INSTITUTE FOR GLOBAL PROSPERITY

THE ECONOMICS OF ECOSYSTEMS AND BIODIVERSITY ON COMMUNITY-BASED ORGANISATIONS FOR MEDICINAL PLANTS IN THE FORESTS OF KENYA

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ABSTRACT

With numerous species and a wide range of medicinal uses, the Mau Forests Complex in Kenya contains a vast potential for the sustainable development of the medicinal plants. However, it also faces many challenges, such as loss of forest resources, invasion by outsiders, mistrust, and difficulty in inheritance. This research aims to find a bottom-up development model that can make nature's and communities' values visible to make decisions that consider ecological and socio-cultural benefits and values, thereby achieving inclusive, sustainable, and resilient prosperity. The key research question of this research is how to achieve sustainable prosperity by the economics of ecosystem and biodiversity on community-driven forest medicinal plants. Community-based medicine organisations are important actors in solving these challenges and developing indigenous treatments. Starting from the perspective of community-based organisations, this research would be based on the TEEB Agriculture framework to measure and add the value of medicinal plants in the forests of Kenya. This research analyses the potential for community-based medicine organisations to develop a range of KEBS-approved indigenous remedies and treatments and gives a new model to build the localized path to sustainable prosperity through CBOs for traditional herbal medicines. This study uses case studies, community science, and Theory of Change to design research. It uses the methods for estimating above-ground biomass, literature reviews, and questionnaires to collect, count, and analyze data and provide suggestions for developing community-based organisations for medicinal plants in the Mau Forests Complex of Kenya.

Key words: Community-based Organisation; the Economics of Ecosystem and Biodiversity; KEBS certified medicinal plants.

CONTENT

LIST OF ABBREVIATIONS

TEEB – The Economics of Ecosystem and Biodiversity
CBO – Community-based Organisation
KEBS – Kenya Bureau of Standards
NGO – Non-governmental Organisation
MFC – Mau Forests Complex
WHO – World Health Organisation

LIST OF ILLUSTRATIONS

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CHAPTER ONE: INTRODUCTION

1.1 Current Background

In this turbulent century, humankind has developed along the unsustainable established trajectory that has been a contradiction between the vision of better lives and a planet with limited resources (Ferraro et al., 2015; Raworth, 2017; Jackson, 2017; David, 2020). Reconceptualising prosperity, formulating new paradigms, and achieving societal transformation are needed urgently (Moore, 2015). The interdependence of the social ecosystem makes the definition of prosperity diverse, including many factors such as health and wellbeing, environment and ecology (Jackson, 2009; Moore, 2015; Stiglitz, 2019). Both natural capital and ecosystem services play an important role (Díaz et al., 2015; Costanza et al., 2017), but their invisibility in top-down development models is not conducive to the realisation of inclusive, sustainable, and resilient prosperity (De Groot et al., 2010).

The Economics of Ecosystems and Biodiversity (TEEB) framework was proposed to "making nature's values visible" (Ring et al., 2010). It balances economic, socio-cultural and ecological benefits and values for decision-making (De Groot et al., 2010). TEEB AgriFood extended this to a broader setting to ensure that agrifood systems were not dealt with in isolation (TEEB, 2018a).

As a precious gift from the planet to humankind, medicinal plants open a door to sustainable prosperity. It can not only meet the basic needs of human health and wellbeing but also help indigenous people solve poverty, maintain biodiversity and the stability of the ecosystem (Otieno and Analo, 2012; Chen et al, 2016; Rios et al., 2017; Nankaya et al., 2019). Medicinal plants are gaining wider recognition in recent global conservation and development initiatives (Stein, 2004; Kala, 2004). However, the wider use of traditional medicinal plants has suffered a tortuous development process, including the impacts of illegal land clearance and forest degradation, over exploitation of specific plants by outsiders, a lack of documented treatment methods, people's mistrust, and weak global supervision.

In India, antimalarial medicinal plants containing artemisein, developed into an international pharmaceutical drug, attracting the attention of governments, NGOs, and international funding agencies (Shukla and Gardner, 2006). At present, artemisinin and its derivatives are the first choices for the treatment of malaria. Although the availability of artemisinin can be in short supply, a number of medicinal plants have now been identified that contain artemisinin and its derivatives (WHO, 2014; Pandey and Pandey-Rai, 2016). Indeed, people in northeastern India use 68 medicinal plants from 33 families to treat malaria (Shankar et al., 2013). In addition to the government's large public expenditures, successful community-based organisations are also a major feature of the development of Indian medicinal plants. At the sub-state level (district, block, taluka and village), the intervention and development plans of medicinal plants and related local knowledge systems are organised by local NGOs and community groups (FRLHT, 2005; Shukla and Gardner, 2006). The community-based approaches taken by the RCMPCC

(Rural Commune's Medicinal Plant Conservation Centre), such as vaidu sammelan and the village biologist programs, successfully used folk and codified local medicine systems along with formal medical systems (Shankar et al., 2013). These methods have promoted the legalisation and recognition of medicinal plants and related knowledge, created international medicinal drugs, and mobilised the joint research and funding commitments of government departments, NGOs, and research institutions. An importat part was the pre-testing of a community-based education model to promote the dissemination of folk knowledge related to the use of medicinal plants at local levels. The results demonstrate how to achieve the larger goals of equity and empowerment envisaged in community protection (Shankar et al., 2013). Th question is whether this approach community-based traditional medicine is

The success of a paradigm for the development of community-based approaches is its scalability and replicability. As in India, Kenya's forests also have many medicinal plants, and the community has an increasing demand for medicinal plants (Otieno and Analo, 2012). Medicinal plants have a high acceptance in the communities of Kenya because they are considered cheap and have solid cultural attachments (Umair et al., 2019). Kenyan medicinal plants are mainly used to treat stomach diseases, malaria, colds, and diabetes. A large number of traditional herbalists have passed down the herbal treatments and values from generation to generation (Nankaya et al., 2019). Kenya has the potential to develop medicinal plants and discover effective international medicines. However, in Kenya, medicine plants face environmental and social challenges such as loss of forest resources and the encroachment of outsiders. Facing the risk of loss of medicinal plants, local communities have gradually realised the preciousness of medicinal plants and the importance of sustainability. In 2019, the Kenyan government appointed and supported an organisation focusing on the sustainable development of medicinal plants and encouraged stakeholders to focus on growing medicinal plants and believed they have huge economic potential (MOTW, 2019).

In Kenya, Community-based organisations (CBOs) are important structures for supporting development. They reflect local needs, help collaboration amongst stakeholders, and are useful in plannig and improving local development, resolving conflicts, and networking (Opare, 2007; Woodruff et al., 2016; Adebayo et al., 2018). Viewing CBOs as transition catalysts can help the community develop a holistic, inclusive, and locally contextual approach to prosperity and establish a bottom-up model of change.

This research takes the Mau Forests Complex in Kenya as a case study to analyse, evaluate, and improve the values of medicinal plants in the forest as part of a larger programme (McGlade et al., 2021). It explores the possibility of developing a community-driven TEEB for medicinal plants, and proposes a model whereby CBOs can participate in the process. The model examines how the CBO can add value to medicinal plants sustainably based on a deep understanding of local culture and values, and realise transitions, enhance the wellbeing of residents, and promote long-term prosperity of the indigenous communities.

1.2 Research Aim and Questions

There are four aims in this research: 1) Evaluate medicinal plant values in the Mau Forests Complex to provide suggestions for sustainable use and sales of herbal medicines, and find medicinal plants with development potential; 2) explore how CBOs involved in a community-driven TEEB for medicinal plants could promote local economic development, employment increase, social culture and value development, and improve indigenous wellbeing based on protecting ecosystems and biodiversity; 3) explore the sustainable development model of traditional medicinal plants to meet the challenges they face and carry on good inheritance; and 4) contribute to the study of sustainable prosperity and provide a new paradigm to build an inclusive and localized path to an autonomous, sustainable and resilient community.

It responds to the demand for literature and practices of the bottom-up community-driven paradigm transformation and the economics of ecosystems and biodiversity. Currently, there is relatively little literature related to community drive with the economics of ecosystems and biodiversity and sustainable prosperity, and a lack of specific case studies. In addition, theliterature on traditional medicinal plants in Kenya, is limited and most focus on the properties of their medicinal materials rather than the sustainable development driven by their communities. This research will fill the research gap by studying the following research question.

- **How to achieve sustainable prosperity by the economics of ecosystem and biodiversity on community-driven forest medicinal plants?**

This research will answer this question by exploring the following:.

- **What are the potential medicinal plants in the Mau Forests Complex? How to evaluate, maintain and increase the value of medicinal plants in the Mau Forests Complex?**
- **How to keep the CBOs involved to ensure that local livelihoods benefit?**
- **How to build an inclusive, holistic ans localized path to communities prosperity through medicial plants?**

Ultimately, this research hopes to analyse the short and long-term commercial potential for small-scale CBOs medicine organisations to develop a range of KEBS-approved indigenous remedies and treatments and provide the new definition and specific community-driven implementations for sustainable prosperity.

1.3 Scope and Structure

This study focuses on the case of the Mau Forests Complex (MFC), explores the distribution and value of medicinal plants in the area, and how to promote CBOs as involve them through a community-driven TEEB framework. This study examines the potential of CBOs to develop medicinal plants certified by KEBS and establish a localized path to sustainable prosperity.

Chapter 2, reviews the concepts and theories of the economics of ecosystems and biodiversity (TEEB), community-based organisations (CBOs), and medicinal plants certified by KEBS. In this process, the theories combine with Kenya's practice to provide clear reasons and development directions for the following research step. Chapter 3 describes the study area, research design, and data sampling and processing methods. This study uses case analysis, the methods for estimating above-ground biomass, literature review and survey, and collecting and

analysing many qualitative and quantitative data. Chapter 4 presents the results, including the species, distribution, growth state, and uses of medicinal plants, the experiences, and views of CBOs about dealing with KEBS. The penultimate chapter, discusses the possibility of future development of medicinal plants in the MFC, focusing on the networking between communities and the inheritance of traditional herbal therapies and the replicability and scalability of this model. The last chapter summarises the discussion of this research and reflects on the future development direction and broader impact.

CHAPTER TWO: LITERATURE REVIEW

2.1 The Economics of Ecosystems and Biodiversity: New Paradigm to Promote Prosperity

In the past few decades of research, people exaggerated the role of economic growth and even developed it at the expense of society and the environment (Habermas, 1987). However, the contradiction between a good life and limited resources makes people realise that prosperity is not simply economic growth, and the concept of the economy needs to be reconsidered (Stiglitz et al., 2010; Jackson, 2017). Prosperity and resource allocation, human wellbeing, and global ecosystems are closely interdependent. The concept of natural capital was proposed and developed in the 1990s to prove the importance of ecosystems in promoting social and economic development (Costanza and Daly 1992; Jansson et al. 1994; Dasgupta et al. 2000). The Millennium Ecosystem Assessment (MA, 2005), based on it, pointed out that the ecosystem has supporting, provisioning, regulating, and cultural functions. Although mainstream research increasingly recognises the importance of ecosystems and believes that sustainability is the key to future policies, it is still adopting new unsustainable ways to solve this problem (Blühdorn, 2013; Moore, 2015; David, 2020). The fundamental cause of ecosystem degradation is the failure of the system and model (De Groot et al., 2010), which can not be solved by blindly maintaining the established model. To achieve sustainable and resilient prosperity requires a transition to a new economic and social paradigm.

The economics of ecosystems and biodiversity (TEEB) is a relatively new paradigm that redefines the economy and the relationship between economy and prosperity. An ecosystem is a complex of organisms and interacting non-biological environments in a specific location (Odum, 1989; Folke et al., 1991; UN, 1992; Arrow et al., 1995). Biodiversity is the sum of organisms (UN, 1992), and forests are important ecosystems with biodiversity. TEEB is a closed-loop cycle system model and starts from ecosystem and biodiversity (Kumar, 2010) . The interaction of ecosystem structure and processes is the cornerstone of TEEB, which provides production, regulation, habitat, and information (MA, 2005; De Groot, 2010). These functions can promote human wellbeing from the economy, the cultural society, and the environment (Farber et al., 2002; De Groot, 2010; MacDonald and Corson, 2012). They can provide people, especially indigenous communities, with use-value and non-use value, they can also maintain a healthy and ecologically stable environment, and promote their social culture and values (ten Brink, 2012; Russi and ten Brink, 2013; Sukhdev et al., 2014). Then policymakers can see the value of biodiversity and ecosystem services through aggregation, economic trade-off, environmental-economic accounting, raising awareness, and positive incentives (De Groot et al., 2010; Russi and ten Brink, 2013; McVittie and Hussain, 2013). Finally, the traditional model that ignores wellbeing in the decision-making process has been changed. These decisions have driven the development of ecosystems and biodiversity through direct and indirect factors (TEEB, 2012). Figure 1 shows the TEEB-conceptual framework. Based on the TEEB-concept framework, the exploration of TEEB is further deepened. Research on TEEB has been developed in the past ten years, but the number of them is not

large, and most of them focus on the construction of theoretical and policy frameworks. From 2009 to 2013, 122 case studies on TEEB were published, of which 17 were conducted in Africa but few look at medicinal plants or community-based organisations. This research is part of a larger community-led TEEB Agrifood programme in Kenya (McGlade et al., 2021).

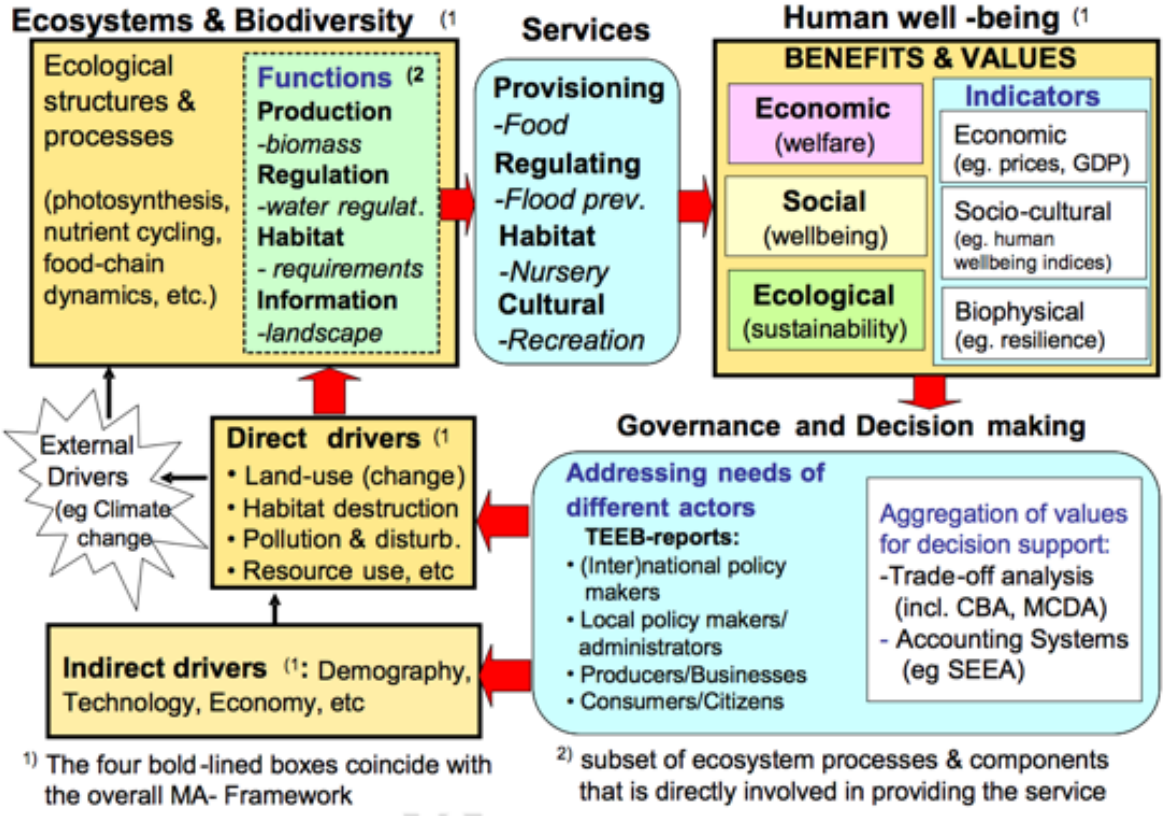


Figure 1. TEEB-conceptual framework (De Groot et al., 2010)

In 2015, the TEEB AgriFood framework was proposed and gained wide popularity. Figure 2 shows the TEEBAgriFood framework that emerged from the subsequent programme (TEEB 2018b; McGlade et al. 2021). In the past, people usually focused on agricultural productivity evaluation or production chain when measuring agricultural systems (TEEB, 2018a). Some scholars paid attention to environmental efficiency evaluation, but they tried to maintain the existing model and ignored broader sustainability and equity. The TEEB AgriFood framework provides a new overall evaluation model composed of stocks, flows, outcomes, and impacts (TEEB, 2018b). Among them, stocks include natural capital, produced capital, human capital, and social capital. They support agriculture and food outputs, ecosystem services, residuals, and purchase inputs, which create an agrifood value chain. These dynamics promoted changes in the outcomes and changes in the stock of the four capitals and then acted on human wellbeing. The framework provides methods for different actors and makes them closely connected with other stakeholders. This research adopts this framework to explore the interrelationship between medicinal plants in the forest and the economic, social, health, and environmental impact. Additionally it gives community-based organisation suggestions for decision-making, thereby improving the human wellbeing and prosperity in MFC.

