REPUBLIC OF KENYA

MINISTRY OF
ENVIRONMENT,
CLIMATE CHANGE
& FORESTRY


# KENYA NATIONAL BAMBOO DEVELOPMENT STRATEGY AND ACTION PLAN (2025-2035)

Bamboo ceiling, Madrid airport

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# FOREWORD

Bamboo resources in Kenya are a valuable natural endowment that must be sustainably managed for the present and future generations. Bamboo resources offer a range of benefits and opportunities for local and national economic development, improved livelihoods and provision of environmental goods and services such as watershed protection and carbon sequestration. Kenya's Bamboo sector has experienced poor performance in the past. Key barriers that have impeded the development of the Bamboo sub-sector include lack of strategic direction, inadequate supply of quality planting materials, high price of bamboo seedlings, lack of coordinated development and allocation of resources, inadequate research emanating from low funding, low level of technology adoption, weak marketing systems and limited information and decision making tools at both National and County Government levels.

Currently, The Government of Kenya has accorded high priority to bamboo sector. Bamboo sector development can be an important tool to achieve some of the objectives of the national development agenda, including the Bottom –up Economic Transformation Agenda (BETA), Vision 2030, Presidential directive on 30% tree cover by 2032, the Medium-Term Plan (MTP) IV, and other international obligations including Sustainable Development Goals (SDGs), Bonn Challenge among others. The Government has also gazetted bamboo a scheduled crop and developed a National Bamboo Policy to promote sustainable management and utilization of bamboo as a renewable resource.

This Bamboo Strategy and Action plan will spark new measures to enhance bamboo growing, sustainable management of bamboo resources...

This Bamboo Strategy And Action Plan will spark new measures to enhance bamboo growing, sustainable management of bamboo resources; encourage commercialization and value-chain development, creating an enabling environment for bamboo sector development in Kenya for the next ten years. In addition, bamboo with its intrinsic nature to contribute to watershed development (soil and water conservation) and carbon sequestration will enhance ecological benefits.

This Strategy and Action plan also provides a framework for improved governance, resource allocation, partnerships and collaboration with state and non-state actors enabling the sub-sector to contribute in meeting the country's growth and poverty alleviation goals within a sustainable environment. However, formulating the Bamboo Strategy and Action Plan on its own is insufficient to bring about the envisaged bamboo commercialization. There is a need for commitment from all citizens to ensure that the contents of this Strategy are implemented as per the action plan contained therein, and funds are allocated to implement the activities detailed in the plan. The National and County Governments have to play their part in providing an enabling environment, effective extension service, forestry research and allocation of funds to the sector. Meaningful participation of stakeholders will continue to be sought through regular consultation and discussions, as we strive together to attain the most efficient, sustainable and equitable use of our bamboo resources.

**Dr. Deborah Mlongo Barasa**
Cabinet Secretary, Ministry of Environment, Climate Change and Forestry

# PREFACE

Kenya National Bamboo Development Strategy and Action Plan 2025-2035 is a ten-year Plan to guide the development of the Bamboo Sector for Kenya. The Strategy and Action plan aims at making bamboo sector a key driver for sustainable local and national economic development, improved livelihoods and provision of environmental goods and services such as watershed protection and carbon sequestration.

The National Bamboo Strategy and Action Plan has been developed through a consultative process with contribution from key stakeholders in the Bamboo Sector. The Ministry of Environment, Climate Change and Forestry wishes to acknowledge the contribution by partners drawn from the National and County Governments, Academia, the private sector, groups and individuals for their commitment and content enrichment during development of this Strategy and Action Plan.

We recognize the expert guidance and contribution drawn from the Ministry of Environment, Climate Change and Forestry, Kenya Forestry Research Institute, Kenya Water Towers Agency, Kenya Forest Service and the International Bamboo and Rattan Organization. We also thank the Heads of Directorates, Divisions, Programmes and Development partners for their vital contribution and input to the finalization of this Strategy.

Lastly our appreciation and gratitude goes to the INBAR's Dutch-Sino-East Africa Bamboo Development Programme for financial support towards the development of this strategy.

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**Gitonga Mugambi, CBS**
Principal Secretary, State Department for Forestry
Ministry of Environment, Climate Change and Forestry

# ACKNOWLEDGEMENT

We extend our gratitude to all stakeholders who contributed to the development of the Kenya National Bamboo Strategy and Action Plan. This process brought together diverse actors from government ministries, departments and agencies, the private sector, research institutions, civil society organizations, community-based groups, and development partners. Their expertise, dedication, and collaborative spirit were instrumental in shaping a strategy that reflects Kenya's unique ecological, economic, and social realities while unlocking the immense potential of bamboo for sustainable development.

We are particularly grateful to the technical team drawn from the State Department for Forestry, Kenya Forestry Research Institute (KEFRI), Kenya Forest Service (KFS), and other relevant institutions who led the consultative and drafting processes. Their commitment to evidence-based planning and stakeholder engagement ensured that the Strategy is not only aligned with national development goals, such as Vision 2030 and the Bottom-Up Economic Transformation Agenda (BETA), but also with international frameworks including the Sustainable Development Goals (SDGs) and climate change commitments under the Paris Agreement.

Special appreciation goes to our development partners, notably the International Bamboo and Rattan Organisation (INBAR) and other supporting agencies, for their financial and technical support throughout the process. Their partnership has been invaluable in advancing bamboo as a climate-smart and inclusive value chain that can support livelihoods, restore degraded landscapes, and spur green industrialization. We look forward to continued collaboration in the implementation of this Strategy to realize the full potential of bamboo for Kenya's sustainable future.

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**Mr. George Tarus,**
Secretary, Forest Development
State Department for Forestry

# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| **AFC** | Agricultural Finance Corporation |
| **AG** | Attorney General Chambers |
| **APC** | African Plantation Capital |
| **ASALs** | Arid and Semi-Arid Lands |
| **BAK** | Bamboo Association of Kenya |
| **CAADP** | Comprehensive Africa Agriculture Development Programme |
| **CBD** | Convention on Biological Diversity |
| **CBOs** | Community Based Organizations |
| **CEC** | County Executive Committee |
| **CFA** | Community Forest Association |
| **CIC** | County Implementation Committees |
| **CIDPs** | County Integrated Development Plans |
| **CIMES** | County Integrated Monitoring and Evaluation System |
| **CoG** | Council of Governors |
| **COMTRADE** | Commodity Trade Statistics Database (of the United Nations) |
| **EC** | Ecosystem Conservator |
| **EMCA** | Environmental Management and Coordination Act |
| **ENSDA** | Ewaso Nyiro South Development Agency |
| **FLR** | Forest landscape restoration |
| **GBM** | Green Belt Movement |
| **GDP** | Gross Domestic Product |
| **GESIP** | Green Economy Strategy Implementation Plan |
| **GPE** | Green Pot Enterprises |
| **ICT** | Information and Communication Technology |
| **ICTA** | Information and Communication Technology Authority |
| **IDRC** | International Development Research Centre |
| **IFAD** | International Fund for Agricultural Development |
| **INBAR** | International Bamboo and Rattan Organization |
| **IPPC** | International Plant Protection Convention |
| **JICA** | Japan International Cooperation Agency |
| **KALRO** | Kenya Agricultural and Livestock Research Organization |
| **KEBS** | Kenya Bureau of Standards |
| **KEFRI** | Kenya Forestry Research Institute |
| **KEPHIS** | Kenya Plant Health Inspectorate Service |
| **KEPROBA** | Kenya Export Promotion & Brand Agency |
| **KEPSA** | Kenya Private Sector Alliance |
| **KES** | Kenya Shilling |
| **KFS** | Kenya Forest Service |
| **KIBT** | Kenya Institute of Business Training |
| **KICD** | Kenya Institute of Curriculum Development |
| **KIE** | Kenya Industrial Estates |
| **KIPI** | Kenya Industrial Property Institute |
| **KWS** | Kenya Wildlife Service |
| **KWTA** | Kenya Water Towers Agency |

| | |
|---|---|
| **MDA** | Ministry, Department or Agency |
| **M&E** | Monitoring and Evaluation |
| **MENR** | Ministry of Environment and Natural Resources |
| **MEWNR** | Ministry of Environment, Water and Natural Resources |
| **MoA&LD** | Ministry of Agriculture and Livestock Development |
| **MoEP** | Ministry of Energy and Petroleum |
| **MoECC&F** | Ministry of Environment, Climate Change and Forestry |
| **MoE** | Ministry of Education |
| **MoF&DA** | Ministry of Foreign and Diaspora Affairs |
| **MoH** | Ministry of Health |
| **MoIC&TDE** | Ministry of Information, Communications and The Digital Economy |
| **MoI&CNG** | Ministry of Interior and Coordination of National Government |
| **MoIT&I** | Ministry of Investments, Trade and Industry |
| **MoPSP&DM** | Ministry of Public Service, Performance and Delivery Management |
| **MoRT** | Ministry of Roads and Transport |
| **MoTW** | Ministry of Tourism and Wildlife |
| **MSEA** | Micro and Small Enterprises Authority |
| **MSME** | Micro, Small and Medium Enterprises |
| **MTP** | Medium Term Plan |
| **NCA** | National Construction Authority |
| **NEMA** | National Environmental Management Authority |
| **NETFUND** | National Environment Trust Fund |
| **NFP** | National Forest Programme |
| **NGOs** | Non-Governmental Organizations |
| **NIMES** | National Integrated Monitoring and Evaluation System |
| **NRF** | National Research Fund |
| **NTIC** | National Technical Implementation Committee |
| **NTP** | National Treasury and Planning |
| **P&T** | Primary processing and Training facility |
| **PLC** | Public Limited Company |
| **PPPP** | People-Private-Public Partnership |
| **RDs/ARDs** | Regional Directors/Assistant Regional Directors |
| **SAGAs** | Semi-Autonomous Government Agencies |
| **SCIC** | Sub County Implementation Committee |
| **SDGs** | Sustainable Development Goals |
| **SMEs** | Small and Medium Enterprises |
| **SWOT** | Strengths Weaknesses Opportunities Threats |
| **TC** | Technical Committee |
| **TOT** | Training of Trainers |
| **TVET** | Technical and Vocational Education and Training |
| **UN** | United Nations |
| **UAE** | United Arab Emirates |
| **UNIDO** | United Nations Industrial Development Organization |
| **VIRED** | Victoria Institute of Research in Environment and Development |
| **WG** | Working Group |
| **WIC** | Ward Implementation Committee |
| **WRUAs** | Water Resources Users Associations |

# EXECUTIVE SUMMARY

The purpose for this Strategy and Action Plan is to spur bamboo development in the country. This will enhance commercialization of the bamboo sector in the country for sustainable development, environmental conservation and creation of wealth for the people.

While the national government provides policy and coordination of the policy, implementation will take place at the County level spearheaded by stakeholders comprising governmental and non-governmental players in the bamboo sector. The strategy notes the slow pace at which bamboo sector has grown despite concerted effort led by KEFRI with support from The International Development Research Centre (IDRC), The United Nations Industrial Development Organization (UNIDO) and International Bamboo and Rattan Organisation (INBAR) over the last thirty years. As one would have said, it is time that bamboo leaves the research and government corridors to the farms.

