricultural shows.

### **3. AGROFORESTRY VALUE CHAINS DEVELOPED**

#### **3.1 Agroforestry Ecosystem Services**

**Strategic Issue 3.1.1: Limited appreciation of agroforestry ecosystem services.**

**Strategic Objective 3.1.1:** To enhance appreciation of multiple agroforestry services that include biodiversity conservation, species diversity, soil and water management.

##### **Strategies**

- Promote appreciation of ecosystem services from diverse agroforestry systems including those developed from preservation of forest remnant trees, natural regeneration of trees, farm forestry, woodland regeneration, home gardens and boundary planting.
- Promote application of PES and carbon credits as a new source of income for land management, restoration, conservation and sustainable use which will have significant potential for promoting sustainable ecosystem management.
- Enhance institutional capacities of all actors and the sharing of knowledge on payment schemes for tree-based environmental services at the national and county levels.
- Promote agroforestry for soil and water management in combination with practices such as soil restoration structures, no-till farming, cover crops, nutrient management, manuring and sludge application, improved grazing, efficient irrigation.

- Promote application of indigenous agroforestry knowledge and practices, innovation and technologies which corresponds to the diversity of indigenous peoples and their different contexts.
- Provide incentives to ecosystem-based conservation including promotion of landscape based recreational activities, ecotourism and cable games, and localized/area-based Agroforestry ecosystem services.
- Support strengthening of community institutions for successful community conservation areas.
- Establish robust mechanisms for valuation and monitoring of ecosystem services within sectoral planning including in agriculture and livestock management.
- Provide incentives for land reclamation and restoration processes

## **3.2 Non wood products**

**Strategic Issue 3.2.1: Declining livestock productivity due to low quality fodder and pasture.**

**Strategic Issue 3.2.2: Limited investment in the productivity and marketing of fruits, nuts, and honey.**

**Strategic issue 3.2.3: Limited investment in the productivity and marketing of herbal medicine, gums and resins.**

**Strategic Objective 3.2.4:** Promote investment in productivity, standardization and marketing of non-wood agroforestry products (livestock feed, fruits, nuts, gums and resins, herbal medicine and honey).

### **Strategies:**

- Carry out comprehensive value chain analyses to identify inherent weaknesses in the three sub-sectors.
- Diversify species and technologies to support the specific value chains.
- Enhance agroforestry practices specific to improving standards in fruits and nuts value chains including indigenous species.
- Promote domestication and on-farm cultivation of tree species for herbal medicine, gums and resins.
- Enhance the governance of herbal medicine, gums, and resins value chains especially at community and county level.
- Standardize the entire agroforestry product value chains from seedling production to product consumption, including with appropriate packaging and quality assurance.

- Improve fodder production, conservation and feeding management in agroforestry systems (consider technology, species, germplasm).
- Promote control and management of invasive species.
- Improve grazing management systems and rangeland development in the ASAL areas.
- Promote farmer/pastoralist managed natural regeneration of land and trees (F/PMNR) systems.
- Put mechanisms in place to disincentivize competitive imports.
- Strengthen farmer organizations through an inclusive market systems approach.

### **3.3 Timber and biomass fuels (charcoal and fuelwood) value chains**

**Strategic Issue 3.3.1: Unsustainable production and use of wood/biomass energy products from farms.**

**Strategic Objective 3.3.1:** Green the biomass energy value chain by improving product value and efficiency in production and use.

#### **Strategies**

- Promote uptake of improved technologies and practices for sustainable production (e.g. use of invasive tree species such as *Prosopis juliflora*, use of tree branches for charcoal) and efficient processing of biomass (e.g. charcoal, briquettes) energy products.
- Promote uptake of improved technologies and practices for efficient use of biomass energy products (e.g. use of improved cook stoves, promotion of alternative sources of energy such as coconut husks) aligned to the Biomass Strategy 2020.
- Promote standardization and improved valuation of biomass energy products (link to tree commercialization strategy).
- Promoting technologies and innovations for value-added processing of agroforestry products for local and external markets.
- Increase supply and valuation of wood for woodfuel through FMNR and allocation of gazetted areas and niches for tree planting for this purpose (e.g. fast growing species).
- Devise implementation mechanisms that promote cottage industry such as wood carving with fit-for-purpose species.