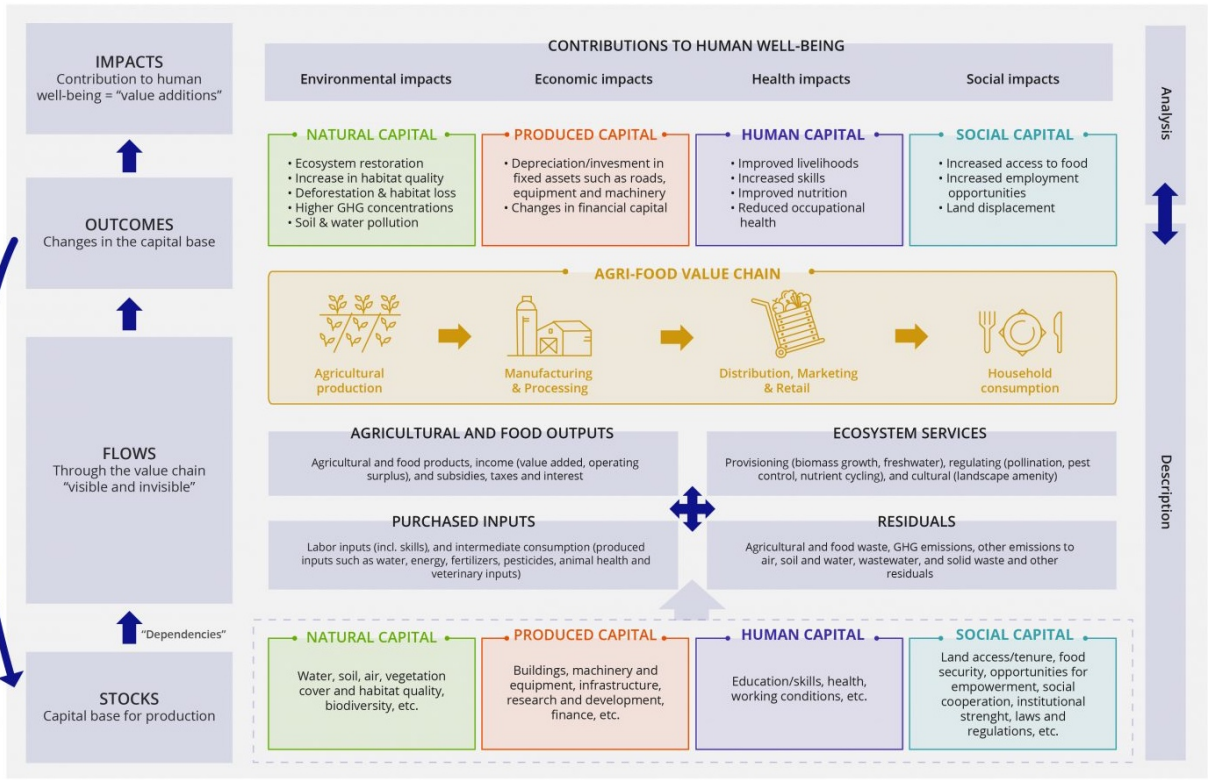


Figure 2. The TEEB AgriFood Framework Components (TEEB, 2018b).

2.2 Community-based Organisation: Important Actor to Explore Locally Contextual Approach

In the face of diverse challenges, there is no single path to prosperity (Moore, 2015). However, in past studies, the development of the Global South has been conceived as a one-way and global adaptation. The orthodoxy that links the development of the Global South with global economic growth affects generations of people worldwide (Coyle, 2014; Hepburn et al., 2014; Moore, 2015). Increasing inequality has broken this idealized utopian model, and the single dominant economic model in the global south urgently needs to be reevaluated (Stiglitz et al., 2010; Gamble, 2014; Atkinson, 2015; Moore, 2015; Jackson, 2017). People have gradually realised that the approaches to achieve prosperity in different places are different, and a single top-down model cannot give a fundamental in-depth understanding (Escobar, 2018). Policymaking and economic development should integrate the voices of local communities, and a holistic, inclusive, and locally contextual approach to prosperity must be developed (Moore, 2015; McGlade et al. 2021). However, there is a lack of studies on creating this approach to prosperity.

Community-based organisations (CBOs) play an important role in developing this bottom-up approach. CBOs are non-profit organisations that represent the community and meet the community's needs (Glik et al., 2014; Blakeney et al., 2015; Caldwell et al., 2015). The members of CBOs live in the community and have regular contacts with local people, so they can wholly understand local needs, culture, and social experience and respond more effectively and faster. CBOs can intervene in policy formulation and supervision, produce inclusive

decision-making processes, provide members with sufficient bargaining power and promote community empowerment (Dale, 2001; Weinberger and Jutting, 2001; Seong-Kyu, 2004; Blakeney et al., 2015). Besides, the participation of CBOs can mediate relationships, promote community unity, and help eliminate the helplessness that may be caused by poverty (Nyamugasira, 1999; Akintobi et al., 2012; Burkhalter et al., 2013; Kakietek et al., 2013; Kelaher et al., 2014). However, some CBOs may lack funds, resources, skills, which affect their effective performance and inhibit their ability to provide more diversified development services to their members and the entire community (Opare, 2007).

The ability of CBOs to promote community development and transform depends on whether they can become effective change agents through necessary capacity improvement (Smith et al., 2001; Opare, 2007). Effective leadership building, regular networking, and registering with official agencies are considered factors that promote the development of CBOs (Green and Matthias, 1997; Pesche, 2004; Grady, 2005; Opare, 2007). In the current research literature, there is no consensus on the definition of community participation. Most of the relevant literature evaluates the participation of research participants or community members, but it rarely involves how CBOs are involved. According to a summary of the literature, Community-based organisation engagement is composed of demand, partnership, resources (including but not limited to personnel, funds, expertise, and equipment) and results (Kelaher et al., 2014; Caldwell et al., 2015; Darling et al., 2015; Singer et al., 2015; Woodruff et al., 2016; Adebayo et al., 2018). CBOs need to reach a consensus with stakeholders on their needs (Burkhalter et al., 2013; Caldwell et al., 2015; Woodruff et al., 2016). CBOs strengthen mutual trust with stakeholders through two-way communication (regular meetings, teleconferences, webinars and online conversations), process transparency and accountability (Caldwell et al., 2015; Darling et al., 2015; Honeycutt et al., 2015; Singer et al., 2015). When conflicts arise, CBOs and stakeholders should have active dialogue (Napoles et al., 2014; Darling et al., 2015). CBOs also provide planning, training, intervention development and advice for stakeholders (Boutain and McNees, 2013; Honeycutt et al., 2015).

With the high cost of modern medicine and the inadequacy of public health services, the demand for medicinal plants in Kenya increases due to their cheap price and high effectiveness (Sheldon et al., 1997; Wanzala, 2017). Local CBOs began to work on this demand for 1) promoting primary health care in the community. 2) protecting indigenous medicinal plants and enriching their research. 3) providing employment opportunities and generating income for community members. The services and products these CBOs provide and their models are different. "Farmers With a Vision", a community-based organisation affiliated with Busia County, opened a garden for medicinal plants and processed them into treatments and other products. They created the popular mosquito repellent from the artemisia plant and made anti-fungal and bacterial soaps, ointments, and anti-malarial tea, marketed under the registered label Didasco Products (Wanzala, 2017). They trained local farmers to grow various medicinal plants and taught them valuable knowledge about the use of medicinal plants. However, the organisation is currently facing the challenge of a lack of funds. Because traditional medicine has been underestimated, the overtures to banks and micro-finance institutions have been rebuffed. In communities near Kakamega Forest, two medicine plants are domesticated to

boost livelihoods. Local farmers collected and sold *Mbombela* to revitalize, appetize and clear hangovers and *Ocimum Kilimandscharicum* to create balms and ointments to treat flu, cold, chest congestion, pain, and insect bites (TNH, 2009). The Mondia community organisation encouraged farmers to cultivate the medicinal plant, processed in a factory built with financial assistance from international donors.

The forests in Kenya have obvious biodiversity and are vulnerable under the influence of human activities. Although some CBOs make an effort to protect the ecosystem and medicinal plants and actively assume social responsibilities, there are still many challenges. The phenomenon of over-harvesting of medicinal plants is difficult to control, which greatly endangers the survival of wild medicinal plants and harms the community's long-term development (Kavilu, 2018). Technical and intellectual limitations hinder sustainable logging levels and the safety and quality of medicinal plants (Nankaya et al., 2019). With globalisation development, local CBOs are relatively small in scale and lack funds, making it difficult to compete with foreign companies. Some people have a distrust of medicine plants (Chebii et al., 2020). Traditional indigenous medicinal plant knowledge has not been sufficiently protected, and the pass-down of this knowledge between generations has not been very well documented (Moore et al., 2020). This study focuses on the medicinal plants in Mau Forests Complex to explore how the local community-based organisation can solve these challenges.

2.3 Medicinal Plants Certified by KEBS: Cherishing Products to Improve Human Wellbeing

Medicinal plants are welfare given by nature. The data from World Health Organisation shows 70% of the population in the world uses medicinal plants for health care (Mamedov, 2012). As early as ancient Greek and Chinese mythology, stories about medicinal plants to treat diseases have been recorded. Much research focuses on the uses of medicinal plants, including common infections (colds, fever, indigestion) and deadly diseases. For example, artemisinin extracted from Chinese herbal medicines to anti-malaria (Miller and Su, 2011) and the Madagascar periwinkle can treat cancer (Cragg et al., 1996). In some Asia and African countries, traditional medicinal plants are admired, the preference for traditional medicinal plants is also increasing in western countries. In 2019, the global herbal medicine market exceeded USD 75 billion and was expected to grow (WHO, 2019). However, the uses of medicinal plants are mainly passed on from generation to generation by indigenous based on practice experience and observations (Kokwaro, 2009), which causes opacity in the therapy knowledge, in addition with the weak global regulatory framework, many people remain questioning and distrustful of it (Chebii et al., 2020).

There are many precious indigenous medicinal plants in the forest of Kenya (Otieno and Analo,

2012). However, the process of developing herbal medicine in Kenya has been very torturous (Chebii et al., 2020). The Witchcraft Act of 1925 labeled traditional medicine as witchcraft. This law caused a lasting negative impact on the identity of medicine plants. Until 1992, Convention on Biological Diversity advocated for traditional medicine and emphasized the importance of medicinal plant research, protection, and consumption. The traditional medicine and medicinal plants bill of 2010 provided an appropriate definition for medicinal plants and emphasized domesticating wild medicinal plants, intellectual property protection, and indigenous knowledge. The 2018 Traditional and alternative medicine policy draft emphasized biodiversity conservation, sustainable harvesting, and cultivation of medicinal plants and made provisions to establish the legal and institutional framework for traditional medicine. In 2019, The Health Laws recognized traditional medicines as health products. Kenya's Pharmacy and Poisons Board (PPB) and the Ministry of Health are responsible for the certification and registration of all pharmaceutical drugs manufactured or imported. The standards were developed by many stakeholders, such as consumers, academia, industry, and government. The scale of trade in traditional medicine and the existing governance system are still unclear, and there is basically no documented record.

The Kenya Bureau of Standards (KEBS) is the government agency that provides Standards, Metrology and Conformity Assessment (SMCA) services in Kenya. It was established in 1974, and with the reconstruction of the East African Community (EAC) and Common Market for Eastern and Southern Africa (COMESA), it has continued to develop and improve, becoming more regional and international (KEBS, 2021). KEBS have a series of rules and evaluation systems to medicinal plants, which can solve the problems of opacity and weak supervision. KEBS requires pre-export verification of conformity for herbal products, and issues a certificate of conformity for products that meet the requirements through designated inspection agents. It not only provides people with reliable herbal products, but also promotes the international trade and sustainable production system of medicinal plants. However, some indigenous communities do not know much about KEBS, and hardly try to use it to certify medicinal plants. This research aims to explore how CBOs deal with KEBS and create a series of medicinal plants certified by KEBS to promote indigenous wellbeing.

CHAPTER THREE: METHODOLOGY

3.1 Study Area

The study was conducted in the Mau Forests Complex, located in the Rift Valley of Kenya. It straddles the equator between 00 1' 0" N and 00 55' 0" S and latitudes of 350 15' 0" and 360 15' 0" E, and occupies more than 500,000 hectares, with deep and fertile volcanic soil (Mutugi, 2015; KBAP, 2020). It was part of a larger project on the application of the TEEB AgriForestry in Kenya (McGlade et al. 2021). The Mau Forests Complex is the largest indigenous forest in East Africa and one of Kenya's main water towers, which is rich in biodiversity (KBAP, 2020; McGlade et al. 2021). It comprises gazetted forest blocks, community forests, and non-gazetted forests, crossing Bomet, Baringo, Kericho, Nakuru, Narok, and other counties (LVBC, 2011). Figure 3 shows the location and size of the Mau Forests Complex. Many rivers pass through here, and it is one of the highest rainfall areas in Kenya, providing the livelihood for unique genetic diversity and complex vegetation (Beentje, 1994). Mau Forests has a large number of precious medicinal plants and is also the most important honey production area in Kenya (Sloan et al., 2014). In the past, the Mau Forests Complex was inhabited by indigenous communities, such as the Ogiek, who pursued a sustainable lifestyle that can protect and maintain biodiversity (Nabutola, 2010). The forest provides a home for more than 400,000 families living nearby (McGlade et al. 2021). It offers products and services such as food, water, charcoal, medicine, feed, and construction, supporting a wide range of economic sectors, including energy, tourism, agriculture, industry, and health (CIA, 2014). Mau Forests is not only a local resource but also an important natural resource with regional and global impact.

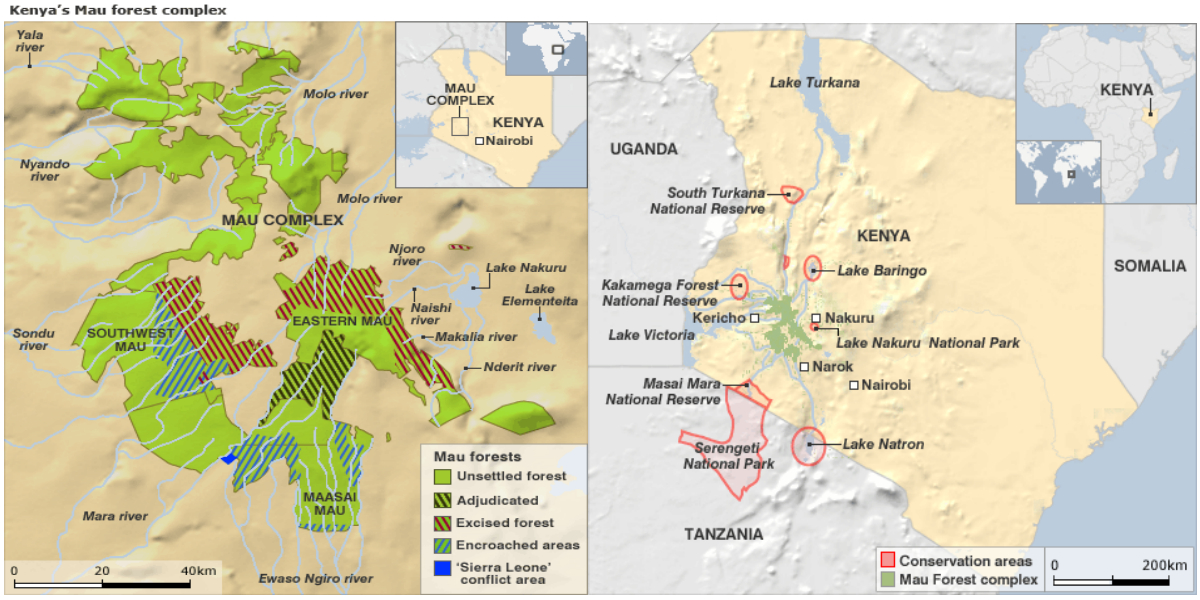


Figure 3. Location of Kenya's Mau Forests Complex (GOK, 2009)

However, Mau Forests has suffered much damage in recent years. From the 1960s to 2010, deforestation in Mau Forests is estimated to reach 160,000 hectares (Hesslerová and Pokorný, 2010). Population growth and human settlement, climate change, unsustainable livestock

grazing, charcoal burning, and wood logging from forests have resulted in more than 25% of the Mau Forests being deforested or degenerate, which also caused the household income and prosperity of the local community to drop significantly (UNEP, 2008; GOK, 2009). Figure 4 shows the change of the size of Mau Forests from 1980 to 2020. Land degradation has adverse effects on forest health, resource availability, and biodiversity, which lead to the loss of natural capital, ecosystem services, and the ability to adapt to climate change (Myers, 1988; Mwangi et al., 2014). The medicinal plants in Mau Forests are facing a crisis due to land degradation, forest reduction, and overharvesting trees by unscrupulous herbalists (Kavilu, 2018). This research focuses on the medicinal plants in the Mau Forests Complex to gain insights into their growth, distribution, usefulness, and how community-based organisations can use these plants sustainably to face its challenges and promote community prosperity.