The Strategy provides an insight into bamboo sector development, the history, current status and aspirations of the sector. The strategy will be implemented over a period of ten years with funding from both internal and external sources including individuals and groups. The budget is detailed and contains activities and proposals on funding sources. As with all strategies, the document provides a pathway along which bamboo development is to take place. Of importance is the value chain approach which is the main development method contained in the strategy. Sustainably managed bamboo resources will contribute to poverty alleviation, employment creation, economic development and forest protection. It is anticipated that the implementation of the Strategy will not only result in the expected outputs and address the strategy objectives, but will impact the lives of all stakeholders, particularly, farmers in the bamboo sector. The success of the strategy will hence be measured by the extent it supports livelihoods at the household level, its positive impact on the environment, particularly, on the rehabilitation of degraded sites and its economic impact on the local and national economies.

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# 1.0 INTRODUCTION

## 1.1 Background

The dominant species of bamboo in Kenya is *Oldeania alpina* formerly known as *Arundinaria alpina* or *Yushania alpina*. The species is indigenous in Kenya and is commonly known as highland bamboo. It is mainly found in the Kenya's five water towers at an elevation of 2200 to 3400 m above sea level. In the past, bamboo poles were harvested to meet various uses, including subsistence and cottage industry. By the year 2000, an estimated 25 million bamboo poles were being harvested annually from gazetted forests, mainly for fencing, scaffolding, and construction of houses especially in rural areas. Bamboo splits were used for making baskets, for farm and household uses such as those used in harvesting tea leaves. Juvenile bamboo shoots are also used as food. The current uses of the indigenous bamboo within government forests and in trustlands are; catchment rehabilitation, regulation of water-flow, and soil erosion control and carbon sequestration. In Kenya, bamboo is being cultivated on private land where the cultivation is mainly focused on growing bamboo for the cottage industry.

Since 1986, Kenya Forestry Research Institute (KEFRI) in collaboration with various partners including, International Development Research Centre (IDRC), United Nations Industrial Development Organization (UNIDO) and International Bamboo and Rattan Organisation (INBAR) have introduced about 40 exotic bamboo species. The introduced species are more versatile and can be widely cultivated in different ecological zones. The species are being validated for their growth, yield and performance in various ecological regions of the country and 12 have shown good performance.

The Government of Kenya has accorded high priority to development of bamboo sector by classifying and designating bamboo as a scheduled crop. The aim of the classification is to foster commercialization of bamboo and promote it as part of Kenya's green campaign of increasing tree cover and creating employment. Bamboo has the potential to contribute to achieving Kenya Vision 2030 and the Bottom- Up Economic Transformation (BETA) Agenda. Bamboo can directly contribute to "economic and social pillars" and flagship programs of the Vision 2030 with a focus on: Micro-, Small and Medium Enterprises (MSMEs) development; promoting manufacturing; rehabilitation of degraded land and landscapes; ensuring equity and eradicating poverty; and, supporting provision of affordable ecologically friendly housing. Bamboo also can contribute to the green economy. This will improve the livelihoods and incomes of Kenyans who depend on agriculture and forestry.

Despite the huge potential of bamboo in playing a significant role in driving the economy and in environmental conservation, there are challenges facing development of bamboo sector in Kenya. There is need therefore to have a coordinated approach to address these challenges to support the bamboo value chain.

## 1.2 Bamboo industry and trade

### *1.2.1 Global bamboo industry and trade*

Globally, 1.5 billion people depend on bamboo for their livelihoods. Bamboo has over 10,000 documented uses. The global bamboo market in 2022 was valued at over USD 72 billion (Research and Markets, 2022). Bamboo commodities are one of the important globally traded commodities. The international trade value of bamboo products in 2018 was USD 2.9 billion (INBAR, 2021a). China is the world leader in

**1.5B**

people depend on bamboo for their livelihoods globally

**$72B**

The global bamboo market valued in 2022

**$2.9B**

The international trade value of bamboo products in 2018

bamboo commodity production, consumption and export. The European Union, United States of America and Japan are the major importers of Chinese bamboo products, which in 2019 accounted for almost 60% of China's total bamboo export market (INBAR, 2021b).

There are 12 globally traded bamboo commodities which include: (a) preserved bamboo shoots (20.4 %), (b) bamboo flooring (19.4%), (c) bamboo basketry works (14.2%) and (d) bamboo and rattan furniture (10.3%) (Gauli *et al.* 2018). Emerging and growing bamboo markets are wood substitutes such as plywood, reconstituted boards, textile, charcoal and non-traditional furniture (Gauli *et al.* 2018; Research and Markets, 2021).

#### *1.2.2 Regional bamboo industry and trade*

Africa accounts for about USD 21 million (1.61%) of imports and USD 18 million (1.21%) of the global exports of bamboo. The Common Market for Eastern and Southern Africa (COMESA) block imports bamboo products worth USD 9.26 million and exports products worth USD 2.12 million annually.

**$21M**

Africa accounts for about (1.61%) of imports

## 1.3 Relevant policies, legal and institutional framework

Kenya is a signatory to nearly fifty international legal instruments or guidelines dealing with aspects of introduction, management and utilization of bamboo. Some of the key international legal instruments include; The Convention on Biological Diversity (CBD), the Ramsar Convention on Wetlands, and the International Plant Protection Convention (IPPC).

Planting of bamboo contributes to the aspirations of the Constitution of Kenya, 2010 and Kenya's Vision 2030, which promote sound environmental conservation, and increasing national tree cover to 30% by 2032.

The Kenya National Forest Programme (2016 to 2030) and Forest Conservation and Management Act, 2016 support management and utilization of bamboo. Other sectoral laws and policies that address or relate to bamboo development include: The National Bamboo Policy, 2022; The Energy Act, 2019; The Environmental Management and Coordination Act, (EMCA) 2022; The Water Act, 2016; County Government Act, 2012; and The Agriculture, Fisheries and Food Authority Act, 2013.

In spite of the various policy and legal frameworks, the lack of an institutional and organizational framework for bamboo development is a major impediment to the development of the sector.

**12**

globally traded bamboo commodities

Bamboo shoots

**19.4%**

Bamboo flooring

**14.2%**

Bamboo basketry works

**10.3%**

Bamboo and rattan furniture

## 1.4 Need for a bamboo strategy

The need for a bamboo strategy stems from the growing consumer-driven demand for bamboo products, the urgent need to address emerging climate change challenges, and the potential for creating green jobs across the value chain. The strategy will guide community and private sector engagement in bamboo value chain in line with Kenya's Vision 2030, Medium Term Plan four (MTP IV), the National Forest Programme (2016–2030), and the Agricultural Sector Transformation and Growth Strategy (2019–2029). It will also support the implementation of the Bamboo National Policy (2022), aimed at building a vibrant bamboo industry through sustainable management and value addition.

## 1.5 Guiding principles

The following guiding principles underpin this strategy and action plan:

a) **Sustainability:** The Strategy promotes sustainable production and consumption of bamboo which includes management and efficient use of the resource. This will contribute to resilient green economy, reduce pressure on forests and enhance ecosystem services

b) **People-Private-Public Partnership (PPPP):** Bamboo development will be centred on collaboration and partnership between people, the private and public sector to enhance bamboo development for the benefit of the people and environment. The Strategy will support small scale farmers in participating in bamboo value chain for livelihoods improvement

c) **Market centred:** The Government of Kenya will promote bamboo development through market competiveness of bamboo products.

d) **International best practices:** The Strategy encourages community participation, responsible harvesting, value addition, and alignment with global standards to ensure bamboo contributes to climate resilience, biodiversity conservation, and green economic growth.

# 2.0 STATUS OF BAMBOO RESOURCE DEVELOPMENT IN KENYA

## 2.1 Bamboo resource base in Kenya

Indigenous bamboo forest covers 133,273 ha of land area in Kenya mainly in the Aberdare Ranges, Mt. Kenya, Mt Elgon, Mau Forests Complex, and Cherangany Hills. The largest bamboo forest cover is in the Aberdare Ranges (50,038 ha), followed by Mount Kenya (25,966 ha) (INBAR, 2018b).

Exotic bamboo is spread out in different agro-ecological zones of Kenya. They are found in forests and farmlands. Of the 40 bamboo species introduced from Asia, the following species are suitable for different agro-ecological zones: ***Bambusa brandisii, B. vulgaris var. striata, B. bambos, B. tulda, Dendrocalamus membranaceus, D. strictus, D. asper, D. giganteus***, ***Oxytenanthera abyssinica,*** and ***Thyrsostachys siamensis.*** Farmers, communities and the private sector have so far grown 4,000 hectares of exotic bamboo spread across different counties consisting mainly of ***B. vulgaris, D. asper*** and ***D. giganteus***. A bamboo species site suitability assessment was carried out in 2020 and an atlas prepared based on the information below **Table 1** (Otuoma et al., 2021).

**Table 1:** A summary of bamboo species–site suitability in Kenya

| Bamboo species | Zone of optimal performance | Zone of marginal performance |
|---|---|---|
| *Oldeania alpina* | Mountain ranges (LH0) at an elevation range of 2,300–3,200 m a.s.l.<br>- Used for conservation and commercial utilization | Upper midland zones (UM1–2) and lower highland zones (LH1–3) at an elevation range of 1,900–2,200 m a.s.l.<br>- Ornamental and conservation use |
| *Thyrsostachys siamensis* | Coastal lowlands (CL2–4) at an elevation range of 1–200 m a.s.l. | Low-lying midland zone (LM2)<br>Elevation range of 1,000–1,500 |
| *Phyllostachys aurea* | Versatile in most lower midland zones (LM1–2), upper midland zones (UM1–3), and lower highland zones (LH1–3). An elevation range of 1,000–2,100 m a.s.l.<br>- Mostly useful for live hedges, furniture making, and construction | |
| *Oxytenanthera abyssinica* | Humid lower midland zones (LM1–2), upper midland zones (UM1–2), and a lower highland zone (LH3)<br>Elevation range of 1,000–2,100 m a.s.l. | Humid coastal lowlands (CL2–4)<br>Elevation range of 1– 100 m a.s.l. |

| Bamboo species | Zone of optimal performance | Zone of marginal performance |
|---|---|---|
| *Dendrocalamus strictus* | Sub-humid low-lying lower midland zones (LM3–5), including coastal lowlands (CL2–4)<br>Elevation range of 1–1,000 m a.s.l. | Lower midland zones (LM1–2)<br>Elevation range of 1,000–1,500 m a.s.l. |
| *Dendrocalamus membranaceus* | Humid low-elevation zones (CL2–4, LM1–2) and low-lying upper midland zone (UM2)<br>Elevation range of 1–1,800 m a.s.l. | Lower highland zone (LH3)<br>Elevation range of 1,900–2,100 m a.s.l. |
| *Dendrocalamus hamiltonii* | Coastal lowland (CL2–4), lower midland (LM1–2), and upper midland (UM2) zones with reliable rainfall<br>Elevation range of 1–1,800 m a.s.l. | Lower highland zone (LH3)<br>Elevation range of 1,900–2,100 m a.s.l. |
| *Dendrocalamus giganteus* | Lower midland (LM1–2) and upper midland (UM1–2) zones with reliable rainfall<br>Elevation range 1,200–2,100 m a.s.l. | Lower highland zone (LH3)<br>Elevation range of 1,900–2,100 m a.s.l. |
| *Dendrocalamus brandisii* | Low-lying humid midland zones (LM1–2 and UM1–2)<br>Elevation range of 1,200–1,800 m a.s.l. | Lower highland zone (LH3)<br>Elevation range of 1,900–2,100 m a.s.l |
| *Dendrocalamus asper* | Humid coastal lowland (CL2) and humid lower midlands (LM1–2)<br>Elevation range of 1–1,500 m a.s.l | Lower highland zone (LH3)<br>Elevation range of 1,900–2,100 m a.s.l |
| *Bambusa vulgaris* var. *vulgaris* | Coastal lowland (CL2–4), humid lower midland (LM1–2), and low-lying UM1 zones<br>Elevation range 1–1,650 m a.s.l | Upper midland (UM2) and lower highland (LH1–3) zones Elevation range of 1,700–2,100 m a.s.l |
| *Bambusa vulgaris* var. *vittata* | Agro-ecological zones (CL2–4, LM1–5, and UM2). Performance depends on silvicultural management and soil moisture content.<br>Elevation range of 1–1,800 m a.s.l | Higher upper midland zone (UM1) and lower highland zones LH1–3<br>Elevation range 1,900–2,100 m a.s.l and above |
| *Bambusa tulda* | LM1–2 and UM1–2 zones<br>Elevation range of 1,200–1,700 m a.s.l. | LH3 zone<br>Elevation range of 1,900–2,100 m a.s.l. |
| *Bambusa multiplex* | LM1–2 and lower-elevation UM1–2<br>Elevation range of 1,200–1,700 m a.s.l. | LH1–3 zones<br>Elevation range of 1,900–2,100 m a.s.l. |
| *Bambusa blumeana* | CL2–4, LM1–2, and low-lying UM1–2 zones<br>Elevation range of 1–1,600 m a.s.l. | LH3 zone<br>Elevation range of 1,900–2,100 m a.s.l. |