**Strategic Issue 3.3.2: Unsupportive and uncoordinated environment for wood and biomass value chains.**

**Strategic Objective 3.3.2:** Create an enabling regulatory environment and incentivize growers' and private sector investments in timber and wood biomass value chains.

#### **Strategies:**

- Promote measures aimed at improving growers' motivation to invest in timber and related value chains (e.g. improving access to information and advisory, quality inputs, financing models, demand driven research outputs (e.g. in tree breeding and suitability matching), growers' coordination/farmers organizations, and high value end products and markets).
- Promote private sector investments in timber and related value chains originating from agroforestry systems (e.g. in aggregation and processing infrastructure; embedding support services such as research, improved inputs, and information and advisory; partnerships with growers' organizations).
- Ensure the relevant (tree harvesting and marketing) regulatory frameworks are favorable to trees and products originating from agroforestry systems (farms).
- Devise implementation mechanisms that promote principles of inclusiveness and ease of access to regulatory services (e.g. including elements of self-regulation and co-regulation).
- Harmonize conflicting policies affecting the biomass energy segment.
- Improve access to timber and wood biomass markets by smallholder agroforestry producers.
- Promote good governance and policies for planning (decentralized), coordination and implementation of the value chains including addressing corruption, mapping stakeholders and partnerships.
- Enhance cultural, religious and legal regulations/restrictions on individual, producer and user behavior.

### **3.4 Seed and seedling production**

#### **Strategic Issue 3.4.1: Under-developed tree seeds and seedlings supply systems**

**Strategic Objective 3.4.1:** To support production of good quality seeds and seedlings for diverse tree species and ornamental plants.

#### **Strategies:**

- Register and capacity build the tree nursery operators for quality production of tree seedlings including ornamental plants.
- Control pollution caused by use of pesticides in nurseries.
- Provision of subsidies and incentives for quality production of tree germplasm of a high diversity of species including innovating around indigenous germplasm.
- Establish quality declared tree seed sources and mother blocks at community level.
- Organize seed and seedling producer associations for quality germplasm production at community level.

## **4. ENHANCED GENDER AND SOCIAL INCLUSION IN AGROFORESTRY**

**Strategic Issue 4.1.1: Gender, youth and vulnerable groups-based constraints in access to agroforestry information and advisory services.**

**Strategic Objective 4.1.1:** To enhance inclusion of women, youth and vulnerable groups in advisory services provision for better access to information, and advisory.

### **Strategies:**

- Undertake a needs assessment of youth, women and other vulnerable groups to identify the existing technological gaps.
- Promote linkages between indigenous sources of agroforestry knowledge and formal knowledge development networks (education and training, research, and AFEAS).
- Nurturing partnerships, networks and linkages with knowledge providers targeting women and youth (extension services, markets, technology providers).
- Develop IEC materials tailored to appeal to marginalized social groups- youth, women, less literate population.
- Create platforms (online and face to face) for peer learning and knowledge sharing for youth including involvement of youth celebrities in messaging.
- Use of ICTs in technology dissemination especially those that are targeting women, youth and vulnerable people in the communities.
- Develop framework to support local knowledge for inclusive agroforestry technology - Infusing gender in all efforts on knowledge brokerage.

**Strategic Issue 4.1.2: Gender and youth-based constraints in access and control over benefits of agroforestry-based value chains development and markets.**

**Strategic Objective 4.1.2:** To enhance equitable access to, and control over, benefits of agroforestry-value chains and market system by women, youth and marginalized or vulnerable groups.

### **Strategies**

- Promote gender and youth sensitivity in AF value chain development policies and programs.
- Profile and promote women and /or youth friendly agroforestry value chains e.g. fruits, fodder, honey, woodlots, ornamental plants.
- Develop guidelines on gender and youth sensitive AF value chain development including aspects of risk mitigation, insurance etc.



**Strategic Issue 4.1.3: Land and tree tenure (ownership, access and use rights) system not sufficiently supportive of women and youth investment.**

**Strategic Objective 4.1.3:** To promote policy, institutional, and social innovations that enhance access to secure land and tree tenure among youth and women.