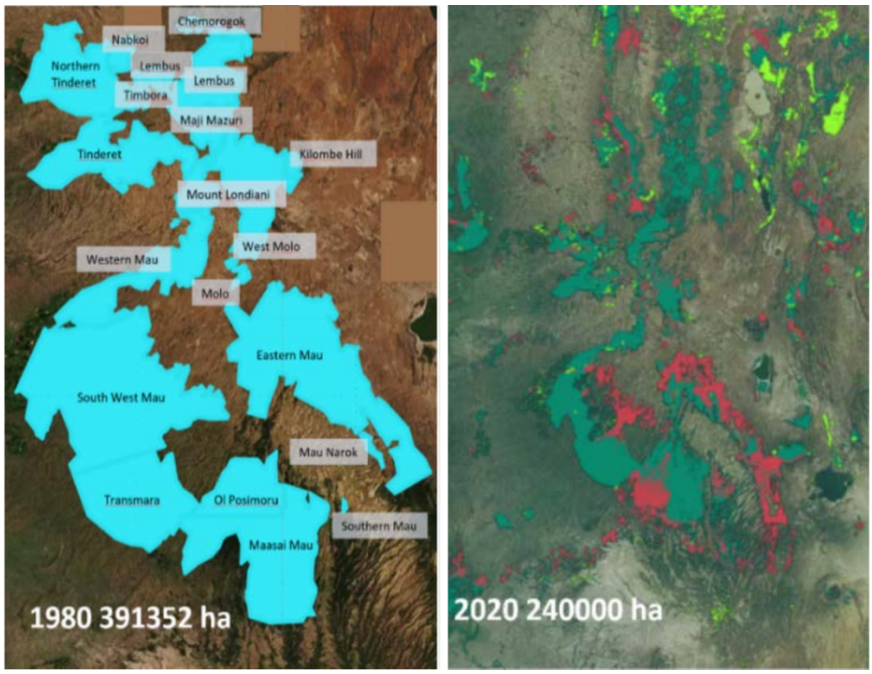


Figure 4. The Change of Mau Forests size from 1980 to 2020. Gazetted forest block in 1980s; Deforested area from 2010 to 2020 (red) and regrowth (light green). (McGlade et al., 2021)

3.2 Research Design

The core of this research is to estimate and enhance the value of medicinal plants in the Mau Forestss Complex to the community and Kenya. This research uses a community-led process to collect primary and secondary data, and adopts a mixed research method to explore the values of the medicinal plants in Kenya's Mau Forests and the potential for local communities to use the sustainable forest ecosystem. The community and the environment are dominant in driving innovation and planning decisions. TEEB AgriFood Framework was used in this research.

This study uses the field research done by local communities and the Procol Kenya team, and the methods for estimating above-ground biomass to learn about the abundance and species of local medical trees (McGlade et al. 2021). This study also uses literature review to obtain the

medicinal use of these trees. The questionnaires answered by the local community leaders are used to distinguish whether the uses of these trees are the same as in the literature, find whether communities use the trees selectively, and get their experience with selling or creating value-added products. The secondary data would be collected to compare and combine with the primary data. Through these methods, this research can analyse the long-term commercial potential for small-scale community-based medicine organisations, to develop a range of KEBS-approved indigenous remedies and treatment and to sustainably provide living standards for the locals. Figure 5 shows the flow of the methods in this research.

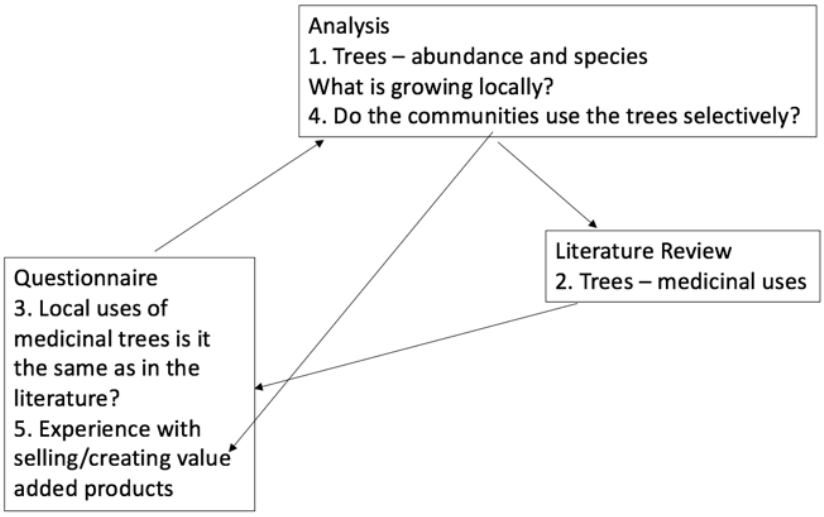


Figure 5. The methods flow of this research.

3.2.1 Research Philosophy, Epistemological Approach and Methodology

This study uses a research philosophy that is a mixture of positivism and interpretivism. The ontology of positivism is an actual and independent reality, which uses observable and measurable facts and quantitative analysis (Goldkuhl, 2012). Positivism typically uses highly structured, large samples and measurements (Saunders, 2018) (Figure 6). This method is used to assess the stock of medicinal plants and ecosystems in this research. The ontology of interpretivism is complex and diverse, which relies on in-depth investigations and qualitative analysis (Goldkuhl, 2012). Interpretivism focuses on concepts, stories, narratives, perceptions, and explanations constructed through culture and language (Saunders, 2018). This method is used to understand the views and experiences of local community leaders, social capital, and cultural ecosystem services in this research.

This research is agnostic to epistemological approach and combines inductive and deductive, semantic and latent, critical realist and constructionist (Braun and Clarke, 2006). The deductive-inductive data collection is informed by the propositions of the theoretical framework and then used to explore the phenomenon, identify themes and patterns to create a conceptual framework (Newman, 2002; Morse and Mitcham, 2002). The semantic-latent analysis explains what people say that support data, which achieve “ideas, hypotheses and conceptualizations to ideologies and then to be theorized shaping as the content of semantic

data" (Landauer et al., 1998; Goddard, 2011). The critical realist-constructionist approach is used to obtain the objectivity of people's experiences and uses a framework to analyze how people perceive a situation (Braun and Clarke, 2006).

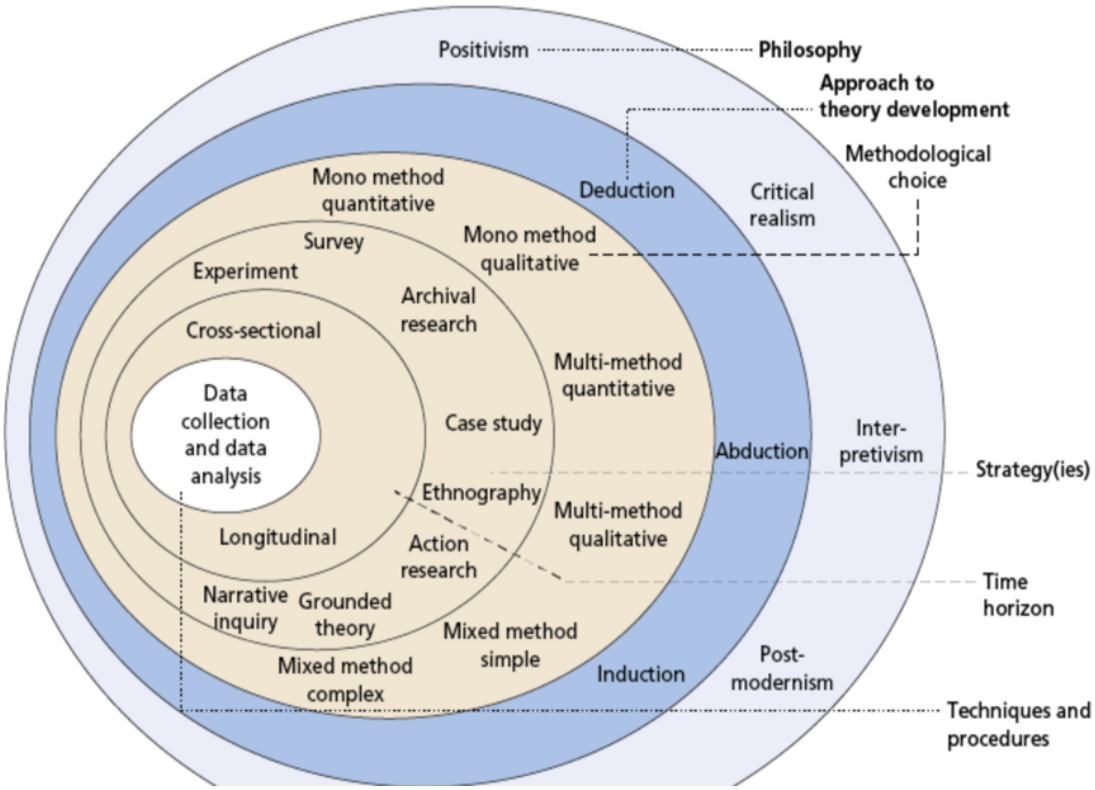


Figure 6. Research Onion (Saunders et al., 2018).

This research uses the mixed method (Fielding, 2012) and the triangulation design (Creswell et al., 2017) to collect and analyse the quantitative and qualitative data. The main quantitative data (the abundance and species of local medical plants) and qualitative data (the views and experience from the community-based organisations), including primary data and secondary data, are collected and analysed simultaneously. Quantitative data is collected from the field research and the methods of estimating above-ground biomass. Qualitative data is collected from the literature review and survey (questionnaire). The descriptive analysis is used for quantitative data to transform it into descriptive statistical graphs and ordinal variables with correlation and comparison tests through the application of SPSS and QGis. The thematic analysis is used for qualitative data to summarise the responses as themes and code them. The most frequent theme and the emotions to the themes (positively, negatively, or neutrally) are identified from frequency analysis and sentiment analysis. The exact results from analysing quantitative and qualitative data are mixed and combined/compared with the secondary data for interpretation (Figure 7).

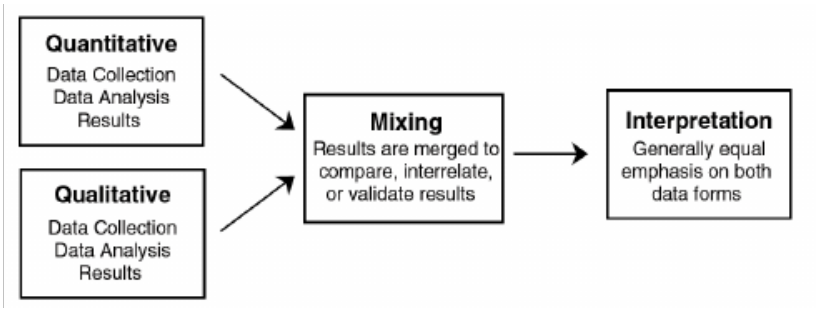


Figure 7. The process of the triangulation design (Creswell et al., 2017).

3.2.2 Community Science and Co-production Methods

Community science is driven and controlled by the community and is based on local knowledge, community learning, collective action, and empowerment (Charles et al., 2012). Co-production is the participation of different perspectives to create knowledge to formulate and implement policies and plans (Galuszka, 2019; Osuteye et al., 2020). It relies on the epistemology of knowledge that challenges unitary visions but creates knowledge through multiple ways of living, working, and observing the environment (Osuteye et al., 2019).

Before, people mostly relied on the research and governance model of "Western" scientific versus, which were prone to fall into a stalemate with a single vision for the future and made it difficult for theories to adapt to local development and achieve local prosperity (Mazzocchi, 2006). The community science and co-production methods truly connect scientific methods and community learning. They understand science as broadly encompassing different scientific inquiry modes to solve complex social and ecological challenges. This research aims to use community science and co-production methods to support the ecosystem management and environmental sustainability of Mau Forests Complex, and to promote a better "match" between ecosystem and policy in local and higher-level decision-making (Folke et al., 2007; Ekstrom and Young, 2009; Epstein et al., 2015).

3.2.3 Theory of Change and Logical Framework

This research is inseparable from the Theory of Change and Logical Framework. Theory of Change focuses on the complex social, economic, political, and institutional processes underlying social change (Bullen, 2013). This research uses the Theory of Change to capture different processes and approaches related to past changes and potential policy interventions, and through the combination of logical chains in the Logical Framework, to find the relationship between dimensions and capitals (stock, flow, value). Figure 8 shows the connection between Theory of Change and Logical Framework. Figure 9 shows the Theory of Change in this research.

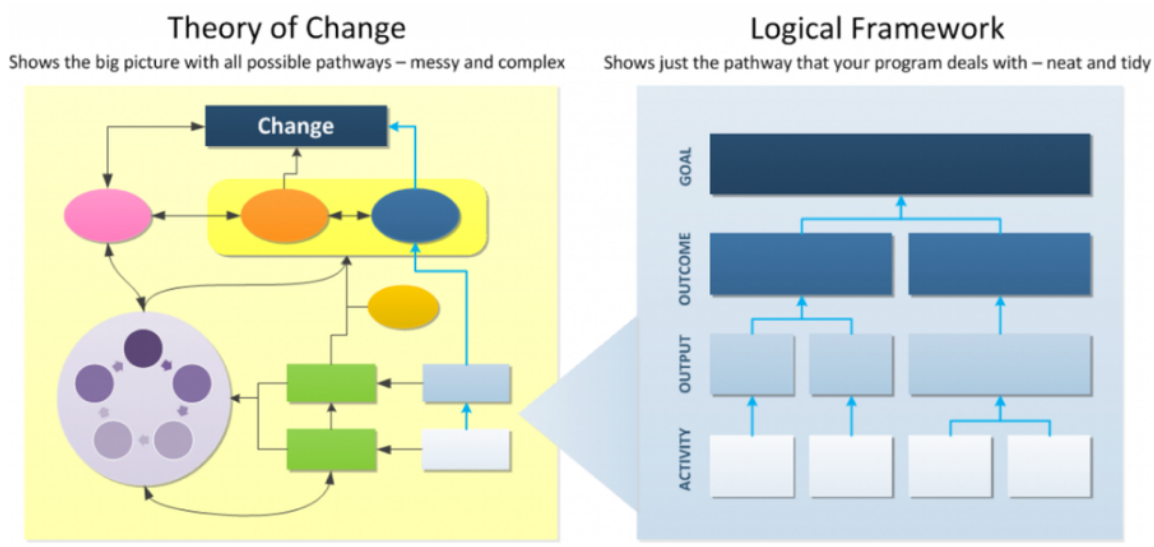


Figure 8. Between theory of change and logical framework (Bullen, 2013).