## 2.2 Bamboo development initiatives in Kenya

A number of development initiatives have been undertaken by INBAR in partnership with KEFRI, Maseno University and South Eastern Kenya University (SEKU). The initiatives include the following projects;

- Bamboo Production as an Alternative Crop and Livelihood Strategy for Tobacco Smallholder Farmers in South Nyanza, Kenya
- Eastern Africa Bamboo Project
- Development and promotion of Bamboo housing in East Africa
- Dutch-Sino East Africa Bamboo Development Programme

A number of farmers (mainly from South Nyanza) have mature bamboo. Two private players; Green Pot Enterprises (GPE) and African Plantation Capital (APC) are involved in establishment of large-scale bamboo plantation in farmlands. Eco Green Kenya a Community Based Organisation has also been instrumental in enhancing bamboo growing in western Kenya. In addition, a number of private nursery operators namely; Kitil Farm, Nyabera PLC, and Tiriki Gardens, have large scale nurseries producing and selling bamboo seedlings. Other notable large scale nurseries are with institutions such as Ewaso Nyiro South Development Agency (ENSDA), Kenya Forestry Research Institute (KEFRI), Kenya Forest Service (KFS) and Eco Green Kenya a Community Based Organisation.

## 2.3 Contribution of bamboo to international and national agenda

### *2.3.1 International agenda*

In meeting the United Nations Sustainable Development Goals (SDGs), bamboo investments will directly translate to creating green jobs along the value chain, bamboo enterprises address **SDG 1 (No Poverty)** and **SDG 8 (Decent Work and Economic Growth)**. Offering renewable energy solutions such as charcoal briquettes and bioenergy promotes **SDG 7 (Affordable and Clean Energy)**, while providing a sustainable source of raw material for timber alternatives supports **SDG 9 (Industry, Innovation, and Infrastructure)** and **SDG 12 (Responsible Consumption and Production)** through value addition and green construction. Its fast growth and high carbon sequestration capacity directly advance **SDG 13 (Climate Action)** by mitigating greenhouse gas emissions and enhancing resilience to climate change. Bamboo's role in land restoration and soil conservation contributes to **SDG 15 (Life on Land)** by combating desertification, halting land degradation, and supporting biodiversity.

### *2.3.2 National agenda*

Constitution of Kenya, Article 69 Vision 2030, Social Pillar including education, health, water and sanitation in a clean environment

Bamboo contributes to the Bottom- Up Economic Transformation Agenda and employment through industrialization (cottage industry), universal health (medicinal uses, water cleaning and purification), food security (human and animal feed), and affordable housing (green buildings, furniture, and fencing).

The National Landscape and Ecosystem Restoration Strategy (2023-2032) targets 150,000 hectares of bamboo across various landscapes in the country which is expected to create over 750,000 green jobs in the first two years of planting and more jobs in the harvesting and processing value chains.

## 2.3 Contribution of bamboo to environmental conservation and climate change mitigation

Bamboo provides significant contribution in mitigation of climate change due to its fast growth. It is estimated that carbon storage and sequestration rates for bamboo range from 30 – 121 Mg per hectare and 6 – 13 Mg per hectare per year respectively. Bamboo produces 35% more oxygen and absorbs 40 % more carbon dioxide compared to trees.

Bamboo can also be used to restore degraded lands and riparian areas including: reducing siltation of lakes, dams and rivers; river bank stabilization; flood control; soil and water conservation; hydrological cycle regulation; and reducing air pollution.

## 2.4 Existing and potential bamboo value chains

Bamboo value chains are not well developed in Kenya. However, the production and use of bamboo is gaining momentum thus the need to develop a complete value chain for various bamboo products. The most imported bamboo products in Kenya include bamboo plywood and flooring both of which are not produced in the country.

Value-addition of bamboo has been undertaken through the Ministry of Environment, Climate Change and Forestry and Non-Government Organizations (NGOs). Production of various information products such as guideline and manual on growing and use of bamboo has been done to support the value chains. Bamboo value chains are also supported through availing of bamboo processing equipment and training bamboo artisans at KEFRI National Forest Products Research Programme in Karura. A number of private entrepreneurs have established workshops for making various products using bamboo culms, these are found in Nairobi, Eldoret and Busia. A few NGOs namely Victoria Institute of Research in Environment and Development (VIRED) based in Kisumu and Green Belt Movement (GBM) are promoting bamboo in their project target locations, mainly aimed for land rehabilitation.

## 2.5 Bamboo market

Bamboo import and export account for 0.06% and 0.02% respectively of the global trade. Kenya is a negligible player in the global bamboo trade. During 2009-2013, Kenya imported bamboo and rattan products worth USD 0.8 million and exported bamboo products valued at USD 0.27 million. The major bamboo products imported were; flooring tiles, plywood and furniture. Other minor bamboo products traded include charcoal and wood biomass. Despite this low rate of trade in bamboo, there is a great potential for improving the export trade while at the same time reducing imports of bamboo products. This will enable the country to improve on balance of trade with other countries which are currently exporting bamboo products into Kenya.

## 2.6 Opportunities for bamboo development in Kenya

### *2.6.1 Bamboo as a timber substitute*

Kenya is a wood deficit country whose shortfall is filled through imports from neighbouring countries of Uganda, Tanzania, Malawi and the Democratic Republic of Congo (DRC). This deficit can be reduced using timber reconstituted from bamboo.

### *2.6.2 Bamboo pulp and paper*

Kenya in 2019 and 2020 imported wood pulp and other fibrous cellulosic material valued at a combined total of USD 27,831,448. This includes recovered paper and paperboard. Bamboo is an important source of fibre for pulping and papermaking. Bamboo being fast growing can be an alternative source of fibre for the pulp and paper industry. Bamboo fibres are comparable to hardwood fibres in several fibre characteristics. Therefore, pulp mills can establish their own bamboo plantations for stable supply of bamboo chips and contract local farmers as bamboo out growers.

### *2.6.3 Bamboo furniture*

The rapid growth of Kenya's population and rapid urbanization has led to an increased demand for home and office space. This has resulted to acquisition of new household items including furniture. The demand for furniture has been growing by approximately 10% every year and is estimated to account for USD 496 million (Creapo Oy, 2015). Currently, a large share of the furniture imported into the country is from **China**, Turkey, United Arab Emirates (UAE), and India. Bamboo can be used to make furniture using either whole culms or laminated bamboo timber.

### *2.6.4 Bamboo in construction*

The construction industry in Kenya has been on the upward trend over the past decade. The country faces a housing deficit of over 2 million units (World Bank, 2017) and is exacerbated by an urbanization rate of 4.4%, equivalent to 0.5 million new town dwellers every year. In 2022, the Government launched its economic blueprint dubbed "Bottom-Up Economic Transformation Agenda (BETA)" whose focus is

Agriculture, MSMEs, affordable housing, health and Digital & creative economy. According to the construction industry outlook for 2020, GDP contribution by the construction sector grew by 11.5% from KES 496 billion to KES 542 billion in 2019 (NCA, 2020). However, the construction industry has an oversized carbon footprint and contributes over a third of the greenhouse gas emissions in the country. The annual steel consumption has also grown steadily in the last 5 years; from 1,870,946 tonnes in 2015 to 2,433,623 tonnes in 2019. The use of steel has increased due to the shortage of wood resources.

Kenya's Green Economy Strategy Implementation Plan (GESIP 2016-2030) aims for "A low carbon, resource-efficient, equitable and inclusive socio-economic transformation". The plan mandates the National Construction Authority (NCA) to promote sustainable design and construction of buildings and infrastructure. Bamboo has key role to play in the construction industry as it can provide materials for scaffolding, making of trusses and partitioning. Bamboo compared to steel is three times cheaper and has greater tensile strength. Studies have shown that a sizeable amount of steel can be replaced by bamboos in building of structures.

### *2.6.5 Bamboo energy*

Charcoal is a major source of cooking fuel in Kenya. About 82% of the urban households and 34% of the rural households depend on charcoal. Charcoal imports into the country have increased over the past two years, more so since the implementation of the forest harvesting moratorium in early 2018. A charcoal assembling point has been established in Busia (a border town with Uganda) where bags of charcoal from Uganda are stored and loaded onto trucks destined for other Kenyan towns. In 2019 the country imported 1,233,475 bags of charcoal through the Busia border point valued at over KES 1.4 billion. The cost of charcoal at the border point range from KES 700-1,600 with a mean price of KES 1,150 depending on the quality and are sold at over KES 2,500 in Nairobi. Bamboo with its rapid growth rate and regeneration characteristics make it a candidate source of energy for domestic and industrial use.

### *2.6.6 Bamboo crafts and basketry*

In Kenya, the handicraft industry falls under the Small and Medium Enterprises (SMEs). They provide a source of employment, income generation and poverty reduction. The handicraft production can be cultural, traditional and is predominantly a cottage industry. These handicrafts consist of textile and non-textile items. The non-textile items comprise of wooden and soap stone carvings, and basketry made from various fibres including sisal and tree barks. Bamboo has great potential in this industry for products that can be used locally and for export.

### *2.6.7 Bamboo plywood*

According to COMTRADE database, Kenya in 2019 imported sheets for veneering of plywood or similar lamination purposes amounting to over 1.4 million kg valued at USD 936,062. Bamboo has the potential to supply sheets for veneering and reduce the importation of the same products.

### *2.6.8 Bamboo flooring*

Various flooring material are in use in Kenya. These include flooring tiles made from hardwood species, engineered hardwood, laminate flooring, vinyl and linoleum, stone tiles, ceramic or porcelain tiles and concrete tiles. All these differ in costs where on average they range from KES 700- 4500 per $m^2$.

Bamboo flooring has become a popular alternative to wood flooring in recent years in Kenya. However, these materials are imported from China and cost KES 4,500 per $m^2$. The potential to produce locally manufactured bamboo tiles would make them more competitive than the ones imported from China.

#### *2.6.9 Bamboo shoots.*

Bamboo shoots offer Kenya a promising opportunity by providing nutritious food and high market demand, especially in Asia. With favourable growing conditions, Kenya can cultivate and process shoots into fresh, canned, or pickled products for local use and export, creating rural livelihoods, boosting food security, and tapping into premium international markets.