**Strategies**

- Create awareness on existing (pro-women) land right laws and policies through capacity building of community influential persons and champions (peer to peer learning, role models, exchange programmes).
- Develop a framework for agroforestry information around tenure and user rights.
- Promote inclusion of women, youth and other vulnerable groups within the leadership of management committees through leadership empowerment programmes and awareness creation on the importance of inclusion of women in key leadership positions.
- Promote use of men champions to support gender and social inclusion in land related decisions and improve women-access to information including awareness creation on cultural change e.g. women owning land and transitional initiatives amongst elders/youth.
- Create an enabling environment (policies and regulations) to allow women, youth and marginalized groups to use land as collateral to access financial resources (for example waivers on tax and land rates).
- Promote implementation of existing pro-women land reforms/policies for inclusive sustainable land management.
- An affirmative action to enable women, youth among other vulnerable groups to participate in agroforestry policy making process and implementation.

**Strategic Issue 4.1.4. Gender and youth-based constraints in access to financial services.**

**Strategic Objective 4.1.4:** To enhance provision of financial knowledge and opportunities for women, youth and other vulnerable groups.

**Strategies**

- Create an agroforestry fund (revolving fund) for example pesa mfukoni for the value addition opportunities which can provide seeds and incentives for women, youth and other vulnerable groups to start and scale up agri-business.
- Proper and sustainable utilization of energy saving options to enable households realize more savings hence become more credit worthy.
- Facilitate agroforestry-based commercial engagements such as leasing idle land for agroforestry.
- Support women and youth to access commercial financing to sustain and expand their agri-businesses through government credit guarantee schemes.
- Advocate for the adoption of innovative low-cost agroforestry approaches.

- Promote inclusive sustainable value chains e.g. fruits, fodder, woodlots.

**Strategic issue 4.1.5. Knowledge and evidence gaps on social inclusion/exclusion questions.**

**Strategic objective 4.1.5.** To enhance research and learning on social inclusion/exclusion topics.

**Strategies**

- Incorporate social inclusion/exclusion topics in the research for development agenda for this AF strategy and its derivatives (e.g., integrated into objectives under pillar 2).
- Analyze structures of marginalization in agroforestry practices from a rights-based approach.
- Promote platforms for knowledge sharing and learning on social inclusion innovations.

## Chapter Four: Strategy Implementation, Monitoring, and Evaluation

### 4.1 Introduction

This strategy is premised on inter-ministerial and inter-agency collaboration to harness synergy from the various sectors whose aims are supported by agroforestry. Key roles are foreseen in the ministries, departments and agencies responsible for agriculture and forestry with linked interventions by other ministries such as energy, water, devolution and others. Being a devolved function, counties have agroforestry development as a key implementation agenda within agriculture and natural resources management frameworks. Agroforestry promotion in the country has hitherto been significantly supported by non-state actors who will play a key role in data sharing and capacity building while partnerships with the private sector and global financing mechanisms is critical for resource mobilization. The role of these actors as well as the necessary coordination is the thrust of this chapter.

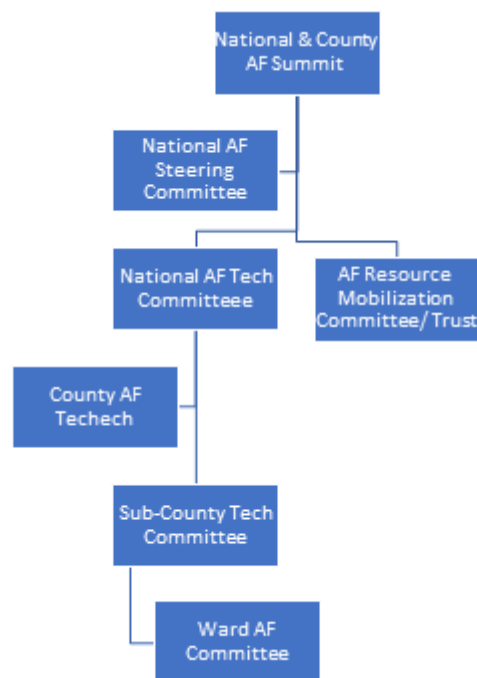
### 4.2 Coordination of the strategy implementation

The National Government through the ministry, departments and agencies in charge of the agriculture sector will coordinate the implementation of this strategy and development of the anchoring policy in partnership with the ministry in charge of forestry. To ensure coordination of all actors, the Principal Secretary at the ministry in charge of agriculture will chair a National Agroforestry Steering committee whose membership should not exceed 15 but involving very key institutions. Membership to the committee will ensure that the constitutional two-thirds gender principle is observed. The membership to the committee includes the ministries responsible for agriculture, environment and forestry, energy, education, public service (focus on gender), State Department for ASAL development and the Office of State Corporations at the Presidency. Other members include the Council of Governors, Agriculture Sector Donors Working Group, representatives of UN organizations (FAO, UNEP, Habitat) and representatives of Farmer Apex Organizations, Private sector, NGOs and County Caucuses on environment and agriculture. The Director at the ministry responsible for agroforestry will serve as secretary of the steering committee and will also chair a national technical working group that is composed of Assistant Director level representatives at various Ministries/State Departments.