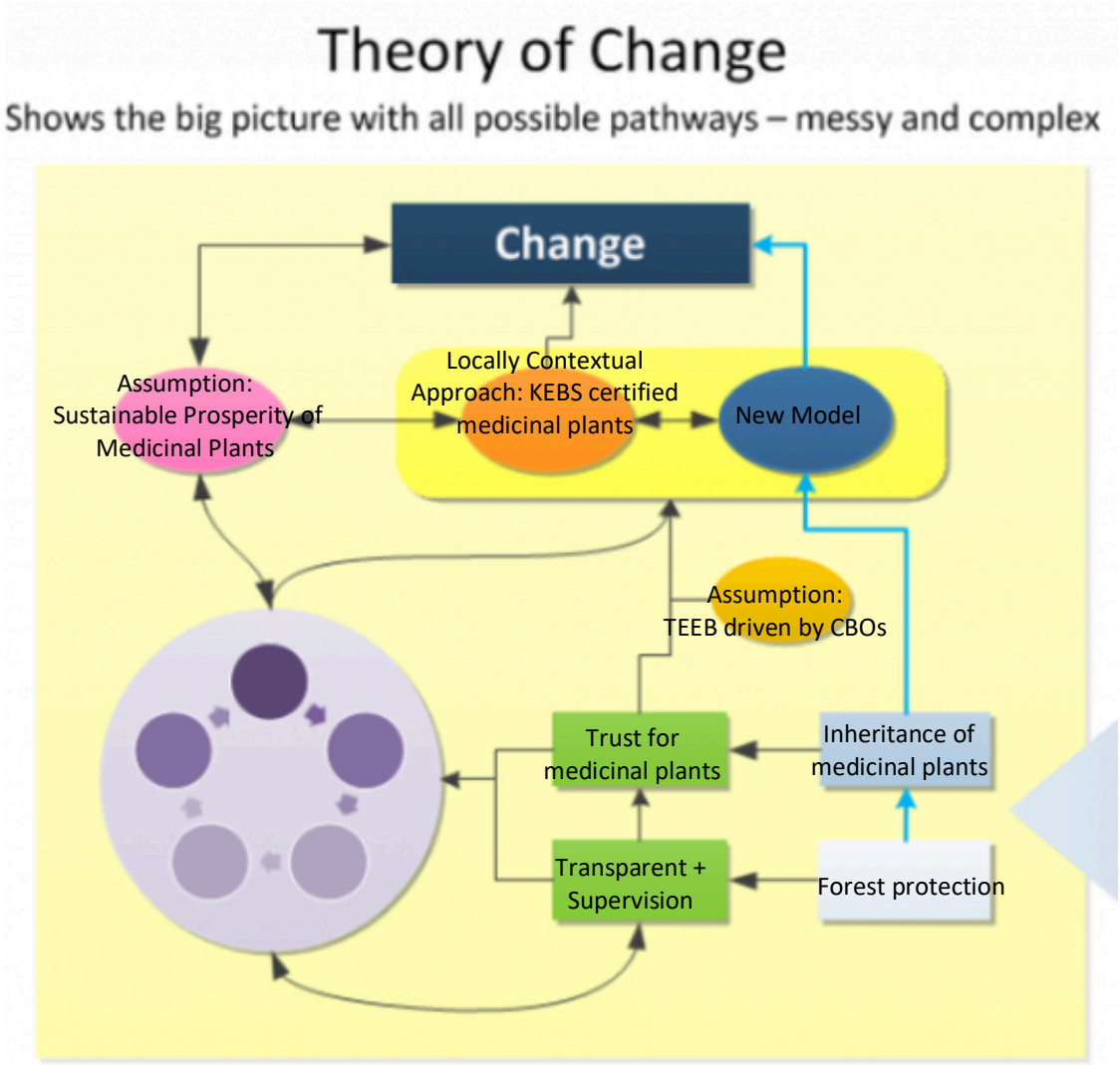


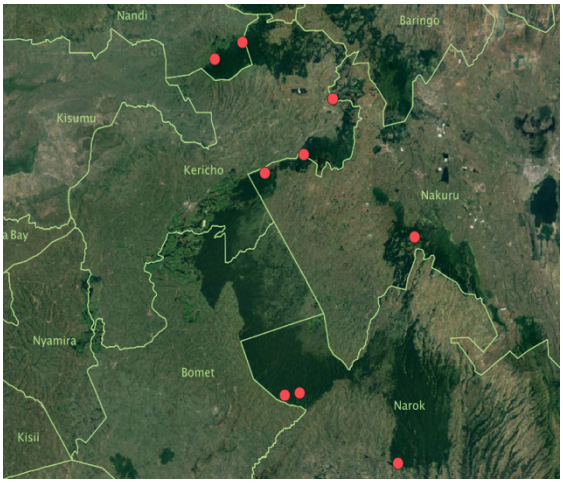
Figure 9. The Theory of Change in this research.

3.3 Sampling and Procedure

This research uses a series of methods to collect primary and secondary data to conduct qualitative and quantitative analysis for the medicinal plants in MFC. A large amount of data on the biophysical elements of natural capital was obtained and supported through field observations and estimating above-ground biomass methods. The experiences for communities to collaborate with KEBS and local uses of medicinal plants are collected by the survey. These primary data are compared with the medicinal uses in the literature (obtained through literature review) to find the differences and the selection from local people. Finally, this research finds the most potent medicinal plants in the Mau Forests Complex and analyses the long-term commercial potential for community-based organisations to develop a range of KEBS-approved indigenous remedies and treatments.

3.3.1 Primary Data: Methods for Estimating Above-Ground Biomass

Estimating above-ground biomass is widely used in forest inventory planning and project estimation, monitoring changes in carbon stocks and monitoring biodiversity (Woldemariam, 2015). Above-ground biomass includes all biomass in living vegetation, including woody and herbaceous plants, and above the soil, including stems, stumps, branches, bark, seeds, and leaves (Woldemariam, 2015; McGlade et al., 2021). Its changes are important indicators that affect related welfare, such as carbon emission reduction. Estimating above-ground biomass requires a series of steps, such as selecting land use categories, defining project boundaries, stratification, mapping (IPCC, 2006; Kangas and Maltamo, 2006). This research uses key indicators "the species name," "diameter," "height," "state" to determine the parameters to be measured, establishes basic spatial units (BSUs) of 50mx50m (100 sub-blocks of 5mx5m), and sample within nine blocks that are visible to each other (Figure 10). The data are input into the database. SPSS is used to plot the relationship visually between height and diameter of medicinal plants, and the geographic information system (QGis) is used to map the overall distribution and each species distribution of medicinal plants. Geographic information platforms have standard procedures to ensure that the same reference coordinate system is used.



County	BSU Locations
Bomet	NAIROTIA A, NAIROTIA B
Kericho	CHEPSIR B, LONDIANI-MASAITA, KEDOWA
Nakuru	KIPTUNGA
Nandi	TINDERET CENTRAL, TINDERET SOUTH WEST
Narok	NKARETA

Figure 10. Location of BSUs.

3.3.2 Primary Data: Questionnaire

This study conducted surveys on six community leaders in the Mau Forest Complex in Kenya. These interviewees have a deep understanding of medicinal plants and the community in Mau Forest. The survey uses a structured questionnaire, guided by a mixture of closed and open questions (see questionnaire in Appendix one). The questionnaire method is a statistics and surveys approach that uses controlled measurements to collect reliable data and answer the research question (Bryman, 2016). The online questionnaire is posted on the ArcGIS survey and was sent to the community leaders. The conduct of all questionnaires complies with research ethics and is to be filled out anonymously. The information captured and recorded includes: 1) the name of the medicinal plants they used; 2) the disease/illness that these plants are used to treat; 3) the feedback on phytotherapy; 4) their experience with KEBS; 5) views on medicinal plants certified by KEBS. Descriptive analysis was used for quantitative analysis, and thematic analysis was used for qualitative analysis. The results were compared and combined with secondary data to obtain the final interpretation. Through the questionnaire, this research gets a localized perspective about medicinal plants in Mau Forest.

3.3.3 Secondary Data: Literature Review

This research collects secondary data from two sources. Some data is collected from the various international indices, the System of National Accounts, and government departments or organisations, such as site-specific data on medicinal plants, soil measurement, biodiversity, and water quality. This secondary data is used to understand the current objective status of the medicinal plants and ecosystem. The other data is collected from books, articles, and reports published. The literature review is used to organise the medicinal use of these trees in the Mau Forests Complex and conduct the thematical analysis. The themes "ethnomedicinal medicinal uses," "preparation methods," and "parts used" are extracted from the literature and coded. This data is used to compare with the primary data to know the differences between local uses and uses in literature and gain the selection preference of local people. The secondary data about how community-based organisations protect and improve medicinal plants' value and the economic, socio-cultural, and ecological factors behind it is also collected from this source. The story of a community-based organisation in Bomet, combined with the views from community leaders in the questionnaire, can provide a pathway to CBOs to sustainably develop the medicinal plants and promote localizing prosperity in the specific place and culture. The secondary data combines or compares with the primary data, and better explains the primary data and its emotions.

3.4 Scope, Limitations and Reflexivity

This research places particular importance on the medicinal plants and community-based organisations in Mau Forests Complex. Therefore, the survey recipients are mainly community leaders, but due to their small number and their first language not being English, there may be

a risk of miscommunication in filling out the questionnaire. Besides, some questions are qualitative, meaning that the results are difficult to generalise. This research attempts to use thematic analysis to find patterns in the responses and analyse it to reduce bias. However, the personal nature of the subject and insufficient sample composition may affect the survey results.

Ethics were considered throughout the whole of the research period. The collection of the main data obtained the consent and support of the local community and the consent of all interviewees. All secondary data are available in the public domain.

CHAPTER FOUR: FINDINGS AND ANALYSIS

4.1 Species, Distribution and Growth Status of Medicinal Plants in Mau Forests

This research uses the data on the species, distribution, and growth status of medicinal plants in the Mau Forests Complex collected through field research and methods for estimating above-ground biomass and organises this information into a database (McGlade et al. 2021). The Mau Forests Complex has significant biodiversity, especially among medicinal plants. Nearly 16,000 medicinal plants, including more than 200 species, were recorded in the Mau Forests Complex through the larger programme (McGlade et al., 2021). Figure 11 shows the distribution of the medicinal plants in the Mau Forests Complex. Among them, *Acanthus eminens* is the most commonly found medicinal plant in the Mau Forests Complex, with a total of 1247 plants.

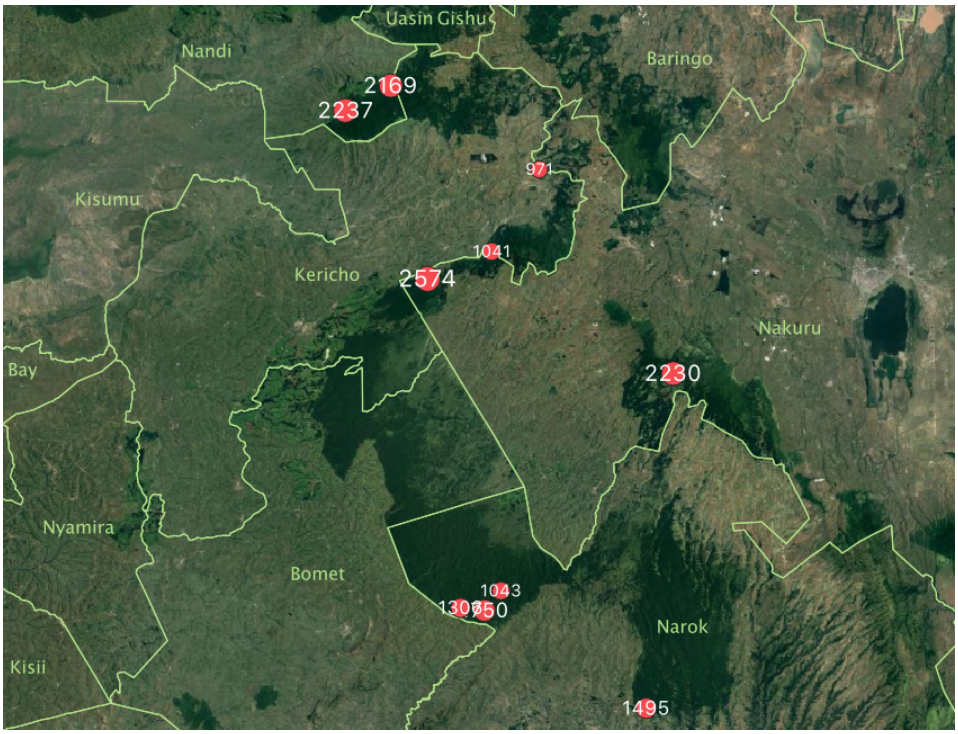


Figure 11. the distribution of the medicinal plants in the Mau Forests Complex

The 9 BSUs (basic spatial units) samples in this study all contain a large number of medicinal plants and multiple species. See Appendix II for the distribution map of each species in Mau Forests. This data reflect the differences in the growth of medicinal plants in the five communities. In Bomet, the most diverse community, there are 10 species of medicinal plants with more than 100 plants. Kericho and Nandi follow with 7 species each, Nakuru with 5 species and lastly Narok with 3 species. This data may be influenced by the uneven number of BSUs in each community. Different species develop differently in different communities. In the Nandi community, *Acanthus eminens* is the most widely distributed, equal to the entire

Mau Forests Complex, with 694 plants found. *Basella spp* is the most common in the Kericho community (353). The most widely distributed in the Nakuru community is *Myrsine africana* (1005), in the Bomet community is *Podocarpus latifolius* (521), in Narok community is *Trichocladua ellipticus* (466). Figure 12 shows the distribution of these species in the Mau Forests Complex. Under the premise of no other influencing factors, the greater the number of medicinal species in the community, the more suitable the species is to survive in the community. The most widely distributed species may have the most development potential, which can provide suggestions for sustainable planting, using, and selling of the species in the community. Medicinal plants of some species are widely distributed. In the research, 21 species are found in 4 communities, and 15 species are found in 5 communities. Among them, Teclea nobilis was found in 9 all BSUs in five communities.

Figure 12. Distribution map of the most widely distributed medicinal plant species in each community. (From top to bottom, from left to right are *Acanthus eminens* in the Nandi, *Basella spp* in the Kericho, *Myrsine africana* in the Nakuru, *Podocarpus latifolius* in the Bomet, *Trichocladua ellipticus* in the Narok).

The overall community-led field survey research produced data on the growth and health status of medicinal plants in the Mau Forests Complex through the collection and analysis of the

height, diameter, and status (alive, dead, cut half). Most of the medicinal plants in the Mau Forests Complex are healthy. The higher the height and the longer the diameter medicinal plants have, the healthier they are. Most medicinal plants have a positive correlation between height and diameter and are in an "alive" state.

4.2 Tranditional Uses of the Medicinal Plants in the Mau Forests Complex

4.2.1 Local Uses of Medicinal Plants by Communities

Through a survey of local community leaders, 43 medicinal plants mainly used by people in the Mau Forests Complex are obtained and recorded (Figure 13). Among them, *Enkoloshoo*, *Entamejoi*, and *Esumeita* are used most frequently. *Urtica massaica* (*Entamejoi*) is effective for anti-diabetic activity, and its ability to low blood sugar is equivalent to that of conventional drugs (Mwangi, 2015). It is also used to treat hair loss, constipation, indigestion, ulcers, anemia, high blood pressure, and night sweats (Wasike, 2013). *Esumeita* is considered to have great medical value, and its barks can be used to treat malaria (Semali and Kincheloe, 2002). *Esumeita* is also used to treat persistent headaches caused by enlarged bile (Tarayia, 2015). Most medicinal plants are found in the forest, and a few are found in community land, which may emphasize the role of forest reserves in helping to protect medicinal plants.

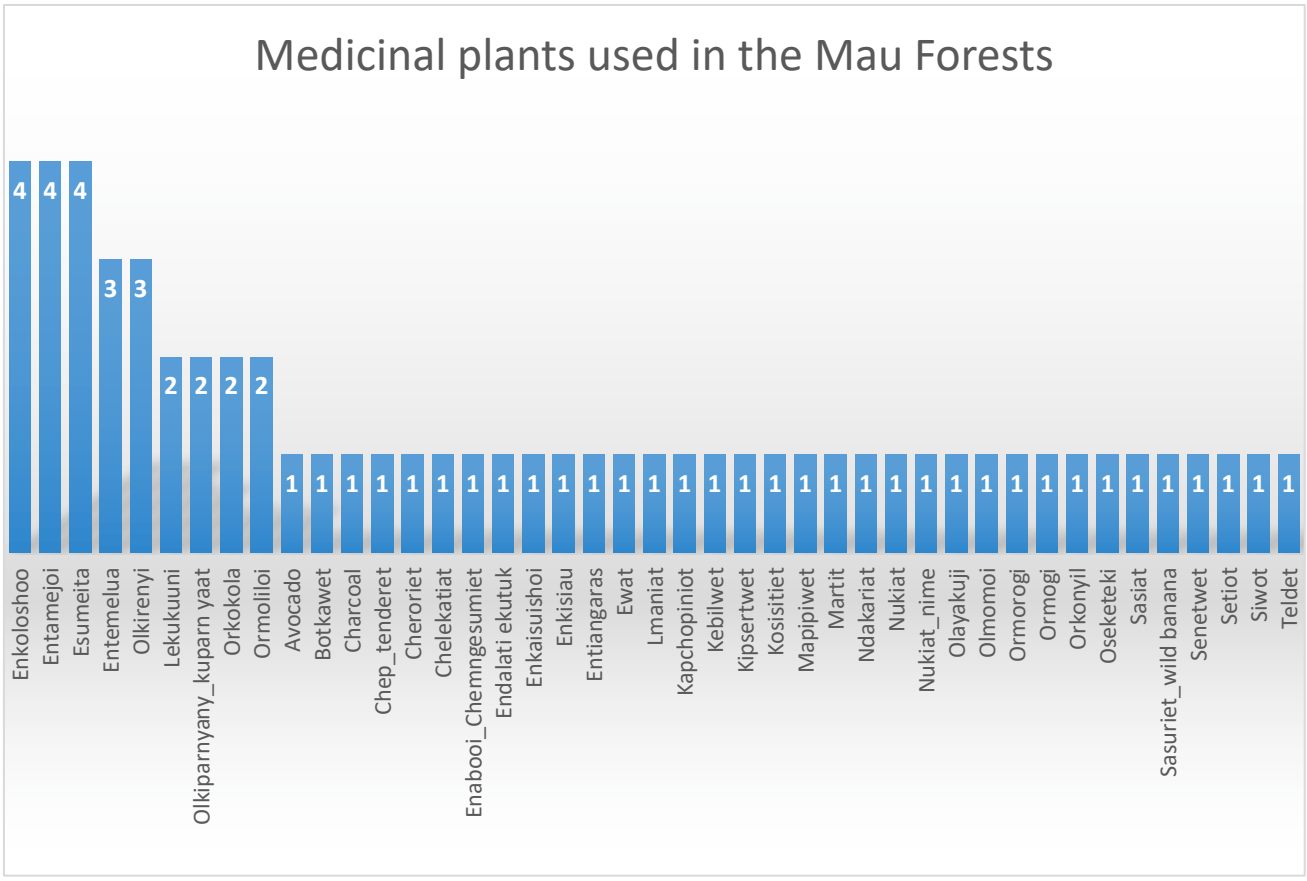


Figure 13. Medicinal plants used in the Mau Forests (See Appendix two for species names).