#### *2.6.10 Textile Industry value chains*

The bamboo textile industry offers Kenya a promising value chain opportunity, driven by rising global demand for sustainable fabrics. Bamboo fibers can be processed into soft, durable, and eco-friendly textiles used in clothing, home furnishings, and industrial materials. By investing in processing technology and linking growers with manufacturers, Kenya can create jobs, support rural incomes, and position itself as a regional hub for green textile production, while contributing to sustainable industrial growth.

## 2.7 Challenges in bamboo development

The constraints and challenges to development of bamboo sector include:

- Low prioritization of the sector in the past, leading to low levels of public participation and investments including inadequate budgetary allocation
- Limited support services such as marketing
- Insecurity of land tenure, land use conflicts and uneconomic land fragmentation
- Current restriction on harvesting of bamboo from state forests
- Poor market structure for bamboo products and seedlings
- Inadequate capacity in raising bamboo and processing of products
- Unavailability of appropriate credit and financial services
- Limited incentives to support bamboo value chain
- Limited existing bamboo resource base to attract investments in large scale bamboo processing infrastructure
- Poor quality planting material due to limited access to certified, high-quality bamboo seedlings.

Bamboo bridge, in Solo, Indonesia

# 3.0 STRATEGIC INTERVENTIONS

## 3.1 Strategic Goal

The overall goal of the bamboo strategy is to ensure coordinated development of the bamboo sector through; provision of high quality germplasm, propelling green economic development and production of high-value products targeting domestic, regional and international markets.

## 3.2 Strategic Objectives

**Table 2**: Strategic objectives and actions

| S/No. | Strategic Objective | Activities |
|---|---|---|
| ***3.2.1.*** | ***Promote and upscale bamboo production in public, communal and private lands*** | 1. Develop bamboo planting materials production protocols<br>2. Strengthen bamboo seedling production facilities (tree nurseries infrastructure, tissue culture facilities & greenhouses)<br>3. Establish a standard and certification procedure for planting materials<br>4. Train trainers and dissemination of techniques and technologies in bamboo propagation<br>5. Procure bamboo seed for mass propagation<br>6. Identify and map bamboo nurseries<br>7. Produce 225 million bamboo planting materials in ten years<br>8. Delineate and map bamboo growing zones in the country<br>9. Link different bamboo species to different agro-ecological zones (site-species matching)<br>10. Establish bamboo research and demonstration plots (forest, riparian and farmland)<br>11. Promote bamboo growing in gazetted forests (75,000 ha); riparian areas and farmlands (75,000 ha) in ten years<br>12. Develop and disseminate bamboo growing, maintenance and management guidelines<br>13. Geo-reference and map planted bamboo in public, private, farmlands and other ecologically sensitive areas<br>14. Develop a regulatory mechanism for inclusive exploitation of bamboo in gazetted forests<br>15. Develop bamboo management plans to guide activities in gazetted forests<br>16. Develop bamboo harvesting protocols and guidelines in public and private land |

| S/No. | Strategic Objective | Activities |
|---|---|---|
| *3.2.2.* | ***Enhance bamboo value addition and link products to the market*** | 1. Promote bamboo value addition for different products<br>2. Develop one (1) national bamboo centre of excellence and (20) county bamboo technology incubation centres<br>3. Develop framework to support Micro, Small and Medium Enterprises (MSME) value chains.<br>4. Support access to affordable finance and credit facilities for entrepreneurs, industries and investors<br>5. Establish / allocate suitable infrastructure in Industrial Parks / Export Promotion Zones<br>6. Legislate to include bamboo products in preferential procurement list of government departments<br>7. Promote bamboo in construction sector<br>8. Develop county and national bamboo hubs or market centres<br>9. Develop bamboo export compensation schemes<br>10. Develop bamboo carbon credit schemes for growers |
| *3.2.3.* | ***Promote bamboo research and development*** | 1. Carry out research on propagation methods using seeds and tissue culture<br>2. Undertake research on bamboo plantation management<br>3. Establish species-site matching trials<br>4. Introduce and screen additional potential bamboo species<br>5. Undertake research on pests and diseases<br>6. Carry out research and innovation of identified value-chains<br>7. Undertake research in bamboo products development, markets and marketing<br>8. Facilitate South-South and North-South partnership for technology transfer and research<br>9. Disseminate information through different fora and establishment of bamboo demonstration sites |
| *3.2.4.* | ***Capacity building and awareness creation in promotion and management of bamboo*** | 1. Sensitize policy makers, managers and land owners on bamboo development<br>2. Build capacity for all value chain players<br>3. Incorporate bamboo development in curricula for schools, Technical and Vocational Education and Training (TVET), colleges and universities<br>4. Train extension staff on bamboo value chains<br>5. Avail research grants for apprenticeship for artisans and training at graduate and post graduate levels<br>6. Develop dissemination materials<br>7. Establish knowledge exchange platforms for information sharing |
| **3.2.5.** | ***Promote private sector investment, public private partnerships, across the bamboo value chain*** | 1. Undertake stakeholder mapping and sensitization<br>2. Organise investor study tours, trade fairs and exhibitions<br>3. Develop standards and certification mechanisms across the bamboo value chain<br>Develop People-Public-Private Partnership guidelines |
| **3.2.6.** | ***Develop and institutionalise bamboo governance framework*** | 1. Establish Bamboo coordination unit at the Ministry<br>2. Establish appropriate bamboo development implementation committees at all levels of government<br>3. Reform bamboo sector through policy framework, rules and guidelines. |

| S/No. | Strategic Objective | Activities |
|---|---|---|
| **3.2.7.** | ***Enhance resource mobilization, networking and partnerships for the implementation of Bamboo Strategy and Action Plan*** | 1. Map and identify potential sources of funding<br>2. Undertake internal fund-raising initiatives at the national and county level budgets<br>3. Liaise with the National Treasury to establish a Bamboo Fund to mobilize public and private financing for bamboo value chain<br>4. Develop proposals for donor funding<br>5. Undertake fundraising promotions, campaigns and expeditions with a broad spectrum of partners both locally and internationally<br>6. Establish a competitive grant for supporting bamboo growing<br>7. Develop a partnership and coordination framework for the key stakeholders nationally and internationally. |
| **3.2.8.** | ***Develop monitoring, evaluation and reporting framework for the implementation of Bamboo Strategy and Action Plan*** | 1. Undertake baseline survey of bamboo resources<br>2. Develop and implement a monitoring and evaluation (M&E) system<br>3. Validate and update bamboo mapping tools for monitoring development of bamboo value chains<br>4. Sensitize, create awareness and train stakeholders and communities on the use of KEFRI App |

# 4.0 COORDINATION AND IMPLEMENTATION OF THE STRATEGY

## 4.1 Coordination Framework

The overall institutional framework for implementation of the bamboo development strategy is shown in Figure 1. Within this structure are committees at various levels of coordination and implementation.

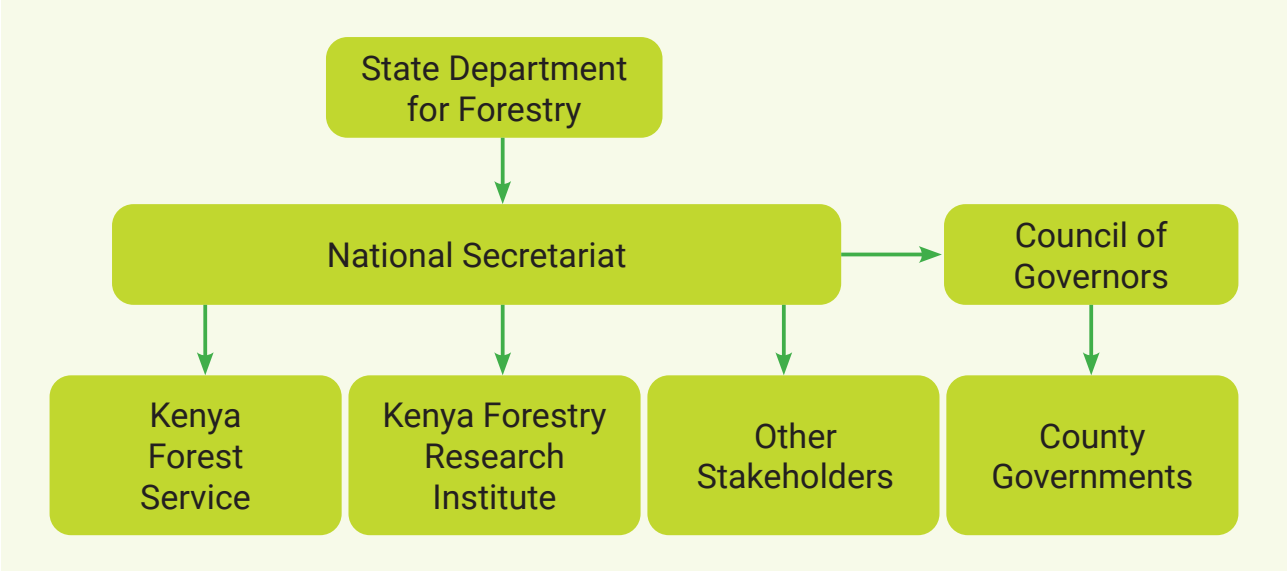


**Figure 1 :** Bamboo Development Institutional Framework

## 4.2 National Secretariat

Overall coordination of the Kenya Bamboo Development Strategy and Action Plan 2025 – 2035 will be carried out by the National Secretariat. This Secretariat, housed at the State Department for Forestry will be responsible for day to day running of the National Bamboo Strategy and Action Plan activities.

The key roles of the national secretariat will be to;
(a) Plan and coordinate the steering and technical committee meetings
(b) Receive and consolidate proposals from counties and prepare forward budgets
(c) Receive, review and consolidate progress reports for the National Steering Committee
(d) Undertake resource mobilization for the implementation of the Strategy
(e) Facilitate implementation of M & E of the Bamboo Strategy and Action Plan activities
(f) Facilitate timely release of funds to support activities at all levels after workplan approval;
(g) Monitor implementation of field activities in collaboration with county, sub county and ward committees;
(h) Custodian of data collected from field activities, correspondences, communications, software and hardware related to the Bamboo Strategy implementation

(i) Update data bases, maps and other software related to implementation of the Bamboo Strategy and Action Plan
(j) Organize national workshops every 2 years to share progress of activities
(k) Any other role assigned from time to time

## 4.3 Linkages with the existing national Policies and Institutional Strategic plans

Development of this National Bamboo Strategy and Action Plan has been aligned to the relevant global, national and institutional initiatives from the participating Ministries, their related Semi-Autonomous Government Agencies (SAGAs) and other relevant National and International institutions.

Relevant policies include:

- The National Forest Policy (2023)
- The National Bamboo Policy (2022)
- The Convention on Biological Diversity (CBD)
- Ramsar Convention
- Sustainable Development Goals (SDGs)
- National Forest Programme (2016-2030)
- Forest Conservation and Management Act (2016)
- The Government's BETA Agenda and the respective strategic plans for Ministries of Environment, Climate Change and Forestry (2023-2027), Kenya Agricultural Marketing Strategy (AMS) 2023-2032, National Treasury and Planning
- The County Government Act (2012)

## 4.4 Information and technology dissemination

A robust information and technology dissemination strategy will be adopted to ensure that local communities who are expected to be the main contact persons in the implementation of the activities are well enlightened. Dissemination methods to be used will include audio-visual, social media and print - brochures, posters, handbooks, manuals, radio and TV scripts, bamboo field days, road shows and other promotion materials. Other fora are field days, exhibitions, open days, conferences and workshops. Effort will also be made to develop online platforms and applications where sharing of information in real time will be done.