The Ministry of Agriculture (or any other ministry that may be given explicit responsibility for agroforestry by an Executive Order) will establish a Secretariat to coordinate the implementation of this strategy supported by the agroforestry unit or focal person. The secretariat will coordinate the implementation of the strategy together with the institutions appointed to coordinate the various objectives in this strategy as per the implementation plan, including county representation. The secretariat will take responsibility for coordinating the monitoring and evaluation process for this strategy. It is however envisaged that the Ministry in charge of Agriculture will work very closely with the Ministry in charge of Forests

in implementing this strategy. This will enable harnessing of forestry extension capacity inherent in the environment ministry and the associated policy and infrastructural framework that is very key to the successful implementation of this strategy. The ministry in charge of the education sector will be very instrumental in supporting education related strategic actions such as curriculum development for agroforestry training and development of relevant training manuals. The Ministry of Lands will support implementation of strategic actions related to land tenure, security, leasing and related actions.

Each County will establish a technical coordinating team involving all pertinent departments reflecting the ministries involved at the national level depending on how departments are established at the county level. Coordinating teams will be established at Ward level and, where specific counties find feasible, at lower levels. The two-thirds gender principle will be observed with all coordinating teams so established.



### 4.3 Resource mobilization

Lack of a national Agroforestry coordinating unit has hampered resource allocation for promotion of the practice. The creation of the coordinating unit in 4.2 under the ministry of agriculture will create a domicile for allocation of resources for implementation from the national treasury.

Implementation of this strategy will cost a total of **Kshs 5.2** billion Shillings during the MTP IV period. Beside the national treasury there are many bilateral and multilateral opportunities for resourcing this strategy. (We propose that) The government will establish a land restoration fund to align with the UN Decade for Ecosystem 2021 - 2030 and decide which percentage to allocate to agroforestry given the key role tree-based approaches play in restoration. This will enable the government to effectively link with and tap into other

restoration envelopes such as FLR, UNEP, FAO, CBD, GCF and others. Development partners with land restoration as a key strategic focus will also be encouraged to work with the fund. The coordinating unit will also dialogue with other already existing funds that are linked to natural resources management such as NETFund, Fish Levy Trust Fund etc. to value the contribution of agroforestry to their aspirations in order to allocate some percentage of their revenue to agroforestry.

Huge opportunities exist within the Green Climate Fund that will be harnessed to resource agroforestry development along the actions pointed out in this Strategy. The GCF NDA has worked with various implementing partners and counties to have 7 proposals submitted to GCF global reflecting projects in 7 regional blocks across counties. Agroforestry is prominent among the actions flagged in the proposals and will be aligned with the actions agreed in this Strategy. NEMA, KCB and Acumen Fund are accredited entities in Kenya to which entities, including non-state actors and community organizations can apply for funds to implement agroforestry projects while KENGEN and Cantas, among others, have applied for accreditation and are awaiting approval.

Counties have different arrangements of the sectoral departments relevant to agroforestry and some have forestry and agroforestry policies which will guide their allocation of resources to implement this policy. Some major initiatives such as the Kenya Climate Smart Agriculture Project are also being implemented through counties which have agroforestry as a major focus and others which will be developed in future for which resources can be allocated.

Opportunities for private sector investments will be identified across agroforestry-based value chains including wood and non-wood products such as power transmission poles as well as PES, carbon credits and other ecosystem based incentive options.

#### **4.4 Monitoring, evaluation, impact and learning**

##### **Scope and aims**

Monitoring (the tracking of progress against indicators) and evaluation (assessing if progress is having the desired result in the short term) are critical to support agroforestry development through the implementation of this strategy and to ensure implementation is impactful, cost effective and coordinated.