These medicinal plants have a wide range of therapeutic uses. The use cases are very different, divided into 13 categories, of which the most common use is to treat Malaria and joint pains. In addition, they are also used to treat colds, prevent the food from spoiling, treat indigestion, cure fever, asthma, ease headaches, diabetes, respiratory infections, cure sore throat, control cholesterol levels, and to treat cough. Figure 14 shows the use cases of these medicinal plants. All interviewers who gave valid answers said that these medicinal plants effectively treated diseases/illness and affirmed that they have advantages such as low price, being easily available, and fewer side effects.

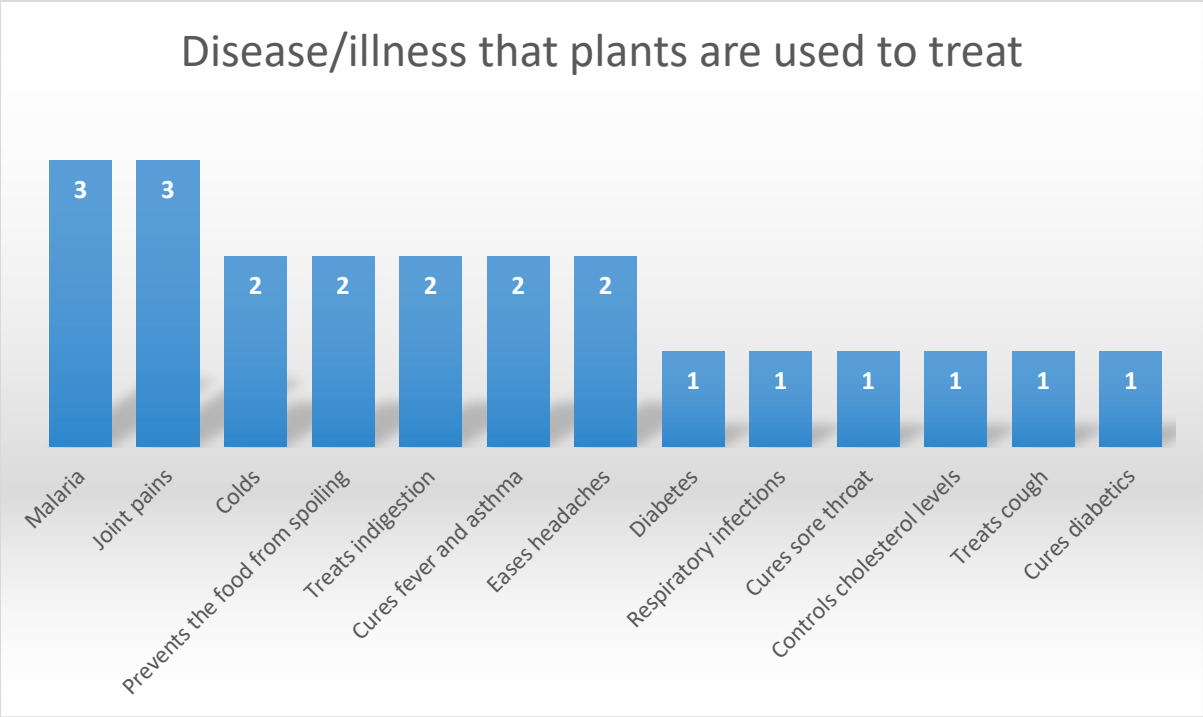
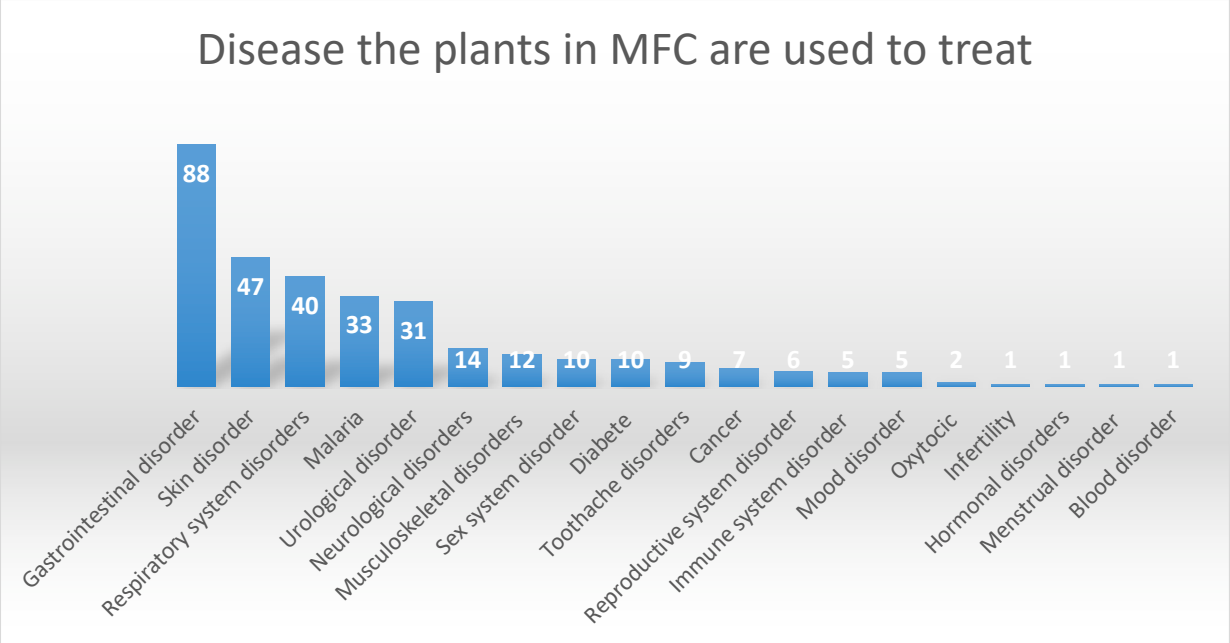


Figure 14. Disease that these medicinal plants are used to treat.

4.2.2 Recorded Uses of Medicinal Plants in the Literature

Through a literature review, this study finds nearly 200 related articles and reports, and compiles a list of the medicinal use of the plants existing in the Mau Forests Complex, including their name, genus, species, location, medicinal use categories, ethnomedicinal uses, preparation methods, and use parts (See Appendix 3). There are ten species without any recorded medicinal use. The total species of the plants in the Mau Forests Complex can treat 19 categories of system disorders, and about 14 types of them can be treated by more than five species. Most species are used for gastrointestinal disorders (27%), skin disorders (15%), respiratory system disorders (12%), malaria (10%), and urological disorders (10%). And its ethnomedicinal uses are more diverse, including treatment of fever, cold, acne, indigestion, worms, and others. Multiple species have various efficacies and can treat diverse diseases. Spathodea campanulata treats up to 6 different disorders, which makes it a valuable medicinal species (Figure 15).



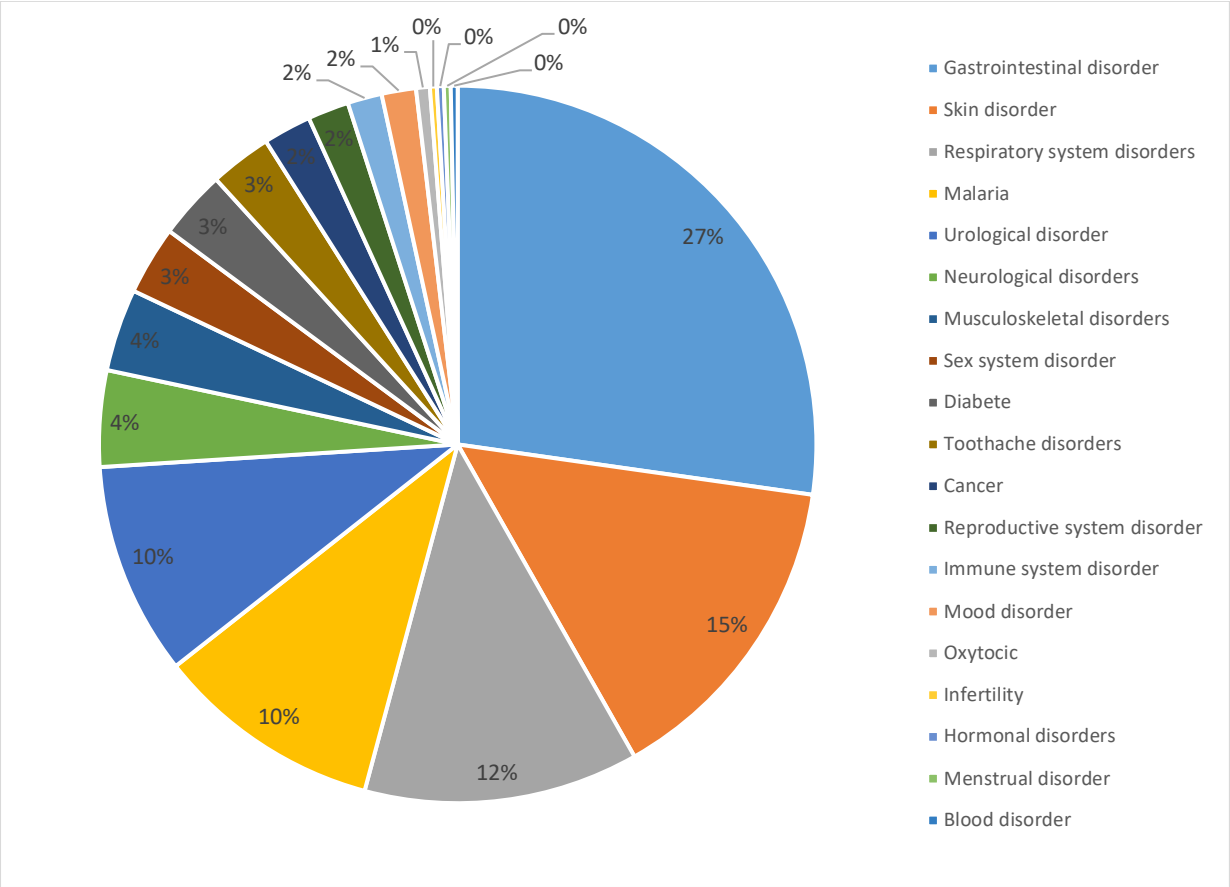


Figure 15. Disease that the plants in MFC are used to treat

These medicinal plants have various preparation methods. Decoction (89) is the most common preparation method, followed by pounded (43), infusion (20), chewed (20), boiled (13). There are also some rare preparation methods, such as mixing the medicinal plants with soup, making medicinal plants into oils. In terms of used parts, many medicinal plants have multiple parts

that can be used. Roots, leaves, and barks are all commonly used plant parts, but in a few species, the treatment agent comes from the flowers, fruits and stems.

4.2.3 The Comparison Between Local Use and Uses Recorded in Literature

By comparing the data analysis from different sources, this research finds that the medicinal plants' database this research collected cannot fully include the species that local community leaders use, and the main diseases they use medicinal plants to treat are slightly different from uses in literature. The medicinal uses in the literature are much more than the local use. It may be because the locals have selectively used medicinal plants, but it may also be due to the small number of survey samples. Community leaders did not mention the use of medicinal plants to treat skin disorders and urological disorders, but these two medicinal uses have been mentioned many times in the literature. Moreover, most of the diseases that community leaders use medicinal plants to treat are more common and are not difficult to cure, but the uses from the literature include deadly diseases, such as cancer. It may show that local uses are closer to reality than uses from literature. It is worth mentioning that community leaders use medicinal plants to control cholesterol levels, which has not been found in the literature. Besides, there are some similarities between these two. For example, malaria, colds, indigestion, and fever are the main diseases used by both to treat medicinal plants. This study finds that medicine plants in the Mau Forests Complex have great potential for treating malaria, diabetes, and some common diseases through these comparisons.

4.3 The Experience and Views of Community for KEBS Certified Medicinal Plants

Among the questions involving KEBS and experience, this study found that the current community leaders have little or nearly no association with KEBS. None of the community leaders surveyed have dealt with KEBS, and their scale of partnership is individual. Besides, they have never commercially sold the medicinal plants to KEBS. This study tried to use medicinal plant honey that is more common in Mau Forests as an example and asked them whether to consider using KEBS to certify the honey, but the answers were all negative. The reason for the interviewee not cooperating and collaborating with KEBS is a lack of basic knowledge and exposure.

The community leaders all hold positive attitudes and views that KEBS could impact the certification of medicinal plants. They believe that it can add ecological value (biodiversity conservation in key biodiversity areas; supporting wild medicinal species populations), economic value (improved livelihoods and incomes through value addition) and socio-cultural value (gaining skills through value addition of medicinal plants; preservation of genetic material; promotion of general awareness of medicinal plants benefits). Table 1. shows the thematic analysis of views for KEBS could have an impact through the certification of medicinal plants.

Table 4.1. Thematic analysis of views for KEBS to certify medicinal plants from community.

Category	The impact through the certification of medicinal plants	Count	Percentage
Ecological value	Biodiversity conservation in key biodiversity areas	1	16.67%
	Supporting wild medicinal species populations	2	33.33%
Economic value	Improved livelihoods and incomes through value addition	1	16.67%
Socio-cultural value	Gaining skills through value addition of medicinal plants	2	33.33%
	Preservation of genetic material	1	16.67%
	Promotion of general awareness of medicinal plants benefits	1	16.67%

4.4 Development of CBO for Traditional Herbal Medicines

The high requirements for medicinal plants from KEBS, the community's positive attitude towards KEBS-certified herbs, and the gap in the connection between the community and KEBS have made KEBS-certified medicinal plants an urgent need for the communities. Based on this demand, the community-based organisation for traditional herbal medicines has continued to develop, and the first community-based organisation for traditional herbal medicines was established. In August 2021, 12 herbalists from Bomet met to discuss the next steps and created a CBO in which each member has a KEBS code as a traditional herbalist. With this, the members can submit plants for certification by KEBS and ensure that the IP is assigned to individual members collectively.

This model makes medicinal plants more standardised, transparent and can even enhance people's confidence in the use of medicinal plants, thereby promoting the economic development of medicinal plants. The local community can gain benefits and increase employment by selling KEBS-certified medicinal plants, improving its well-being. Besides, herbal products certified by KEBS are more authoritative and more attractive to consumers. Promoting the KEBS certification and selling KEBS-certified herbal products through CBO can effectively eliminate the deforestation and non-compliant sales of merchants from outside by decreasing the demand. CBO for traditional herbal medicines from the community considers the impact of the environment on the community when making decisions, which promote the sustainable development of medicinal plants. In addition, this model is also conducive to the inheritance of medicinal plants' knowledge, and strengthens the indigenous understanding, which has educational and social-cultural significance. This innovative community-based organisation for traditional herbal medicines model is reproducible and scalable. If successfully piloted in Bomet, it can be extended to other communities in Mau Forests and even promoted domestically in Kenya and internationally.

CHAPTER FIVE: DISCUSSION

Based on the specific background of Mau Forests in Kenya, this research explores how the theories and practices of TEEB framework and CBOs can be used to understands the above research findings and give the new model to build the holistic, inclusive and localized path to sustainable prosperity.

5.1 Potential International Medicines in Mau Forests Complex

In 2019, there were around 229 million malaria cases worldwide and an estimated 409,000 deaths (WHO, 2021a). In 2019, approximately 1.5 million people died of diabetes (WHO, 2021b). Countless people in the world are suffering from diseases. Many people face not only common diseases such as cough and fever but diseases that are genuinely fatal and incurable. International medicines usually treat these diseases. The development of international medicines can not only increase the value chain of medicines and improve the living standards of local people but also maintain health worldwide and benefit people all over the world.