Bamboo house at Michuki Park, Nairobi

# 5.0 SWOT, STAKEHOLDER AND RISK ANALYSIS

## 5.1 SWOT analysis for bamboo sector

SWOT analysis involved evaluating Bamboo Sub-Sector internal strengths and weaknesses and its external opportunities and threats. Results of the SWOT analysis are shown in Table 1.

**Table 3: SWOT analysis**

| Strengths | Weaknesses/constraints |
|---|---|
| • The gazettement of bamboo as a scheduled cash crop will accelerate commercialization of bamboo<br>• Bamboo stakeholders, including farmers and donors, share common objectives and motivation to make them want to work together for sustainability of the bamboo sub-sector in Kenya<br>• Strong and positive commitment and willingness of partners to champion development of bamboo<br>• Legal foundation based on Government recognition of bamboo as a scheduled cash crop.<br>• Existence of competent trainers. | • Limited funding and resources<br>• Lack of a coordination unit<br>• Limited information management systems<br>• High reliance on external funding<br>• Limited public communication framework leading to reactive approaches to addressing pertinent issues affecting the bamboo sector.<br>• Inadequate approaches to addressing knowledge management, documentation, and dissemination of best practices and success stories among stakeholders<br>• Limited corporate branding to create, manage, and sustain an identity for Bamboo Sub-Sector connect with/to audience (farmers and communities).<br>• Limited content on platforms to champion Bamboo Sub-Sector cause |

Bamboo plywood and bamboo lumbar

| Opportunities | Threats |
|---|---|
| • Support from National and County Governments in line with Kenya Vision 2030 and Bottom- Up Economic Transformation Agenda.<br>• Existence of the Constitution of Kenya 2010 and County Government Act 2012, which have frameworks for transformative governance principles of transparency, accountability, participation and collaboration, and coordination of public sector services.<br>• Need for and support of the bamboo sub-sector is well pronounced in both national and global planning agenda. This provides an environment for Bamboo Sub-Sector to leverage of strategic resource to grow the sector and achieve its goals, and agriculture sector reforms and plans that have been undertaken by the Government of Kenya.<br>• Global (INBAR, UN and SDGs) and regional (CAADP) platforms in support of agricultural sector initiatives.<br>• Existence of smart technology for use in the bamboo sub-sector and in remote communities for sustainable development.<br>• Existence of varied categories of stakeholders in public sector, private sector, civil society organizations, and international organizations (INBAR, JICA, World Bank, IFAD) and this can be used to tap synergy in sustainable development of bamboo propagation and production in Kenya. | • Insufficient policy coordination frameworks in the agricultural sector hence leading to complex and compartmentalization approaches in management of the sector. This makes institutional coordination highly inefficient, ineffective, unproductive, and unsustainable.<br>• A strong political influence and pressure leading to supply-driven approach in the implementation of projects since principles of effective project design, demand driven, and sustainability are not duly taken into account.<br>• Limited public sector financing due to competition from other social sectors of the economy and meagre national and county government budgetary provisions on the bamboo sector, for both developmental and recurrent expenditure.<br>• Frequent changes in key personnel in the larger agricultural sector, hence leading to weak institutional memory and strategic focus.<br>• Negative effects of climate change and its implications in the country and globally.<br>• Conflicts over limited natural resources<br>• Inadequate coordination framework between the county and national government over management of natural resources |

## 5.2 Stakeholder Analysis

Given that bamboo is a cross cutting sector involving many players along the value chain, the stakeholders are diversified. Table 2 shows organizations which are currently involved in the bamboo sector.

**Table 4: Stakeholder Analysis**

| Stakeholder | Stake/ Role in Bamboo Development |
|---|---|
| Ministry of Environment, Climate Change and Forestry | • Policy formulation on natural resources management<br>• Management and development of bamboo production resources<br>• Mapping, designation of forest protected areas |
| Ministry of Agriculture and Livestock Development | • Agricultural policy and management<br>• Mapping, designating and developing areas ideal for large scale farming |
| KEFRI | • Research and development<br>• Supply of bamboo propagation materials |
| Parliament | • Discuss motions and pass legislation on matters bamboo production and development |
| Senate | • As a legislative arm, the Senate represents the counties and their governments |
| County Governments | • County Governments ensure conducive environment and support for bamboo farming purposes<br>• Land for bamboo growing<br>• Development of County Integrated Development Plans and County Sectoral/ Spatial Plans<br>• Utilization of bamboo in development of County Aggregated Industrial Parks (CAIPS) |

| Stakeholder | Stake/ Role in Bamboo Development |
|---|---|
| Kenya Seed Company | • To produce and market top quality certified seed with an overall objective of adding value to the farming business and contributing to food self-sufficiency in the country |
| Financial institutions | • Advisory roles on co-operative and a legal framework that offer an enabling environment that is conducive for development of the bamboo sector<br>• Financial support to bamboo farmers |
| Pest Control Products Board | • Facilitate availability of new pesticides with proven safety, economic value, quality and efficacy for use on farms |
| KEPHIS | • Provide a science based regulatory service by assuring plant health, quality of agricultural inputs and produce |
| INBAR | • Support establishment of the bamboo sub-sector through financing, research, information dissemination and infrastructure |
| KALRO | • Promote, streamline, co-ordinate and regulate research in crops, livestock, genetic resources and biotechnology in the country<br>• Expedite equitable access to research information, resources and technology, and promote the application of research findings and technology in the field of agriculture |
| AFC | • Provide credit for the sole purpose of developing agriculture |
| KEBS | • Development of comprehensive standards, Metrology, conformity assessment, training and certification services |
| Farmers | • Production of bamboo |
| BAK Members | • Association members and immediate stakeholders in bamboo farming and production |
| MSMEs | • Processing of bamboo and product development |
| KEPSA | • Coordinating the private sector in Kenya through various mechanisms and to engage in advocacy that promotes economic growth |
| Universities and learning institutions | • Conduct research into best agricultural practices. |
| NEMA | • Supervision and coordination of all matters relating to the environment |
| Kenya Forest Service | • Manage water catchment areas primarily for soil and water conservation, carbon sequestration and other environmental services, establishment and sustainable management of bamboo in public forests |
| Development Partners | • Fund raising and provision of technical financial resources |

## 5.3 Risk analysis

The risks that could impede implementation of the strategy have been identified (Table 3). A scale of 1–5 with 1 indicating the lowest risk and 5 the highest risk is used to show the level of risk.

**Table 5** Risk analysis and mitigation measures for identified threats

| Risk | Risk Level | Mitigation | Responsibility for mitigation |
|---|---|---|---|
| **1. Indigenous bamboo** | | | |
| **a. Public land**<br>Potential to overharvest | 3 | • Undertake resource assessment | KFS, KEFRI, County Governments |
| Inadequate silvicultural guidelines and skills for management | 3 | • Development of management plan and harvesting guidelines | KEFRI, KFS |
| **2. Plantation bamboo** | | | |
| **a. Public land**<br>Access to resources | 4 | Development of management concessions and agreement between government and investors | KFS, KEFRI, Communities, Private sector, |
| Allocation of budgets | 3 | Budgeting for bamboo (create a vote for bamboo) | MoECC&F, Treasury |
| Adverse weather conditions | 2 | Monitor and share weather reports for planning | Meteorological Dept. |
| Species-site matching | 2 | Develop handbook | KEFRI, KFS |
| Inadequate planting materials | 3 | Develop capacity for tissue culture | KEFRI |
| Inadequate information on pests & diseases | 2 | • Monitor and document pests and diseases<br>• Develop management guidelines | KEFRI, KFS |
| Inadequate silvicultural skills for management | 2 | Develop technical guidelines on bamboo management | KEFRI, KFS |
| **b. Communal land**<br>Land tenure | 4 | Develop and implement concessions | Counties, Communities, MoECC& F, KFS, Private Sector |
| Access to resources | 4 | • Develop benefit sharing mechanism<br>• Develop community governance mechanism to ensure equity in resource allocation | KFS<br>Farmers, communities and private developers |
| Allocation of budgets | 2 | Include bamboo development in the national and County government budget cycle (CIDPs) | The Treasury<br>CoG, |
| Adverse weather conditions | 2 | • Enhance breeding for drought resistance<br>• Introduction of new species | KEFRI |
| Species site matching<br>Inadequate planting materials | 4 | Select sites and species appropriately | KEFRI, KFS and KALRO |

| Risk | Risk Level | Mitigation | Responsibility for mitigation |
|---|---|---|---|
| Inadequate information on pests & diseases | 4 | Innovate alternative propagation methods of controlling pests and diseases | KFS and KEFRI |
| Lack of silvicultural skills for management | 4 | • Develop and use innovative dissemination methods<br>• Build capacity of farmers on silviculture and promote practical skills | KFS and KEFRI |
| **c. Private land**<br>Unclear land tenure hampering bamboo farming | 3 | Provide clear guidance on land use | National Land Commission |
| Counties lack funds to spur bamboo farming | 3 | Include bamboo farming in County Integrated development Plans (CIDPs) | CoGs |
| **3. Political risks** | | | |
| a. Political will for green bamboo economy | 2 | • Political will to develop the green bamboo economy with policy incentives | MoECC&F<br>Investors<br>Counties |
| **4. Value-addition risks** | | | |
| (a) Quality perceptions on bamboo products | 3 | • Awareness creation | KEFRI, KFS |
| | | • Mark of quality | KEBS |
| | | • Mentorship and capacity building of artisans | KEFRI, TVET |
| | | • Capacity building on appropriate technologies and importation of modern machines.<br>• Importation of modern machinery<br>• Quality control | KEFRI, Private sector, Development partners |
| (b) Product selections | 3 | • Awareness creation<br>• Selection of priority market driven products for fast tracking. | Private sector, KEFRI, KFS |
| | | • Developing standards for enforcement | KEBS |
| | | • Capacity development and mentoring of SMEs | KEFRI, MSEA, KFS |
| **5. Financing and linkage to private sector** | | | |
| (a) Pre-investment costs: high cost of project development | 4 | Incentives, tax waivers, guarantees and subsidies. | Treasury, Ministry of Trade and Industry, MoECC&F, Private sector |

| Risk | Risk Level | Mitigation | Responsibility for mitigation |
|---|---|---|---|
| (b) Access to finance | 4 | • Develop Bamboo financing schemes<br>• Lower interest rates for bamboo processing equipment | Treasury, MoECC&F, Private sector, Development Partners |
| | | • Providing grants to bamboo farmers<br>• Fundraising through proposals/concepts | KEFRI, KFS |
| (c) Lack of primary processing at the source | 3 | • Capacity building<br>• Provide basic equipment for primary processing<br>• Establish semi-processing factories at source | Private sector, KEFRI, KFS |
| | | • Formation of clusters/ cooperatives | KEFRI, Ministry of Trade and Industry |
| **6. Marketing development risks** | | | |
| (a) Market study | 2 | • Continuous market surveillance.<br>• Ensuring product competitiveness.<br>• Ensuring standardization of products. | KEFRI, KFS, Ministry of Trade and Industry, Private sector |
| (b) Market access | 3 | • Formation of cooperative to access raw materials and products | Ministry of Trade and Industry |
| | | • Direct procurement policy by government on bamboo products for public institutions (schools, offices, hospitals, etc.). | Ministries of ECC&F, Education, National Treasury |
| | | • Bamboo machineries integrated in agricultural financing | Ministry of Agriculture & Livestock Development |
| **7. ICT** | | | |
| Information | 2 | • Integrate bamboo information in government websites | ICT Authority |
| | | • Bamboo showroom and exhibitions with both local and international products. | KEFRI, Ministry of Interior and Coordination of National Government (Prisons) |
| | | • Development of bamboo app | KEFRI, KFS, ICTA |

| Risk | Risk Level | Mitigation | Responsibility for mitigation |
|---|---|---|---|
| Technology | 3 | • Bamboo networking and dialogue fora for stakeholders.<br>• Develop and or adopt bamboo processing technologies and machinery<br>• Awareness creation, training, media, targeting training for churches, cultural leaders, community leaders, etc.<br>• Encourage Public-Private Partnership | SDF, KEFRI, KFS, Private sector, Development Partners |

**Scale:**

Risk levels 1 and 2 are considered quite low and not likely to significantly affect the strategy and action plan. Risk levels 3– 4 are considered significant and should be addressed. Risk level 5 is considered the highest priority and must be managed urgently, as it will definitely affect the strategy implementation.