The monitoring, evaluation, impact and learning strategy aims at achieving the following objectives:

- Encourage and build a culture of pursuing development impact among agroforestry stakeholders.
- Guide new and ongoing agroforestry programmes and projects to maximize effectiveness.
- Provide a framework to learn from experience.

- Provide evidence of the agroforestry contribution to the country development outcomes.

### **Monitoring strategy implementation**

The logical strategy framework will outline the mission, vision, overall objectives, outputs, activities and several indicators to guide strategy implementation and monitoring. Each component lead organization should establish trackable SMART indicators for both short- and long-term monitoring. These key performance indicators (KPIs) for each component will contribute to the overall M&E framework under the Ministry of Agriculture's proposed secretariat. The national secretariat shall articulate all aspects of the logic framework, including the mission, vision, objectives, outputs and activities, including the means of verification. To accompany the logic framework is the cost and time framework. The cost of implementing the strategy will thus inform the government on the resource mobilization strategy.

Organizations developing agroforestry projects at the county government level are encouraged to align project log frames to the national framework. Cascading indicators will enable all parties to monitor the performance of agroforestry in the country accurately.

Given that there are many actors, the framework must assign roles and responsibilities at national and county levels. For instance, the national secretariat is mainly to support policy, strategy, programming, coordination and resource mobilization.

In collaboration with county governments and partners, the national secretariat will develop a risk assessment framework and register to assist actors in mitigating challenges, which arise from various sectors linked to agroforestry development.

### **Evaluations and tracking**

Implementers will conduct evaluations to determine the exposure to practices and change in actions at the household or community level. Change in tree cover will also be tracked, using spatial tools combined with farm-level data.

Beyond monitoring the implementation of activities, organizations should track selected vital indicators. These indicators include the number of people (men/women/youth) reached through capacity building and germplasm distribution, the number and types of trees grown, and which agroforestry practices are implemented.

### **Impact assessment**

Impact assessment measures the intermediate and long-term changes. Such surveys to measure the impact of agroforestry practice will be done every five years. Impact assessment on agroforestry establishes the degree to which different ways (options, in a different context) impact land health (soil organic carbon, soil erosion), yields, income, food security, resilience, and skills for men, women and youth. Impact assessments should be arranged through the secretariat.

## **Reflection and learning events**

Every five years a reflection and learning event, including key stakeholders, should reflect on monitoring, evaluation and impact assessment results and be used to update the strategy implementation framework and log frame as needed.

## **Tools**

Several existing tools and approaches are employed to monitor many of the indicators and possible impacts of agroforestry adoption. These include crowd-sourcing data collection tools such as the Regreening Africa App, developed through the Regreening Africa project at World Agroforestry. Also, the M-Salm digital tools through Vi Agroforestry and tools from KALRO. These will be strengthened and used systematically with capacity building for local partners and the county level as the critical focus. Mapping tools and use of satellite imagery are undertaken by multiple partners including NRT, DRSRS, CETRAD, KFS, RCMRD and World Agroforestry. Collaboration amongst these partners would be valuable to support capacity building and strengthen the country's spatial monitoring capacities.

To streamline data collection, analysis and communication, an Agroforestry Dashboard will be developed. The dashboard will bring together diverse evidence sources and partners to share information on agroforestry, streamline data presentations, and enhance decision-making. Agroforestry development in Kenya will necessarily involve changes in the behaviors and actions of many stakeholders. Concerted efforts to shift behavior related to agroforestry development are included in the strategy and will be tracked using outcome mapping approach.

## **Roles and process**

The Secretariat appointed by the Ministry responsible for Agroforestry to implement this strategy will have overall responsibility for the monitoring and evaluation framework. Each of the coordinating institutions for each strategic objective will be responsible for monitoring the specific activities under the goal, ensuring devolution of monitoring where possible. The log frame will outline the exact roles of all the partners, including the private sector.

The Secretariat will guide the correct application of the M&E system and for collating this data and arranging for evaluations. The secretariat will ensure alignment with the National Integrated Monitoring and Evaluation Systems (NIMES) and will present an annual collation of M&E results to CPPMU. The unit responsible for agroforestry will carry out internal monitoring in collaboration with the CPPMU and report to the Ministry responsible for planning and broader dissemination to stakeholders. They will also ensure inclusion of monitoring figures to national targets and commitments through multilateral agreements (such as the CBD, NDCs and Bonn Challenge/AFR100 – within the Ministry responsible for Environment).

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