The medicinal plants of Mau Forests have the potential to develop into international medicines. The literature and surveys have proved this point. Thirty-three medicinal plants in the literature are used to treat malaria, such as Withania somnifera, Croton macrostachyus. Ten medicinal plants in the literature are used to treat diabetes, such as Asclepias fruticosa, Rauvolfia hols, Psiadia punctulata. The entamejoi and esumeita, most commonly used by community leaders in the survey, are also used to treat malaria and diabetes. These species have the potential to become international drugs. However, it is not easy to develop international drugs. It requires multiple actors, such as communities, governments, non-governmental organisations, and international organisations, to create a complete and recognized value chain for medicinal plants. It is necessary to achieve successful community planting, the inheritance of medicinal knowledge, and the recognition of medicinal plants. CBOs can promote community-centered planting, inheritance, and development. KEBS provides standards for international trade. Exploring KEBS certification of medicinal plants can make them recognized, which further increases the possibility of medicinal plants becoming international drugs. Promoting the development of KEBS-certified drugs by CBOs can not only improve local wellbeing but also promote the development of potential international drugs and contribute to the prosperity of the world.

5.2 Potential for CBOs to Develop KEBS-approved Indigenous Treatment

This research supports the thesis that the development of KEBS-approved indigenous treatment driven by CBOs in the Mau Forests has unlimited possibilities by analyzing the four capitals and their flows of the TEEB AgriFood framework.

In terms of natural capital, the database compiled by this research proves that the forest contains various species and large quantities of medicinal plants, which are widely distributed from south to north. The height and diameter of most medicinal plants are positively correlated, and they are in an alive state, which means they are thriving. These data show that the Mau Forests Complex is conducive to medicinal plants growth and has natural conditions for developing medicine plants. However, forest degradation may harm this stock. Besides, the literature review and survey findings show these medicinal plants have a wide range of usefulness and fewer side effects. Although some medicinal plants are uncertain in efficacy and dosage (Sofowora, 1996; Nankaya et al., 2019), the model from CBO in Bomet and KEBS strict review can make them transparent and strengthen supervision, thereby increasing its value chain.

As for social capital, local indigenous communities rely on medicinal plants for treatment. Literature reviews and surveys prove this. It may be due to cultural belief in medicinal plants (Nankaya et al., 2019), expensive healthcare systems (Otieno and Analo, 2012), and increasingly improved laws for medicinal plants (Chebii et al., 2020). However, the influence of western education gradually changes the lifestyle and values of local people, which may cause flows in social capital. But fortunately, KEBS makes transitional medicinal plants more standardized and transparent, making it once again win people's trust. Although the community does not have much contact with KEBS, most of them recognize that it can play an active role in developing medicinal plants. These views reflect that CBOs and stakeholders have reached a consensus on demand and trust in KEBS, which is an excellent beginning to promote the development of KEBS certified medicinal plants.

Regarding produced capital, western medicines are often relatively troublesome to extract and create, while medicinal plants are easier to obtain. However, the use methods of traditional medicinal plants are not transparent and easy to lose (Moore et al., 2020). This research finds that many medicinal plants were difficult to find preparation methods and use parts during the literature review process. Besides, many species have multiple names, and this overlap may be a sign of confusion of traditional knowledge records. The CBO, composed of 12 professional herbalists in Bomet, can solve this problem by making the production and manufacture of medicinal plants more professional, streamlined, standardized, and transparent.

Considering human capital, CBO is composed of professional herbalists who have professional skills and rich knowledge in medicinal plants and understand the community's culture, values , and needs, which can effectively promote the development of KEBS certified medicinal plants. Although some indigenous people in the community do not have high academic qualifications, they are very familiar with medicinal plants. This attempt can also provide further training to these indigenous peoples, improve their education, skills and promote employment.

Although CBOs face many challenges in developing KEBS-certified medicinal plants, their special model can solve most problems and has positive potential for development. This research believes that this would be a milestone attempt to promote the development of traditional medicinal plants.

5.3 Potential for CBOs for Traditional Herbal Medicines to Achieve the Transition

It is feasible and potential for CBOs for traditional herbal medicines to promote the development of KEBS certified medicinal plants, but that also places high requirements on the ability of CBOs. CBOs need to face a series of challenges, such as untrust; generational transmission interruption of traditional medicine therapy; unsustainable picking technology and incomplete knowledge of plants safety; small scale and lack of funds, difficulty in competing with large international companies. Based on reviewing the theories of CBOs and exploring the development of CBOs in the Mau Forests Complex, this study believes that CBOs need to have a deep understanding of the community, establish a value chain of medicine plants, maintain transparency, strengthen supervision and innovate. They also should have an excellent ability to cooperate, coordinate, and network.

Achieving sustainable transformation requires CBOs to have a deep understanding of the community. It includes understanding the distribution, growth rate, and medicinal values of local medicinal plants, policies, markets, the environment, needs, culture, values, and emotions within the community. Based on understanding the needs of the community and various capitals, CBOs establish a value chain that includes the production, processing, distribution, and consumption of medicinal plants. It is an important part of the TEEB AgriFood framework, and it is also the part where CBOs for traditional herbal medicines need to work. Like CBOs in Bomet, CBOs for traditional herbal medicines need professional herbalists. They can select the most suitable and potential medicinal plants, submit them to KEBS for certification, and then process and sell them. CBOs also need to maintain transparency of the value chain and break the mystery of traditional herbal medicines, making the indigenous people and consumers see the whole process of its value chain to enhance people's trust. Innovation is also necessary for CBOs, especially organising model innovation to increase the value of medicinal plants.

Good cooperation, coordination and network capabilities are the key areas for CBOs. First of all, the division of labor and cooperation within CBOs needs to be clear and ensure that IP is allocated to individual members collectively. Then, CBOs represent the community and should be closely related to each indigenous people. CBOs need to contact the indigenous people regularly to listen to their needs, opinions, and views. Educating and training the indigenous people can help improve their skill development and promote traditional medical knowledge transmission. Besides, CBOs need to work closely with KEBS to submit medicinal plants and obtain KEBS certification. The ecosystem is broad, and as a forest ecosystem, Mau Forests contains multiple communities. These communities do not exist in isolation but need the network to cooperate and develop medicinal plants together. This research found that the distribution of medicinal materials in Mau Forests is different, especially the difference between north and south medicinal plants. CBOs from different communities can build a network platform for mutual learning and communication. Some medicinal plant species are distributed in multiple communities, which can realize the joint research, development, and

creation of value chains by multiple CBOs. CBOs can cooperate with academic and research institutions to explore technologies and sciences that can promote the sustainable development of medicinal plants. They can also become stronger by pooling resources and skills to lobby donors and international institutions for support, obtain more funds, and gradually strengthen their influence.

5.4 The New Model to Build the Localized Path to Sustainable Prosperity Through CBOs for Traditional Herbal Medicines.

This research attempts to fill the gap in TEEB AgriFood development driven by CBOs, contribute to prosperity studies, and provide a new paradigm to build a holistic, inclusive, and localized path to autonomous, sustainable, and resilient communities prosperity. Based on the case analysis of the Mau Forests Complex, this research uses existing theories and the findings to construct a new model to build the localized path to sustainable prosperity through CBOs for traditional herbal medicines. The four capitals promote the generation of community needs, then act on CBOs. In this process, CBOs cooperate with stakeholders, network, innovation, transparency, and supervision to create and increase the value chain of medicinal plants, then react on the four capital and promote the development of community wellbeing. Figure 16 shows the new model to build the localized path to sustainable prosperity through CBOs for traditional herbal medicines created by this research. However, as Nietzsche (1968) once said, ‘What can be thought must certainly be a fiction, the model provided in this study is only an idealized model and still has limitations. Realizing the localization path leading to prosperity requires deep thinking about prosperity and deep thinking about local culture, customs, and values.

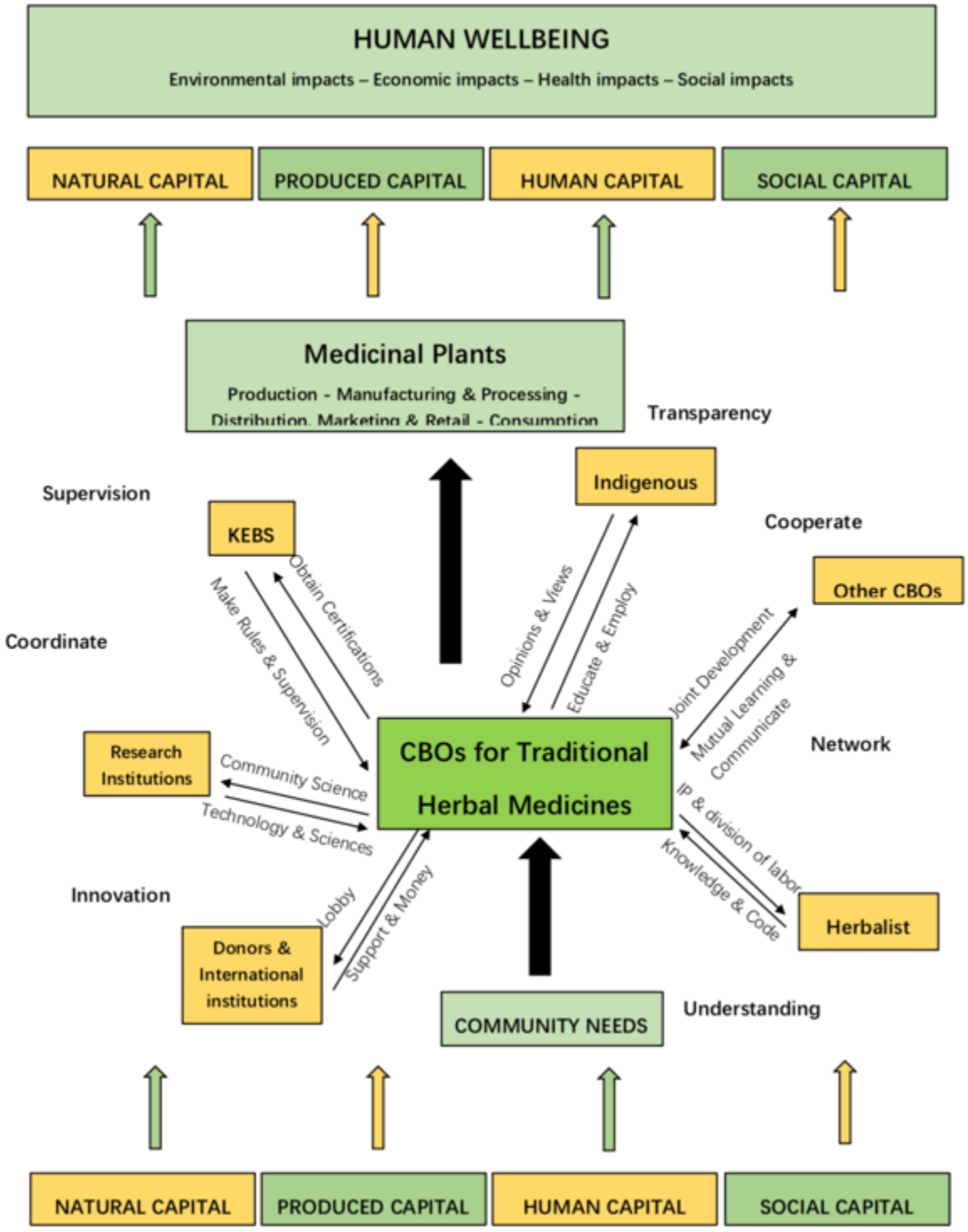


Figure 16. The new model to build the localized path to sustainable prosperity through CBOs for traditional herbal medicines.

CHAPTER SIX: CONCLUSION

The Mau Forests Complex has excellent potential for the development of medicinal plants. The research confirms that there are a large number of abundant and healthy medicinal plants in Mau Forests. These plants have a vast range of medical uses, can treat many diseases, and are widely used by the community. Some medicinal plants can be used to treat deadly diseases such as malaria and diabetes, which can develop into international medicines. In addition to inherently superior natural conditions, social conditions in the Mau Forests Complex also play a positive role in medicinal plants development. Although the community has less contact with KEBS, it has a positive attitude towards developing KEBS-certified medicinal plants, believing that they can bring economic, ecological, and social benefits. With this positive attitude, herbalists from Bomet established the first CBOs for traditional herbal medicines on the Mau Forests Complex, selecting medicinal plants to be handed over to KEBS for certification and sale. This model pioneered the development of medicinal plants and has largely solved the challenges of non-standard, opaque, and insufficient supervision.

On this basis, this research discusses the possibility of developing international drugs in the Mau Forests Complex. Starting from the four capitals of TEEB AgriFood, it explores the unlimited potential of CBOs developing KEBS certified medicinal plants. KEBS professional and strict review can solve the disadvantages of medicinal plants such as uncertain efficacy and dosage, make the use and sale of medicinal plants more transparent and standardized, increase its value chain, and gaining people's trust. The members of CBOs come from the community and have professional knowledge of medicinal plants. They can better understand the needs of the community, train and educate the indigenous people, and solve the problem that medicinal plants are difficult to inherit. However, CBOs for traditional herbal medicines still need to improve their capabilities, such as deepen their understanding of the local area, innovation, cooperation, network development, maintaining transparency, and strengthening supervision to cope with the crisis faced by traditional medicinal plants. In addition, the research provides a new model of TEEB driven by CBOs for traditional herbal medicines for building the localized path to sustainable prosperity. This model is reproducible and extensible. Many countries in Asia and Africa have traditional medicinal plants and have unique local cultures and values. This model will serve as a reference for developing CBOs for traditional herbal medicines to a prosperous localization path. However, it is worth noting that this model is not applicable in areas where the government is too powerful.

This research has certain limitations, such as a small survey sample, but it can still contribute to the realization of sustainable prosperity, especially the establishment of a holistic, inclusive, and localized path to prosperity in Africa. It can further study the organisation, management, and planning of CBOs for traditional herbal medicines and can also be used to develop the TEEB framework driven by CBOs. In addition, this research can also be used to develop traditional Kenyan medicinal plants and sort out their medical use methods. Finally, this research can explore further the diversity and differentiation of prosperity, as well as the transitions and new paradigms needed to achieve prosperity.

REFERENCE

Adebayo, O.W., Salerno, J.P., Francilon, V., and Williams, J. R. (2018). 'A systematic review of components of community-based organisation engagement', Health Soc Care Community, 26(4), pp. 474-484. doi: 10.1111/hsc.12533.

Akintobi, T.H., Yancey, E.M., Daniels, P., Mayberry, R.M., Jacobs, D., & Berry, J. (2012). 'Using evaluability assessment and evaluation capacity-building to strengthen community-based prevention initiatives', Journal of Health Care for the Poor and Underserved, 23(2 Suppl), pp. 33–48. doi: 10.1353/hpu.2012.0077.

Aremu, A.O., Ncama, K., Omotayo, A.O. (2019). 'Ethnobotanical uses, biological activities and chemical properties of Kei-apple [Dovyalis caffra (Hook.f. & Harv.) Sim]: An indigenous fruit tree of southern Africa', Ethnopharmacol, 15, pp. 241. doi: 10.1016/j.jep.2019.111963.

Arrow, K. J., Bolin, B., Costanza, R., Dasgupta, P., Folke, C., Holling, C. S., Jansson, B.-O., Levin, S., Mäler, K.-G., Perrings, C. and Pimentel, D. (1995). 'Economic growth, carrying capacity, and the environment', Science, 268(5210), pp. 520–521.

Atkinson, A.B. (2015). *Inequality: what can be done?* Cambridge, Massachusetts: Harvard University Press.

Beentje, H.J. (1994). *Kenya Trees, Shrubs and Lianas.* Nairobi: National Museums of Kenya.

Blakeney, N., Michaels, M., Green, M., Richmond, A., Long, D., Robinson, W.S., and Corbie-Smith, G. (2015). 'Collaborative development of clinical trials education programs for African-American community-based organisations', Journal of Cancer Education, 30, pp. 400–406. doi: 10.1007/s13187-014-0673-3.

Blühdorn, I. (2013). 'The governance of unsustainability: ecology and democracy after the post-democratic turn', Environmental Politics, 22(1), pp. 16–36.

Boutain, D.M., and McNees, M. (2013). 'Initiating policy, systems, and environmental changes for childhood obesity prevention by engaging six faith-based organisations', Family & Community Health, 36, pp. 248–259. doi: 10.1097/FCH.0b013e31829315b1.

Braun, V., and Clarke, V. (2006). 'Using thematic analysis in psychology', Qualitative Research in Psychology, 3(2), pp. 77–101. doi: 10.1191/1478088706qp063oa.

Bryman, A. (2016). *Social Research Methods (5th ed.).* London: Oxford University Press.