Roof trusses made from bamboo culms - at Moi Siongiroi Girls Secondary School

# 6.0 RESOURCE MOBILIZATION

Commercialization of Bamboo will require both financial and human resources. The government will fund implementation of the National Bamboo Strategy and Action Plan through the National Treasury and leveraging resources from development partners, bilateral and multilateral development agencies.

## 6.1 Financial resources

In order to implement the Kenya Bamboo Development Strategy and Action Plan 2024 - 2034, the financial requirement for Year 1 – Year 10 is estimated at KES 15 billion. For effective and successful implementation of the National Bamboo Strategy and Action Plan, it will be necessary to adopt various resource mobilization strategies. Some of the approaches are:

1. The government to create a Bamboo commercialisation program under the Ministry of Environment, Climate Change and Forestry funded by the National Treasury to support Bamboo commercialization programs at the County level with cross-sector linkages to leverage resources.

2. Leverage domestic research and development funds including; National Research Fund (NRF), the NETFUND and National Commission for Science Technology and Innovation. Each Ministry, Department or Agency (MDA) to allocate a percentage of their budgets for identified activities every year. The National Secretariat will lobby appropriately to ensure that strategy activities are given a high priority and therefore commensurate funding every year throughout the strategy plan period;

3. The Ministry of Environment, Climate Change and Forestry and National Secretariat will mobilize resources from multilateral and bilateral development partners, and climate change loan and grant funds to invest in the bamboo sector. Appropriate lobbying missions with development partners will be done as necessary.

4. Attract investment through domestic and foreign investments; including impact investment funds. Seek audience with potential national and international investors for support. A bamboo cluster approach will be developed for accelerated commercialization. The government will also explore emerging financing mechanisms such as Payment for Ecosystem Services (PES) fund for Bamboo growing and CESS from county governments.

5. Undertake fundraising promotions, campaigns and expeditions with a broad spectrum of partners both locally and internationally.

# 7.0 MONITORING AND EVALUATION

Regular monitoring and periodic evaluation will be undertaken at National and County levels; and as detailed the Action Plan. To achieve the objectives spelt out in the Strategy, an effective coordination, monitoring, evaluation and reporting framework will be established compatible with National Integrated Monitoring and Evaluation System (NIMES) and County Integrated Monitoring and Evaluation System (CIMES) for annual monitoring. A midterm review of the Bamboo Strategy will be undertaken after 5 years and an evaluation review at the end of the 10- year period.

# 8.0 IMPLEMENTATION ACTION PLAN AND BUDGET

To undertake activities and achieve strategic as well as specific objectives of the strategy, a 10-year (Year 0-1 – Short term, Year 2-5 – Medium term and Year 6-10 – Long term) implementation plan (Tables 4 and 5) is proposed. Table 4 highlights the strategic objective and the budget per year while Table 5incorporates a 10-year budget with proposed sources of funding.

Flooring made from bamboo parquets

**Table 6: Implementation Action Plan 2025 – 2035 and budget**

| Strategic objective | Main activity | Budget (KES) in Million KES / Year | | | | | | | | | | Total Budget (in Million KES) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | |
| Strategic objective 1 | Promote and upscale bamboo production in public, communal and private lands | 346 | 502 | 810 | 792 | 1,575 | 1,575 | 2,357 | 2,349 | 2,662 | 3,132 | **16,100.30** |
| Strategic objective 2 | Enhance bamboo value addition and link products to the market | 3.52 | 38 | 61.248 | 55.808 | 16.64 | 16.64 | 8.64 | 0 | 0 | 0 | **200.496** |
| Strategic objective 3 | Promote bamboo research and development | 2.08 | 13.92 | 20.72 | 16.72 | 15.52 | 9.92 | 0 | 8 | 0 | 0 | **86.88** |
| Strategic objective 4 | Capacity building and awareness creation in promotion and management of bamboo | 20.16 | 51.936 | 52.896 | 52.896 | 48.8 | 26.4 | 18.08 | 18.08 | 18.08 | 18.08 | **325.408** |
| Strategic objective 5 | Promote private sector investment, public private partnerships, across the bamboo value chain | 0.96 | 1.856 | 7.392 | 7.36 | 7.36 | 7.36 | 7.2 | 7.2 | 0 | 0 | **46.688** |
| Strategic objective 6 | Develop and institutionalise bamboo governance framework | 31.36 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | **312.16** |
| Strategic objective 7 | Enhance resource mobilization, networking and partnerships for the implementation of Bamboo Strategy and Action Plan | 7.2 | 10.4 | 5.6 | 5.6 | 4 | 5.6 | 2.4 | 2.4 | 2.4 | 2.4 | **48** |
| Strategic objective 8 | Develop monitoring evaluation and reporting framework for the implementation of Bamboo Strategy and Action Plan | 8 | 3.2 | 3.2 | 3.2 | 11.2 | 3.2 | 3.2 | 3.2 | 3.2 | 11.2 | **52.8** |
| | **Total/Year** | **419** | **365** | **992** | **965** | **1,710** | **1,675** | **2,419** | **2,419** | **2,717** | **3.195** | **17,172.73** |

## Table 7: Budget and action plan 2025-2035

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| **Bamboo Resource Development** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bamboo planting material production | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Strengthening planting material production system | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Government nursery | 20 | nurseries / plants (in '000) | 800 | 1200 | 2000 | 2000 | 4000 | 4000 | 6000 | 6000 | 6800 | 8000 | 32 | 48 | 80 | 80 | 160 | 160 | 240 | 240 | 272 | 320 | 1632 | NT, DP, CG | MoECC&F (KEFRI, KFS), MOA&LD , CG | KES 25 -cost of production of 1 seedling |
| Private nursery | 20 | nurseries / plants (in '000) | 800 | 1200 | 2000 | 2000 | 4000 | 4000 | 6000 | 6000 | 6800 | 8000 | 64 | 96 | 160 | 160 | 320 | 320 | 480 | 480 | 544 | 640 | 3264 | | | Purchase cost of seedling - KES 50 |
| Community nursery | 200 | nurseries / plants (in '000) | 400 | 600 | 1000 | 1000 | 2000 | 2000 | 3000 | 3000 | 3400 | 4000 | 32 | 48 | 80 | 80 | 160 | 160 | 240 | 240 | 272 | 320 | 1632 | | | Purchase cost of seedling - KES 50 |
| Establish a certification and accreditation procedure | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop standards and certification for planting material | 4 | meetings | 4 | | | | | | | | | | 1.76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.792 | NT | KEFRI, KEBS, KEPHIS | 20 participant; 2 days each workshop |
| Develop planting material production protocol | 10 | Protocols | 5 | 2 | 2 | 1 | | | | | | | 1.6 | 0.64 | 0.64 | 0.32 | 0 | 0 | 0 | 0 | 0 | 0 | 3.2 | NT | KEFRI | Input and research costs: KES 200,000 per protocol development |
| Dissemination of techniques and technologies | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Publication / IEC materials | 10000 | Copies | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 0 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.288 | NT | KEFRI | Development of printing cost - KES 25 per copy |
| ToT and capacity building | 40 | Training | 10 | 10 | 10 | 10 | | | | | | | 3.04 | 2.96 | 2.96 | 2.96 | 0 | 0 | 0 | 0 | 0 | 0 | 11.92 | NT | KEFRI and KFS | Training cost: 3 days: KES 185000 per training |
| **Intensifying planting of Bamboo** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Define Bamboo growing zones in the country | 2 | Meeting | 2 | | | | | | | | | | 0.96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.96 | NT | KFS and KEFRI | 20 participant; 2 days each workshop = KES 280, 000 |
| Criteria finalised | 1 | Document | 1 | | | | | | | | | | | | | | | | | | | | | | KFS and KEFRI | Outcome of workshop |
| Identification and finalisation of zones / clusters | 10 | clusters | 5 | 5 | | | | | | | | | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | NT | KEFRI, KFS and CG | Cluster mapping, scoping studies, consultation meeting and necessary approvals = KES 1,000,000 |
| Site-species matching | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Report and GIS site-species matching | 1 | Report and Map | 1 | | | | | | | | | | 6.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.4 | FLR | KEFRI | Research on growth, biomass and phenology studies of different Bamboo species in different zones (Validating 5 species) |
| Establish Bamboo research and demonstration plots (forest, riparian and farm land) | 20 | Plots | 10 | 10 | | | | | | | | | 0 | 16 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | FLR | KEFRI | Similar to Farmer Field School Model - 1 demonstration plot - KES 1000000 |
| Promote Bamboo growing in gazetted forests | 102000 | Ha | 2000 | 3000 | 5000 | 5000 | 10000 | 10000 | 15000 | 15000 | 17000 | 20000 | 123.2 | 185.6 | 308.8 | 308.8 | 616 | 616 | 924 | 924 | 1047.2 | 1232 | 6285.6 | NT, DP, FLR | KFS, CG, KWTA | Per hectare plantation cost - KES 385, 000 |
| Promote Bamboo growing in riparian areas | 51000 | Ha | 1000 | 1500 | 2500 | 2500 | 5000 | 5000 | 7500 | 7500 | 8500 | 10000 | 62.4 | 92.48 | 154.08 | 154.08 | 308.8 | 308.8 | 462.08 | 462.08 | 523.68 | 616 | 3144.48 | NT, DP, FLR | KFS, CG, KWTA, WRUA, CFA, CBO | Per hectare plantation cost - KES 385, 000 |
| Promote Bamboo growing in farm lands | 102000 | Ha | 2000 | 3000 | 5000 | 5000 | 10000 | 10000 | 15000 | 15000 | 17000 | 20000 | | | | | | | | | | | | NT, DP, FLR | MOA&LD , CG | Provide subsidy of planting material |
| **Total** | 255000 | Ha | 5000 | 7500 | 12500 | 12500 | 25000 | 25000 | 37500 | 37500 | 42500 | 50000 | | | | | | | | | | | | | | |

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| Develop and disseminate Bamboo growing, maintenance and management guidelines (farm) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Drafting technical manuals and editorial | 3 | Manuals | 3 | | | | | | | | | | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.4 | NT | KEFRI and KFS | Staff time and cost of meeting - KES 500,000 |
| Dissemination through ToT training | 40 | ToT training | 20 | 10 | 10 | | | | | | | | 5.92 | 2.96 | 2.96 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11.84 | NT, DP | KEFRI, KFS, MOA&LD | KES 185,00 per training |
| Publication / IEC material | 10000 | Copies | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 0 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.032 | 0.288 | NT | KEFRI | KES 20 per copy |
| Map planted Bamboo in forest, riparian areas and in farm lands | | Routine / Man-days | 25 | 38 | 63 | 63 | 125 | 125 | 188 | 188 | 213 | 250 | 0.48 | 0.608 | 1.008 | 1.008 | 2 | 2 | 3 | 3 | 3.4 | 4 | 20.504 | NT, CG, Private sector | KFS, KEFRI, MOA&LD | Cost per day for mapping - KES 10000 |
| **Sustainably manage Bamboo forests** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop a regulatory mechanism for inclusive exploitation of Bamboo in Gazetted forests | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Consultative meeting for developing regulation | 4 | Meeting | 2 | 2 | | | | | | | | | 0.96 | 0.896 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.856 | NT | KFS, KEFRI | Cost per meeting - KES 280000 |
| Developing Bamboo management plans to guide activities in gazetted forests | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Drafting Bamboo management plan and approvals | 20 | CFA plans | | | 2 | 3 | 5 | 5 | 5 | | | | 0 | 0 | 3.2 | 4.8 | 8 | 8 | 8 | 0 | 0 | 0 | 32 | DP, CC funds | KFS | KES 1000000 per participatory Bamboo management plan |
| Develop Bamboo harvesting protocols and guidelines (public forest) | 1 | Guideline | 1 | | | | | | | | | | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | DP, CC funds | KFS | Staff time and cost of meeting - KES 500,000 |
| | | | | | | | | | | | | | 345.92 | 502.208 | 809.712 | 792.032 | 1574.864 | 1574.864 | 2357.144 | 2349.144 | 2662.344 | 3132.064 | 16100.296 | | | |
| **Promoting value-addition and value-chains** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Promote Bamboo value addition** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Housing and Construction | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOT Training and capacity building | 10 | ToT | | 2 | 4 | 4 | | | | | | | 0 | 4.16 | 8.32 | 8.32 | 0 | 0 | 0 | 0 | 0 | 0 | 20.8 | DP, NT | KEFRI, MoRT, TVET, County Government | Cost per training (15 days; 20 participant): KES 1.3 million |
| Model enterprises developed | 10 | Enterprise | | 2 | 4 | 4 | | | | | | | 0 | 1.6 | 3.2 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | DP, NT | KEFRI, MoRT, TVET, MOPSP&DM, CG | Model enterprise: Tools and Equipment: KES 500000 |
| Demonstration structures | 10 | Structures | | 2 | 4 | 4 | | | | | | | 0 | 1.6 | 3.2 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | DP, NT | MoRT, KEFRI and CG | Demonstration structure: KES 500000 |
| Bamboo Furniture and Crafts | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| TOT Training and capacity building | 10 | ToT | | 2 | 4 | 4 | | | | | | | 0 | 4.16 | 8.32 | 8.32 | 0 | 0 | 0 | 0 | 0 | 0 | 20.8 | DP, NT | KEFRI, TVET, MOPSP&DM, MoIT&IMoIT&I | Cost per training (15 days; 20 participant): KES 1.3 million |
| Model enterprises developed | 10 | Enterprise | | 2 | 4 | 4 | | | | | | | 0 | 1.6 | 3.2 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | DP, NT | KEFRI, TVET, MOPSP&DM, MoIT&IMoIT&I | Model enterprise: Tools and Equipment: KES 500000 |
| Bamboo timber substitutes | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Enable industries / factories | 20 | Industry | | | | 2 | 4 | 4 | 4 | 4 | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | MoIT&IMoIT&I | |
| Bamboo Energy | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| TOT Training and capacity building | 10 | ToT | | | 2 | 2 | 2 | 2 | 2 | | | | 0 | 0 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 0 | 0 | 0 | 9.6 | DP, NT | KEFRI, TVET, MoEP | Cost of training (5 days training: 20 trainees): KES 600000 |

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| SME | 20 | SME | | | 4 | 4 | 4 | 4 | 4 | | | | 0 | 0 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 0 | 0 | 0 | 16 | DP, NT | MoEP, MoPSP&DM, TVET | Support to model enterprises: Tools and Equipment's: KES 500000 |
| Industry | 10 | Industry | | | | | 2 | 2 | 2 | 2 | 2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | MoEP, MoPSP&DM, TVET | |
| Bamboo Shoots / nutrition | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| ToT training and capacity building | 10 | ToT | | | | 2 | 2 | 2 | 2 | 2 | | | 0 | 0 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 0 | 0 | 0 | 9.6 | DP, NT | MoA&LD , MoTW, MoH | Cost of training (5 days training; 20 trainees): KES 600000 |
| Model enterprise developed | 10 | SME | | | | 2 | 2 | 2 | 2 | 2 | | | 0 | 0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 0 | 0 | 0 | 8 | DP, NT | MoA&LD , MoTW, MoH | Support to model enterprises: Tools and Equipment's: KES 500000 |
| Support supply-chain development | 10 | Supply-chain | | 2 | 2 | 2 | 2 | 2 | | | | | 0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 0 | 0 | 0 | 0 | 8 | DP, NT | MoIT&IMoIT&I, KFS and MoA&LD | Develop associations / cooperatives with basic primary processing facility - KES 500000 |
| Develop centre for excellence | 10 | Centre | | 2 | 4 | 4 | | | | | | | 0 | 2.24 | 4.48 | 4.48 | 0 | 0 | 0 | 0 | 0 | 0 | 11.2 | DP, NT | KEFRI, MoIT&IMoIT&I | Centre of excellence with P&T equipment, (primary processing and training facility) - KES 7000000 |
| Develop support framework to support Micro small and medium enterprises (MSME). | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Support access to affordable finance and credit facilities for entrepreneurs, industries and investors. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workshops and consultative meetings | 4 | Workshop | 2 | 2 | | | | | | | | | 0.96 | 0.896 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.856 | NT | MoIT&IMoIT&I, KEFRI, KFS | Cost of consultative meeting - KES 280000 |
| Establish / allocate suitable infrastructure in Industrial parks / Export Promotion Zone | 10 | Industry | | | | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | | | | | NT | MoIT&IMoIT&I | Provide already established set up for usage |
| **MARKET DEVELOPMENT** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Include Bamboo products in preferential procurement list of government departments | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meetings and consultative workshops | 4 | Meeting | 1 | 1 | 2 | | | | | | | | 0.48 | 0.448 | 0.896 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.824 | NT | MoIT&IMoIT&I, MoF | 20 participant; 2 days each workshop = KES 280, 000 |
| Promote Bamboo in construction sector | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Undertake / adopt research on Bamboo property tests | 5 | Species | | 2 | 2 | 1 | | | | | | | 0 | 1.6 | 1.6 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | NT | KEFRI and KEBS | Property testing of 5 species - KES 500, 000 per species |
| Specification and construction techniques: Code of construction | 1 | Construction code | | 1 | | | | | | | | | 0 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | NT | KEFRI, KEBS, MORT | Entire process of developing Bamboo building code |
| Legislate 10% government procurement of Bamboo products | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Workshops and consultative meetings | 4 | Meeting | 1 | 1 | 2 | | | | | | | | 0.48 | 0.448 | 0.896 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.824 | NT | MoECC&F, NT, National Assembly and Senate | 20 participant; 2 days each workshop = KES 280, 000 |

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| Policy briefs and procurement guidelines | 5 | Briefs | 2 | 2 | 1 | | | | | | | | 1.6 | 1.6 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | NT | KEFRI, KFS, MoIT&IMoIT&I | 1 Policy briefs - KES 500000 |
| Develop county and national Bamboo hubs or market centres | 11 | market hubs | | | 4 | 4 | 3 | | | | | | 0 | 6.4 | 6.4 | 4.8 | 0 | 0 | 0 | 0 | 0 | 0 | 17.6 | NT, CG | CG and MoIT&IMoIT&I | Land for market Hubs and basic infrastructure - KES 1000000 |
| Develop Bamboo export compensation schemes | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Consultative meetings for developing export compensation schemes and revising import duties for Bamboo product import | 4 | Meetings | | 1 | 2 | 1 | | | | | | | 0 | 0.448 | 0.896 | 0.448 | 0 | 0 | 0 | 0 | 0 | 0 | 1.792 | NT | MoIT&IMoIT&I | 20 participant; 2 days each workshop = KES 280, 000 |
| Develop Bamboo carbon credit schemes for growers and processors | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Allometrics research | 5 | allometrics models | | 1 | 2 | 2 | | | | | | | 0 | 1.2 | 2.4 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | NT | KEFRI, KFS, Universities | 1 Allometrics model = 750000 |
| Carbon project development | 10 | carbon projects | | | 2 | 2 | 2 | 2 | 2 | | | | 0 | 6.4 | 6.4 | 6.4 | 6.4 | 6.4 | 0 | 0 | 0 | 0 | 32 | NT | KEFRI, KFS, Universities | Assessment, plot survey: carbon project development costs = KES 2000000 |
| | | | | | | | | | | | | | 3.52 | 38 | 61.248 | 55.808 | 16.64 | 16.64 | 8.64 | 0 | 0 | 0 | 200.496 | | | |
| **RESEARCH AND INNOVATION** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Research on propagation methods | 5 | techniques | 3 | 2 | | | | | | | | | 1.28 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.08 | NT, DP | KEFRI | Bamboo propagation trials and validation - KES 250000 |
| Research on Bamboo plantation and management | 5 | Species | 2 | 2 | 1 | | | | | | | | 0.8 | 0.8 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | NT, DP | KEFRI | Bamboo plantation growth and biomass validation measurement - KES 250000 |
| Research on pest and diseases and invasiness | 2 | Nos | | | | 1 | 1 | | | | | | 0 | 0 | 0 | 0.8 | 0.8 | 0 | 0 | 0 | 0 | 0 | 1.6 | NT, DP | KEFRI | Disease and pest surveillance and research - KES 500000 |
| Research and innovation of identified value-chains | 5 | value-chain | | 2 | 2 | 1 | | | | | | | 0 | 2.4 | 2.4 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | NT, DP | KEFRI | Value-chain and process development - KES 750000 |
| South South and North South partnership for technology transfer and research | 2 | Conference | | | 1 | | | | | 1 | | | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 16 | DP and Bilateral funding | MoIT&IMoIT&I, MoECC&F | International Conference - KES 5,000,000 |
| Demand driven research on value-addition | 10 | Technologies developed | | 2 | 2 | 2 | 2 | 2 | | | | | 0 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 0 | 0 | 0 | 0 | 16 | NT, DP | KEFRI, TVET, Universities | Technology development - KES 1,000,000 |
| South-South and North South technology transfer | 4 | Technologies transferred | | | | 2 | 2 | | | | | | 0 | 0 | 0 | 4.8 | 4.8 | 0 | 0 | 0 | 0 | 0 | 9.6 | DP, Bilateal funding | MoIT&IMoIT&I, MoECC&F TVET, MoF, MoF&DA | Technology transfer; manpower capacity building - KES 1500000 |
| Cross-learning visits | 5 | Visits | | 1 | 1 | 1 | 1 | 1 | | | | | 0 | 6.4 | 6.4 | 6.4 | 6.4 | 6.4 | 0 | 0 | 0 | 0 | 32 | NT, DP and Bilateral funds | MoIT&IMoIT&I, MoECC&F MoF, MoF&DA | Exposure visits - 4,000,000 |
| Publications in journals | 50 | journal paper | | 10 | 10 | 10 | 10 | 10 | | | | | 0 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0 | 0 | 0 | 0 | 1.6 | NT | MoE | Support for Journal Publication - KES 20000 |