Bullen, P.B. (2013). 'Theory of Change vs Logical Framework – what's the difference?'. Accessed on 04.07.2021. https://tools4dev.org/resources/theory-of-change-vs-logical-framework-whats-the-difference-in-practice/.

Burkhalter, J.E., Cahill, S., Shuk, E., Guidry, J., Corner, G., Berk, A., and Lubetkin, E.I. (2013). 'At the intersection of HIV/AIDS and cancer: A qualitative needs assessment of community-based HIV/AIDS service organisations', Health Education & Behavior, 40, pp. 493–503. doi: 10.1177/1090198112459049.

Bussmann, R.W., Gilbreath, G.G., Solio, J., Lutura, M., Lutuluo, R., Kunguru, K., Wood, N., and Mathenge, S.G. (2006). 'Plant use of the Maasai of Sekenani Valley, Maasai Mara, Kenya', Ethnobiol. Ethnomed, 2, pp. 22–27.

Caldwell, W.B., Reyes, A.G., Rowe, Z., Weinert, J., & Israel, B.A. (2015). 'Community partner perspectives on benefits, challenges, facilitating factors, and lessons learned from community-based participatory research partnerships in Detroit', Progress in Community Health Partnerships, 9, pp. 299–311. doi: 10.1353/cpr.2015.0031.

Chebii, W.K., Muthee, J.K., and Kiemo, K. (2020). 'The governance of traditional medicine and herbal remedies in the selected local markets of Western Kenya', Journal of Ethnobiology and Ethnomedicine, 16(1). doi: 10.1186/s13002-020-00389-x.

Chen, S.L., Yu, H., and Luo, H.M. (2016). 'Conservation and sustainable use of medicinal plants: problems, progress, and prospects', Chinese Medicine, 11(37). doi:10.1186/s13020-016-0108-7.

CIA. (2014). *World Factbook.* United States: Central Intelligence Agency.

Charles, A. (2012). 'People, oceans and scale: governance, livelihoods and climate change adaptation in marine social–ecological systems', Curr. Opin. Environ. Sustain., 4, pp.351-357.

Costanza, R., and Daly, H. (1992). 'Natural capital and sustainable development', Conservation Biology, 6, pp. 37–46.

Costanza, R., de Groot, M., Braat, L., Kubiszewski, I., Fioramonti, L., Sutton, P., Farber, S., and Grasso, M. (2017). 'Twenty years of ecosystem services: How far have we come and how far do we still need to go', Ecosystem Services, 28, pp.1-16. doi: 10.1016/j.ecoser.2017.09.008.

Coyle, D. (2014). *GDP: a brief but affectionate history.* Princeton: Princeton University Press.

Cragg, G. M., Simon, J. E., Jato, J. G., and Snader, K. M. (1996). 'Drug discovery and development at the National Cancer Institute: potential for new pharmaceutical crops', Progress in New Crops, ASHS Press, Arlington, VA, pp. 554-560.

Creswell, J.W. and Clark, V.L.P. (2017). *Designing and conducting mixed methods research*. Sage publications.

Dale, R. (2001). 'People's development with people's money: the mobilisation-organisation – finance nexus', Development in Practice, 11(5), pp. 606-621.

Darling, M., Gonzalez, F., Graves, K., Sheppard, V.B., Hurtado-de-Mendoza, A., Leventhal, K.G., and Caicedo, L. (2015). 'Practical tips for establishing partnerships with academic researchers: A resource guide for community-based organisations', Progress in Community Health Partnerships, 9, pp. 203–212. doi: 10.1353/cpr.2015.0042.

Dasgupta, P., Levin, S., and Lubchenko, J. (2000). 'Economic pathways to ecological sustainability', BioScience, 50, pp. 339–345.

Davies, M. (2020). 'Can we imagine a future of many futures', Institute for Global Prosperity, Accessed on 07.04.2021. https://seriouslydifferent.org/igp-stories/can-we-imagine-a-future-of-many-futures.

De Groot, R. S., Fisher, B., Christie, M., Aronson, J., Braat, L., Haines-Young, R., Gowdy, J., Maltby, E., Neuville, A., Polasky, S., Portela, R., and Ring, I. (2010). 'Integrating the ecological and economic dimensions in biodiversity and ecosystem service valuation', In P. Kumar (Ed.), The Economics of Ecosystems and Biodiversity (TEEB): Ecological and Economic Foundations. Earthscan, Routledge.

Díaz, S., Demissew, S., Joly, C., Lonsdale, W., and Ash, N. (2015). 'The IPBES conceptual framework—connecting nature and people', Current Opinion in Environmental Sustainability, 14, pp. 1–16.

Dharani, N., Yenesew, A. (2010). *Medicinal plants of East Africa: an illustrated guide.* Nairobi: Drongo Editing & Pub.

Dharani, N. (2011). *Field guide to common trees & shrubs of East Africa*, 2nd ed. Capetown: Random Struik Publishers.

Duncan, C.M., Buchanan, C., and Chalo, P.M. (2016). 'An ethnobotanical study of medicinal plants used by the Masaai People of Losho, Kenya', Pharm, 6(2).

Ekstrom, J. A., and O. R. Young. (2009). 'Evaluating functional fit between a set of institutions and an ecosystem', Ecology and Society, 14(2), pp. 16.

Epstein, G., Pittman, J., Alexander, S.M., Berdej, S., Dyck, T., Kreitmair, U., Raithwell, K.J., Villamayor-Tomas, S., Vogt, J., and Armitage, D. (2015). 'Institutional fit and the sustainability of social-ecological systems', Current Opinion in Environmental Sustainability, 14, pp. 34-40. doi:10.1016/j.cosust.2015.03.005.

Ernst, M., Grace, O.M., Saslis-Lagoudakis, C.H., Nilsson, N., Simonsen, H.T., and Rønsted, N. (2015). 'Global medicinal uses of Euphorbia L (Euphorbiaceae)', Ethnopharmacol, 24(176), pp. 90-101. doi: 10.1016/j.jep.2015.10.025.

Escobar, A. (2018). *Designs for the pluriverse: radical interdependence, autonomy, and the making of worlds.* Durham: Duke University Press.

Farber, S.C., Costanza, R., and Wilson, M.A. (2002). 'Economic and ecological concepts for valuing ecosystem services', Ecological Economics, 41, pp. 375–392.

Ferraro, F., Etzion, D., and Gehman, J. (2015). 'Tackling grand challenges pragmatically: robust action revisited', 36(3), pp.363-390. doi: 10.1177/0170840614563742.

Folke, C., Hammer, M., and Jansson, A.M. (1991). 'Life-support value of ecosystems: a case study of the Baltic region', Ecological Economics, 3(2), pp. 123–137.

Folke, C., Pritchard, L., Berkes, F., Colding, J., and Svedin, U. (2007). 'The problem of fit between ecosystems and institutions: ten years later', Ecology and Society, 12(1), pp. 30.

Foundation for Revitalization of Local Health Traditions(FRLHT). (2005). Bangalore: FRLHT, Accessed on 22.06.2021. http://www.frlht.org.in/.

Fielding, N. G. (2012). 'Triangulation and mixed methods designs: Data integration with new research technologies', Journal of mixed methods research, 6(2), pp.124-136.

Galuszka, J. (2019). 'What makes urban governance coproductive? Contradictions in the current debate on co-production', Planning Theory, 18(1), pp. 143–160. doi: 10.1177/1473095218780535.

Gamble, A. (2014). *Crisis without end?: the unravelling of Western prosperity.* Basingstoke: Palgrave Macmillan.

Glik, D.C., Eisenman, D.P., Donatello, I., Afifi, A., Stajura, M., Prelip, M.L., and Martel, A. (2014). 'Reliability and validity of the Assessment for Disaster Engagement with Partners Tool (ADEPT) for local health departments', Public Health Reports, 129(Suppl 4), pp. 77–86.

Goddard, C. (2011). *Semantic analysis: A practical introduction*. Oxford University Press.

Goldkuhl, G. (2012). 'Pragmatism vs interpretivism in qualitative information systems research', Eur J Inf Syst, 21, pp.135–146. doi:10.1057/ejis.2011.54.

GOK. (2009). 'Rehabilitation of the Mau Forest Ecosystem'. A Project Concept prepared by the Interim Coordinating Secretariat, Office of the Prime Minister, on behalf of the Government of Kenya.

Grady, H. (2005). 'Opportunities for the UN and civil society to collaborate more effectively', Development in Practice, 15(1), pp. 70-76.

Green, A., Matthias, A. (1997). *Non-Governmental Organisations and Health in Developing Countries,* London and New York, NYMacmillan and St. Martins Press, Hampshire.

Habermas, J. (1987). *The Theory of Communicative Action.* Volume 2: Lifeworld and System. Boston: Beacon.

Hepburn, C., Beinhocker, E., Farmer, J.D., Teytelboym, A. (2014). 'Resilient and inclusive prosperity within planetary boundaries', China & World Economy, 22(5), pp. 76–92.

Hesslerová, P., and Pokorný, J. (2010). 'Forest clearing, water loss, and land surface heating as development costs, International Journal of Water', 5(4), pp. 401-418.

Holland, D.P. (2021). 'Evaluation of the antimicr aluation of the antimicrobial activity of V obial activity of Vangueria V angueria Volkensii Bark, Fruit, Leaf, and Stem Extracts', Thesis, Texas A&M International University, 144.

Honeycutt, S., Leeman, J., McCarthy, W.J., Bastani, R., Carter-Edwards, L., Clark, H., and Kegler, M. (2015). 'Evaluating policy, systems, and environmental change interventions: Lessons learned from CDC's prevention research centers', Preventing Chronic Disease, 12, pp. E174. doi: 10.5888/pcd12.150281.

IPCC. (2006). *IPCC Guidelines for national greenhouse gas inventories*, Prepared by the National Greenhouse Gas Inventories Programme, IGES, Japan.

Jackson, T. (2009). *Prosperity without growth: economics for a finite planet.* London: Earthscam.

Jackson, T. (2017). *Prosperity without growth: foundations for the economy of tomorrow*. 2nd ed. New York, NY: Routledge.

Jansson, A-M., Hammer, M., Koskoff, S., Folke, C., and Costanza, R. (1994). *Investing in natural capital: the ecological economics approach to sustainability*. Washington, DC: Island Press.

Jeruto, P., Lukhoba, C., Ouma, G., Otieno, D., and Mutai, C. (2007). 'Herbal treatments in aldai and kaptumo divisions in Nandi District, Rift Valley Province, Kenya', African Journal of Traditional, Complementary and Alternative Medicines, 5(1), pp. 103-105.

Jaruto, P., Lukhoba, C., Ouma, G., Otieno, D., and Mutai, C. (2008). 'An ethnobotanical study of medicinal plants used by the Nandi people in Kenya', Ethnopharmacol, 116(2), pp. 370–376. doi: 10.1016/j.jep.2007.11.041.

Kakietek, J., Geberselassie, T., Manteuffel, B., Ogungbemi, K., Krivelyova, A., Bausch, S., and Gar, S. (2013). 'It takes a village: Community-based organisations and the availability and utilization of HIV/AIDS-related services in Nigeria', AIDS Care, 25(Suppl 1), pp. S78–S87. doi: 10.1080/09540121.2012.740158.

Kala, C.P. (2004). *Indigenous knowledges: transforming the academy,* Proceedings of an International Conference. Pennsylvania: Pennsylvania State University. Revitalizing traditional herbal therapy by exploring medicinal plants: A case study of Uttaranchal State in India, pp. 15–21.

Kamau, L. N., Mbaabu, P. M., Karuri, P. G., Mbaria, J. M., and Kiama, S. G. (2017). 'Medicinal plants used in the management of diabetes by traditional healers of Narok county, Kenya', CELLMED, 7(2).

Kangas, A., and Maltamo, M. (2006). *Forest Inventory: Methodology and Applications.* Berlin: Springer Nature.

Karehed, J., and Odhult, E. (1997). 'An ethnobotanical study among the Maasai of Loita Hills, Kenya', Minor Field Studies, 14.

Kariuki, A. C., and Njoroge, G. N. (2011). 'Ethnobotanical and antimicrobial studies of some plants used in Kibwezi (Kenya) for management of lower respiratory tract infections', African Journal of Traditional, Complementary and Alternative Medicines, 8(2).

Kavilu, S. (2018). 'For Kenya's Yiaku, medicinal herbs are their forest's blessing and curse. Mongabay news & information from nature's frontline'. Accessed on 22.08.2021. https://news.mongabay.com/2018/11/for-kenyas-yiaku-medicinal-herbs-are-their-forests-blessing-and-curse/.

KBAP. (2020). 'Key biodiversity areas factsheet: Mau Forest complex'. Accessed on 25. 08. 2021. http://www.keybiodiversityareas.org/.

KEBS. (2021). 'Background of Kenya Bureau of Standards', Accessed on 01.07.2021. https://www.kebs.org/index.php?option=com_content&view=article&id=6&Itemid=255.

Kelaher, M., Sabanovic, H., La Brooy, C., Lock, M., Lusher, D., & Brown, L. (2014). 'Does more equitable governance lead to more equitable health care? A case study based on the implementation of health reform in Aboriginal health Australia', Social Science and Medicine, 123, pp. 278–286. doi: 10.1016/j.socscimed.2014.07.032.

Keter, L. K., and Mutiso, P. C. (2012). 'Ethnobotanical studies of medicinal plants used by Traditional Health Practitioners in the management of diabetes in Lower Eastern Province, Kenya', Journal of Ethnopharmacology, 139(1), pp. 74-80.

Kigen, G., Kipkore, W., Wanjohi, B., Haruki, B., and Kemboi, J. (2017). 'Medicinal plants used by traditional healers in Sangurur, Elgeyo Marakwet County, Kenya', Pharmacognosy research, 9(4), pp. 333-347. doi:10.4103/pr.pr_42_17.

Kigondu, E.V.M., Rukunga, G.M., Gathirwa, J.W., Irungu, B.N., Mwikwabe, N.M., Amalemba, G.M., Omar, S.A., and Kirira, P.G. (2011). 'Antiplasmodial and cytotoxicity activities of some selected plants used by the Maasai community, Kenya', Bot, 77, pp. 725–729.

Kimondo, J., Miaron, J., Mutai, P., and Njogu, P. (2015). 'Ethnobotanical survey of food and medicinal plants of the Ilkisonko Maasai community in Kenya', Ethnopharmacol, 175, pp.463–469.

Kiringe, J.W. (2005). 'Ecological and anthropological threats to ethno-medicinal plant resources and their utilization in Maasai communal ranches in the Amboseli region of Kenya', Ethnobot, 3, pp. 231–242.

Kiringe, J.W. (2006). 'A survey on the use of ethno-medicinal health remedies among the Maasai of Southern Kajiado District, Kenya', Ethnobot, 73, pp. 61–73.

Koch, A., Tamez, P., Pezzuto, J., and Soejarto, D. (2005). 'Evaluation of plants used for antimalarial treatment by the Massai of Kenya', Ethnopharmacol, 101, pp. 95–99.

Kokwaro, J.O. (1993). *Medicinal Plants of East Africa*, 2nd ed. Nairobi: Kenya Literature Bureau of Kenya.

Kokwaro, J.O. (2009). *Medicinal Plants of East Africa*, 3rd ed. Nairobi: University of Nairobi Press.

Korir, R.K., Mutai, C., Kiiyukia, C., and Bii, C. (2012). 'Antimicrobial activity and safety of two medicinal plants traditionally used in Bomet District of Kenya', Research journal of Medicinal plant, 6(5), pp. 370-382.

Kumar, P. (2010). *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations.* London and Washington: Earthscan.

Landauer, T. K., Foltz, P. W., and Laham, D. (1998). 'An introduction to latent semantic analysis', Discourse processes, 25(2-3), pp. 259-284.

LVBC. (2011). 'The total economic value of Maasai Mau, Trans Mara and Eastern Mau forest blocks, of the Mau forest, Kenya'. Accessed on 04.06.2021. http://hdl.handle.net/11671/709.

MA. (2005). *Millennium ecosystem assessment, ecosystems and human well-being: synthesis*. Washington, DC: Island Press.

MacDonald, K.I., and Corson, C. (2012). '"TEEB begins now": a virtual moment in the production of natural capital', Development and Change, 43(1), pp 159-184.

Mamedov, N. (2012). 'Medicinal plants studies: history, challenges and prospective', Medicinal & Aromatic Plants, 1(8). doi: 10.4172/2167-0412.1000e133.

Maundu, P., Berger, D., Ole Saitabau, C., Nasieku, J., Kipelian, M., Mathenge, S., Morimoto, Y., and Höft, R. (2001). 'Ethnobotany of the Loita Maasai: towards community management of the forest of the lost child', Experiences from the Loita Ethnobotany Project; People and Plants Working Paper; UNESCO: Paris, France, 8, pp. 1–34.