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| | | | | | | | | | | | | | 2.08 | 13.92 | 20.72 | 16.72 | 15.52 | 9.92 | 0 | 8 | 0 | 0 | 86.88 | | | |
| | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| **Bamboo Education, Training and Skills developed** | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Develop and introduce course curriculum for schools, TVET, College and University | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Meetings / workshops | 8 | Workshop / meeting | 2 | 2 | 2 | 2 | | | | | | | 0.96 | 0.896 | 0.896 | 0.896 | 0 | 0 | 0 | 0 | 0 | 0 | 3.648 | NT, DP | KICD, MoEP, TVET, University | 20 participant; 2 days each workshop = KES 280, 000 |
| Task force for curriculum development | 7 | Course development | | 1 | 2 | 2 | 2 | | | | | | 0 | 6.4 | 12.8 | 12.8 | 12.8 | 0 | 0 | 0 | 0 | 0 | 44.8 | NT, DP | KICD, MoE, TVET, University | Course Development costs - KES 4,000,000 |
| Training staff members on Bamboo course developed | 20 | ToT | | 4 | 4 | 4 | 4 | 4 | | | | | 0 | 8.32 | 8.32 | 8.32 | 8.32 | 8.32 | 0 | 0 | 0 | 0 | 41.6 | NT, DP | KICD, MoEP, TVET, University | Staff training per course - KES 1.3 million |
| Training package developed of extension workers. | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Training package on resource development | 1 | Package | 1 | | | | | | | | | | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | NT, DP | MoE, KEFRI, KFS | KES 500000 |
| Training package on value-chain development | 5 | Package | 1 | 2 | 1 | 1 | | | | | | | 0.8 | 1.6 | 0.8 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | NT, DP | TVET, MoRE, MSEA | KES 500000 |
| Training package on entrepreneurship | 1 | Package | | 1 | | | | | | | | | 0 | 0.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.8 | NT, DP | MoIT&IMoIT&I, MSEA | KES 500000 |
| ToT dissemination training for extension staff | 40 | ToT | | 10 | 10 | 10 | 10 | | | | | | 0 | 9.6 | 9.6 | 9.6 | 9.6 | 0 | 0 | 0 | 0 | 0 | 38.4 | NT, DP | MoECC&F MoA&LD , MoIT&IMoIT&I, TVET | 5 days training; KES 600000 |
| Development of video training materials | 7 | Video program | 1 | 2 | 2 | 2 | | | | | | | 1.28 | 2.4 | 2.4 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 8.48 | NT, DP | KEFRI, TVET, MSEA, MoE, MoIC&TDE | Video Development - KES 750000 |
| Dissemination through video mechanism | 30 | Cycle | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 9.6 | NT, DP | MoIC&TDE | Video broadcasting - KES 200000 |
| Institute research grants for bachelor, master and PhD students | 100 | Scholarship | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 104 | NT, DP | MoE MoEPSTF (NET fund) | Research Grant - KES 650,000 |
| **Awareness, communication and knowledge management** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IEC materials and awareness program | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Awareness and marketing campaigns though television, radio and social media | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Video content development | 1 | Video | | 1 | | | | | | | | | 0 | 1.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.6 | NT, DP | MoIC&TDE, MoECC&F | Awareness and sensitisation video - KES 1000000 |
| Broadcasting of video | 10 | Times | | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0.64 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 3.2 | NT, DP | MoIC&TDE, MoECC&F | Half Hour broadcasting - KES 200000 |
| Radio content development | 1 | Radio | | 1 | | | | | | | | | 0 | 0.16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.16 | NT, DP | MoIC&TDE, MoECC&F | Radio Program - KES 100000 |
| Broadcasting of radio messages | 100 | Times | | 20 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 0 | 3.2 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 16 | NT, DP | MoIC&TDE, MoECC&F | Broadcasting charges - 100000 |
| Social media content development | 20 | Clips | | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0.32 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 1.6 | NT, DP | MoIC&TDE, MoECC&F | Social media clips - KES 50,000 |
| Broadcasting of social media content | | Routine | | | | | | | | | | | 0 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 1.44 | NT, DP | KEFRI | Cost of personnel and internet |
| Establish knowledge exchange and technology platform | 1 | online platform | 1 | | | | | | | | | | 0.8 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 3.68 | NT, DP | MoECC&F MoIC&TDE | Creation of Website - KES 500000 and annual maintenance - KES 200000 |
| Worksop, seminar and consultative meetings | 10 | Workshop | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 16 | NT, DP | MoECC&F, MoIT&IMoIT&I, MoEP | National / county level workshop - KES1000000 |

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| Commemorate International Bamboo Day | 10 | Fair / exhibition | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 24 | NT, DP | MoECC&F | Trade Fair / Exhibition - Bamboo Day Celebration - KES 1500000 |
| Leverage green school programs for wider dissemination | | Routine | | | | | | | | | | | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 1.6 | NT, DP | MoE, MoECC&F | Include Bamboo in green school programme. Misc. costs for coordination |
| | | | | | | | | | | | | | 20.16 | 51.936 | 52.896 | 52.896 | 48.8 | 26.4 | 18.08 | 18.08 | 18.08 | 18.08 | 325.408 | | | |
| **CREATING FAVOURABLE INVESTMENT ENVIRONMENT** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop incentive package for investors | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Consultative workshops and meetings for developing incentive package for investors | 4 | Workshop | 2 | 2 | | | | | | | | | 0.96 | 0.896 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.856 | NT, DP | Ken INVEST, MoIT&IMoIT&I, MoECC&F | 20 participant; 2 days each workshop = KES 280, 000 |
| Develop literature and disseminate it | 200 | IEC document | | | 200 | | | | | | | | 0 | 0 | 0.032 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.032 | NT, DP | Ken INVEST | Printing cost - KES 100 per copy |
| Organise investor study tours and B2B meeting | 6 | Investor meet | | | 1 | 1 | 1 | 1 | 1 | 1 | | | 0 | 0 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 0 | 0 | 19.2 | NT, DP | Ken INVEST, MoIC&TDE, MoECC&F | Investor Tour - 10 participant - KES 2000000 |
| Develop standards and certification mechanisms for Bamboo products | 7 | Product | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | Standards / Code of Practice / Guidelines |
| Working Group meetings and technical committee | 40 | WG and TC meeting | | 6 | 6 | 6 | 6 | 6 | 5 | 5 | | | 0 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.8 | 0.8 | 0 | 0 | 6.4 | NT, DP | KEBS, MoIT&IMoIT&I | Facilitation for working group meeting and Technical committee - KES 100000 |
| Public Private partnership | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Consultative meeting to develop mechanisms for public private partnership in Bamboo sector | 4 | Meeting | | 2 | 2 | | | | | | | | 0 | 0 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 0 | 0 | 19.2 | NT, DP | MoIT&IMoIT&I, Ken INVEST | 20 participant; 2 days each workshop = KES 280, 000 |
| | | | | | | | | | | | | | 0.96 | 1.856 | 7.392 | 7.36 | 7.36 | 7.36 | 7.2 | 7.2 | 0 | 0 | 46.688 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Governance structures on Bamboo established** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Create and support a Unit for Bamboo Development at the Ministry of Environment Climate Change and Forestry | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Constitution of Bamboo Secretariat | 1 | Department for Bamboo Development | 1 | | | | | | | | | | 0.16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.16 | NT | MoECC&F | Documentation costs: KES 100,000 |
| Bamboo Secretariat meeting | 10 | Meeting | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 1.6 | NT | MoECC&F | Internal office meeting: KES 100,000 |
| | | Committee | 1 | | | | | | | | | | | | | | | | | | | | | NT | MoECC&F | Internal meeting through official order |
| | | Meeting | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 | 3.2 | NT | MoECC&F | Meeting costs: KES 100000 |
| Create and support Bamboo Unit at MoECC&F | 1 | Directorate | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 48 | NT | MoECC&F | Annual Maintenance costs: KES 3000000 |
| Establish and support a Bamboo development Unit in each Bamboo growing county / cluster | 10 | Agency | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 240 | NT | Council of Governors | Annual Maintenance costs: KES 1500000 |

| Activity | Target | Unit | Time frame (with indicator) | | | | | | | | | | Budget (KES) in Million KES | | | | | | | | | | Total Budget (in Million KES) | Source | Responsible agency | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | y10 | | | | |
| Establish and support inter-agency technical committee at national level | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Establish technical committee | 1 | Committee | 1 | | | | | | | | | | | | | | | | | | | | | NT | MoECC&F | Office order |
| Quarterly meeting | 40 | Meeting | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 19.2 | NT | MoECC&F KEFRI | Meeting costs: KES 300,000 |
| | | | | | | | | | | | | | 31.36 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 31.2 | 312.16 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **RESOURCE MOBILISATION** | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Develop a Bamboo investment strategy at national and county level | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Consultative workshops to develop strategy and implementation plan | 2 | Meeting | 2 | | | | | | | | | | 4.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.8 | NT | MoECC&F | 20 participant: 1 Week: KES 1500000 |
| Develop project proposal for national funding source | 10 | budget/meeting | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 4.8 | NT | KEFRI | 20 participant; 2 days each workshop = KES 300, 000 |
| Develop proposals for multilateral and bilateral development and climate funds and loans | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Meetings, consultations and proposal development | 10 | Proposal | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 1.92 | 19.2 | NT | MoECC&F | Bamboo Development Department and proposal development personnel: KES 1200000 |
| PES services institutionalized | | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Undertake studies to determine the PES potential for different Bamboo growing zones | 1 | Study | | 1 | | | | | | | | | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | NT, DP | MoECC&F KEFRI, KFS, | One Study: 5, 000, 000 |
| Develop PES schemes for Bamboo growing by piloting | 1 | Pilot | | | 0.4 | 0.4 | 0.2 | | | | | | 0 | 0 | 3.2 | 3.2 | 1.6 | 0 | 0 | 0 | 0 | 0 | 8 | NT, DP | MoECC&F KEFRI, KFS, | Piloting a model: KES 5, 000,000 |
| Implementation of PES schemes at National and County level | 10 | Cluster | | | | | | 1 | | | | | 0 | 0 | 0 | 0 | 0 | 3.2 | 0 | 0 | 0 | 0 | 3.2 | NT, DP | MoECC&F KEFRI, KFS, CG | Developing business cases for replication - KES 2,000,000 |
| | | | | | | | | | | | | | 7.2 | 10.4 | 5.6 | 5.6 | 4 | 5.6 | 2.4 | 2.4 | 2.4 | 2.4 | 48 | | | |
| | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| **MONITORING AND EVALUATION** | | | | | | | | | | | | | 31.36 | | | | | | | | | | | | | |
| Develop baseline and monitoring framework | 1 | Baseline | 1 | | | | | | | | | | 4.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.8 | NT | MoECC&F (KEFRI and KFS) | Baseline data collection - KES 3,000,000 |
| Monitoring and evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring | | Routine | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 32 | NT | MoECC&F | Annual monitoring costs - KES 2,000,000 |
| External Evaluation | 2 | Evaluation | | | | | 1 | | | | | 1 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 8 | 16 | NT | MoECC&F | External Evaluation - KES 5,000,000 |
| | | | | | | | | | | | | | 8 | 3.2 | 3.2 | 3.2 | 11.2 | 3.2 | 3.2 | 3.2 | 3.2 | 11.2 | 52.2 | | | |
| | | | | | | | | | | **Annual Budget (in Millions)** | | | 417.6 | 652.8 | 988.8 | 960 | 1705.6 | 1670.4 | 2424 | 2416 | 2716.8 | 3194.944 | 17,172.73 | | | |
| | | | | | | | | | | | | | | | | | **Total Budget (Y1-Y10) in million** | | | | | | **17,172.73** | | | |
| | | | | | | | | | | | | | | | | | **Total Budget (Y1-Y10) in billion KES** | | | | | | **17.172.73** | | | |

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