Mazzocchi, F. (2006). 'Western science and traditional knowledge. Despite their variations, different forms of knowledge can learn from each other', EMBO reports, 7(5), pp. 463–466. doi: 10.1038/sj.embor.7400693.

Mbuni, Y. M., Wang, S., Mwangi, B. N., Mbari, N. J., Musili, P. M., Walter, N. O., Hu, G., Zhou, Y., & Wang, Q. (2020). 'Medicinal plants and their traditional uses in local communities around Cherangani Hills', Western Kenya, Plants, 9(3), pp. 331.

McGlade, J., Njau, E., Ntaiyia, S., Kones, J., Tuwei,S., Bitok, J., Koila, B., Selim, I., Keriasek, F., Letura, P., Moniko, J., Karia, E., Tirra, A., Ochieng, V., and Xie, Y. (2021). *Prosperity and the Four Capitals in the Mau Forests Complex of Kenya*. TEEB Agriforestry in Kenya. Nairobi: UN Environment.

McVittie, A., and Hussain, S. (2013). *The Economics of Ecosystems and Biodiversity – Valuation Database Manual.* Geneva: The Economics of Ecosystems and Biodiversity (TEEB).

Miaron, J.O. (2003). 'The Maasai ethnodiagnostic skill of livestock diseases: A lead to traditional bioprospecting', Ethnopharmacol, 84, pp. 79–83.

Miller, L. H., & Su, X. (2011). 'Artemisinin: discovery from the Chinese herbal garden', Cell, 146(6), pp. 855–858. doi: 10.1016/j.cell.2011.08.024.

Moore, H.L. (2015). 'Global prosperity and sustainable development goals', 27(6), pp.801–815. doi: 10.1002/jid.3114.

Moore, H., Davies, M., Wanjohi, B.K., Njenga, E. W., Sudoi, V., and Kipkore, W.K. (2020). 'Ecological knowledge of indigenous plants among the Marakwet Community (Embobut Basin), Elgeyo Marakwet County (Kenya)', Ethnobotany Research and Applications: a journal of plants, people and applied research.

Morse, J. M., and Mitcham, C. (2002). 'Exploring qualitatively-derived concepts: Inductive—deductive pitfalls', International journal of qualitative methods, 1(4), pp.28-35.

Mukungu, N., Abuga, K., Okalebo, F., Ingwela, R., and Mwangi, J. (2016). 'Medicinal plants used for management of malaria among the Luhya community of Kakamega East sub-County, Kenya', Journal of Ethnopharmacology, 194, pp. 98-107.

Muthaura, C.N., Rukunga, G.M., Chhabra, S.C., Mungai, G.M., and Njagi, E.N.M. (2007). 'Traditional phytotherapy of some remedies used in treatment of malaria in Meru district of Kenya', South African Journal of Botany, 73(3), pp. 402-411.

Muthee, J.K., Gakuya, D.W., Mbaria, J.M., Kareru, P.G., Mulei, C.M., and Njonge, F.K. (2011). 'Ethnobotanical study of anthelmintic and other medicinal plants traditionally used in Loitoktok district of Kenya', Ethnopharmacol, 135, pp. 15–21.

Mutie, F. M., Gao, L. L., Kathambi, V., Rono, P. C., Musili, P. M., Ngugi, G., Hu, G. & Wang, Q. F. (2020). 'An ethnobotanical survey of a dryland botanical garden and its environs in Kenya: the Mutomo hill plant sanctuary', Evidence-Based Complementary and Alternative Medicine. doi:10.1155/2020/1543831.

Mutugi, M., and Kiiru, W. (2015). 'Biodiversity, local resource, national heritage, regional concern, and global impact: the case of Mau Forest, Kenya', European Scientific Journal, 11(10).

Mwangi, J.M. (2015). 'Antidiabetic activity and safety of aloe volkensii, acacia nilotica, euclea divinorum, rhoicissus tridentata, cynanchum viminale and urtica dioica in mice', Master's Thesis. The school of pure and applied sciences of Kenyatta university. Accessed on 08.08.2021. http://ir-library.ku.ac.ke/handle/123456789/14312.

Nabutola, W. (2010). 'The Mau Forest in the Rift valley: Kenya's largest water tower, a perfect model for the challenges and opportunities of a sustainable development project?' FIG Congress 2010: Facing the Challenges—Building the Capacity, Sydney, 11-16 April 2010, 1-24.

Nankaya, J., Layton, P., Hall, K., and Bardwin, E. (2014). 'The Salient traditional medicinal plants and conservation strategies of the Loita Maasai of Kenya', Master's Thesis, Clemson University, Clemson, SC, USA.

Nankaya, J., Gichuki, N., Lukhoba, C., and Balslev, H. (2019). 'Medicinal plants of the Maasai of Kenya: A Review', Plants, 9(44). doi:10.3390/plants9010044.

Nankaya, J., Gichuki, N., Lukhoba, C., and Balslev, H. (2020). 'Sustainability of the Loita Maasai childrens' ethnomedicinal knowledge', Sustainability, 11(5530). doi: 10.3390/su11195530.

Nankaya, J., Nampushi, J., Petenya, S., and Balslev, H. (2020). 'Ethnomedicinal plants of the Loita Maasai of Kenya', Environment, Development and Sustainability, 22(3), pp. 2569-2589.

Napoles, A.M., Santoyo-Olsson, J., Ortiz, C., Gregorich, S., Lee, H.E., Duron, Y., and Stewart, A.L. (2014). 'Randomized controlled trial of Nuevo Amanecer: A peer-delivered stress management intervention for Spanish-speaking Latinas with breast cancer', Clinical Trials, 11, pp. 230–238. doi: 10.1177/1740774514521906.

Newman, I. A. (2000). 'Conceptualization of Mixed Methods: A Need for Inductive/Deductive Approach to Conducting Research', the American Educational Research Association meeting, April. 24-25.

Ngaruiya, G.W. (2015). 'Reweaving stakeholder networks: promoting climate mitigation and Maasai culture using medicinal plants in Kenya', Ecosyst, 15, pp. 103–112.

Nyambati, G.K., Maranga, R.O., Ozwara, H., and Mbugua, P.K. (2018). 'Use of putative antimalarial herbal medicines among communities in Trans-Mara, Kuria and Suba Districts of Kenya', Pharmacognosy, 1, pp. 1–14.

Nyamugasira, W., Eade, D. (1999). 'NGOs and advocacy: how well are the poor represented?', Development and Social Action, 1999Oxford, UKOxfam GB.

Ochwang'i, D.O., Kimwele, C.N., Oduma, J.A., Gathumbi, P.K., Mbaria, J.M., and Kiama, S.G. (2014). 'Medicinal plants used in treatment and management of cancer in Kakamega County, Kenya', Journal of Ethnopharmacology, 151(3), pp. 1040-1055.

Odongo, E., Mungai, N., Mutai, P., Karumi, E., Mwangi, J., and Omale, J. (2018). 'Ethnobotanical survey of the medicinal plants used in Kakamega County, Western Kenya', Applied Medical Research, 4(1), pp. 22.

Odum, E.P. (1989). *Ecology and our Endangered Life-Support Systems.* USA: Sinauer Associates.

Omara, T. (2020). 'Antimalarial plants used across Kenyan communities', Evidence-based complementary and alternative medicine. doi: 10.1155/2020/4538602.

Opare, S. (2007). 'Strengthening community-based organisations for the challenges of rural development', Community Development Journal, 42(2), pp.251–264. doi: 10.1093/cdj/bsl002.

Orech, F.O., and Chwarz, J.G. (2017). 'Ethnophyto therapeutic remedies used in meat, milk, and blood products by the Maasai people of Kenya', Bot, 108, pp. 278–280.

Osuteye, E., Leck, H., Johnson, C., Ndezi, T., Makoba, F.D., and Pelling, M. (2020). *Communicating risk from the frontline: Projecting community voices into disaster risk management policies across scales.* In M. Pelling(Ed.), Breaking cycles of risk accumulation in Africancities (pp. 132–139). Nairobi: UN-Habitat.

Osuteye, E., Ortiz, C., Lipietz, B., Broto, V. C., Johnson, C., and Kombe, W. (2019). *Knowledge co-production for urban equality* (Working Paper No. 1). London: University College London.

Otieno, N.E., and Analo, C. (2012). 'Local indigenous knowledge about some medicinal plants in and around Kakamega forest in western Kenya', F1000 research, 2, pp.1-40. doi: 10.12688/f1000research.1-40.v2.

Pandey, N., and Pandey-Rai, S. (2016). 'Updates on artemisinin: an insight to mode of actions and strategies for enhanced global production', Protoplasma, 253, pp. 15–30. doi:10.1007/s00709-015-0805-6.

Pesche, D. (2004). 'Services by the people for the people: farmer organisations in Mali', Agriculture and Rural Development, 11(1), pp. 21-23.

Raworth, K. (2017). *Doughnut economics: seven ways to think like a 21st-century economist.* London: Random House Business Books.

Ring, I., Hansjürgens, B., Elmqvist, T., Wittmer, H., and Sukhdev, P. (2010). 'Challenges in framing the economics of ecosystems and biodiversity: the TEEB initiative'. Current Opinion in Environmental Sustainability, 2(1), pp15-26. doi: 10.1016/j.cosust.2010.03.005.

Rios, M., Tinitana, F., and Jarrín-V, P. (2017). '"Horchata" drink in Southern Ecuador: medicinal plants and people's wellbeing', Ethnobiology Ethnomedicine, 13(18). doi: 10.1186/s13002-017-0145-z.

Russi, D., and ten Brink, P. (2013). *Natural Capital Accounting and Water Quality: Commitments, Benefits, Needs and Progress*. A Briefing Note. Geneva: The Economics of Ecosystems and Biodiversity (TEEB).

Saunders, M., Lewis, P., Thornhill, A. (2018). *Research methods for business students.* Pearson.

Semali, L.M., Kincheloe, J.L. (2002). *What is Indigenous Knowledge?* New York: Routledge.

Seno, S.K.O. (1998). 'Strategies for enhancing local support for wildlife conservation in Masailand, Kenya', Ph.D. Thesis, University of Arizona, Tucson, AZ, USA.

Seong-Kyu, H. (2004). 'Housing poverty and the role of urban governance in Korea', Environment & Urbanisation, 16(1), pp.139-153.

Shankar, R., and Rawat, M.S. (2013). 'Conservation and cultivation of threatened and high valued medicinal plants in North East India', International Journal of Biodiversity and Conservation, 5(9), pp. 584-591.

Shukla, S., and Gardner, J. (2006). 'Local knowledge in community-based approaches to medicinal plant conservation: lessons from India', Journal of Ethnobiology and Ethnomedicine, 2(20).

Sindiga, I. (1994). 'Indigenous (medical) knowledge of Maasai', Monit, 2, pp.16–18.

Singer, J., Bennett-Levy, J., and Rotumah, D. (2015). '"You didn't just consult community, you involved us": Transformation of a 'top-down' Aboriginal mental health project into a 'bottom-up' community-driven process', Australasian Psychiatry, 23, pp. 614–619. doi: 10.1177/1039856215614985.

Sloan, S., Jenkins, C.N., Joppa, L.N., Gaveau, D.L.A., and Laurance, W.F. (2014). 'Remaining natural vegetation in the global biodiversity hotspots', Biol Conserv, 177, pp. 12–24. doi: 10.1016/j.biocon.2014.05.027.

Smith, N., Littlejohn L.B., Thompson D. (2001). 'Shaking the cobwebs: insights into community capacity and its relation to health outcomes', Community Development Journal, 36 (1), pp. 30-41.

Stein, R. (2004). 'Alternative remedies gaining popularity', The Washington Post. Accessed on 15.07.2021. https://www.nbcnews.com/id/wbna5077045.

Stiglitz, J., Sen, A., and Fitoussi, J.P. (2010). *Mis-measuring our lives: why GDP doesn't add up.* New York, NY: New Press.

Stiglitz, J. (2019). 'It's time to retire metrics like GDP. They don't measure everything that matters', Guardian. Accessed on 26.06.2021. https://www.theguardian.com/commentisfree/2019/nov/24/metrics-gdp-economic-performance-social-progress

Sofowora, A. (1996). 'Research on medicinal plants and traditional medicine in Africa', Complement, 2, pp. 365–372.

Sukhdev, P., Wittmer, H., and Miller, D. (2014). *The Economics of Ecosystems and biodiversity (TEEB): Challenges and Responses*, in D. Helm and C. Hepburn (eds), Nature in the Balance: The Economics of Biodiversity. Oxford: Oxford University Press.

Tarayia, G.N. (2004). 'The legal perspectives of the Maasai culture, customs, and traditions', Arizona Journal of International & Comparative Law, 21(1), pp. 184-222.

ten Brink, P., Mazza, L., Badura, T., Kettunen, M. and Withana S. (2012). *Nature and its Role in the Transition to a Green Economy*. Geneva: The Economics of Ecosystems and Biodiversity (TEEB).

The Economics of Ecosystems and Biodiversity (TEEB). (2012). *The Economics of Ecosystems and Biodiversity in Local and Regional Policy and Management.* Edited by Heidi Wittmer and Haripriya Gundimeda. London and Washington: Earthscan.

The Economics of Ecosystems and Biodiversity (TEEB). (2018a). *TEEB for Agriculture & Food: Scientific and Economic Foundations*. Geneva: UN Environment.

The Economics of Ecosystems and Biodiversity (TEEB). (2018b). *Measuring what matters in agriculture and food systems: a synthesis of the results and recommendations of TEEB for Agriculture and Food's Scientific and Economic Foundations report*. Geneva: UN Environment.

TNH. (2009). 'Medicinal plants boost livelihoods', The New Humanitarian. Accessed on 09.04.2021. https://www.thenewhumanitarian.org/report/84047/kenya-medicinal-plants-boost-livelihoods.

The Plant List (TPL). (2021). 'The Plant List'. Accessed on 02.06.2021. http://www.theplantlist.org/.

Umair, M., Altaf, M., Bussmann, R. W., and Abbasi, A. M. (2019). 'Ethnomedicinal uses of the local flora in Chenab riverine area, Punjab province Pakistan', Journal of ethnobiology and ethnomedicine, 15(1), pp. 1-31.

UN. (1992). 'Convention On Biological Diversity'. Encyclopedia of Global Change.

UNEP. (2008). ‘Mau Complex and Marmanet Forests’. Accessed on 16.07.2021. https://wedocs.unep.org/bitstream/handle/20.500.11822/28379/MauForest.pdf?sequence=1&isAllowed=y.

Useful Tropical Plants. (2021). ‘Useful Tropical Plants Database’. Accessed on 04.06.2021. http://tropical.theferns.info/.

Van Wyk, B. E. (2015). ‘A review of commercially important African medicinal plants’, Journal of ethnopharmacology, 176, pp. 118-134.

Wanzala, J. (2017). ‘Medicinal plant gardens prescribed to cure Kenya's health woes’, Reuters. Accessed on 04.07.2021. https://www.reuters.com/article/us-kenya-health-medicine-indigenous-idUSKBN16Z1NJ.

Wasike, V. (2013). ‘Mainstreaming biodiversity conservation and sustainable use for improved human nutrition and well being: the case of Kenya’, Regional Workshop on Inter-linkages between Human Health and Biodiversity- Maputo, 2nd-6th April.

Weinberger, K., Jutting, J. (2001). ‘Women's participation in local organisations: conditions and constraints’, World Development, pp.1-14.

WHO. (2014). ‘Facts sheet on the world malaria report 2013’. Accessed on 07.06.2021. http://www.who.int/malaria/media/world_malaria_report_2013/en/.

WHO. (2019). ‘WHO global report on traditional and complementary medicine 2019’. Accessed on 07.07.2021. https://www.who.int/traditional-complementary-integrative-medicine/WhoGlobalReportOnTraditionalAndComplementaryMedicine2019.pdf.

WHO. (2021a). ‘Malaria’. Accessed on 20.08.2021. https://www.who.int/news-room/fact-sheets/detail/malaria.

WHO. (2021b). ‘Diabetes’. Accessed on 20.08.2021. https://www.who.int/news-room/fact-sheets/detail/diabetes.

Woldeab, B., Regassa, R., Alemu, T., and Megersa, M. (2018). ‘Medicinal plants used for treatment of diarrhoeal related diseases in Ethiopia’, Evidence-based complementary and alternative medicine. doi:10.1155/2018/4630371.

Wondrade, T. (2015). *GHG Emission Assessment Guideline*. Volume II: Aboveground Biomass Field Guide for Baseline Survey. Ministry of Agriculture.

Woodruff, R.C., Coleman, A., Hermstad, A.K., Honeycutt, S., Munoz, J., Loh, L., and Kegler, MC. (2016). ‘Increasing community access to fresh fruits and vegetables: A case study of the farm fresh market pilot program in Cobb County, Georgia’, Preventing Chronic Disease, 13, pp. 1–10. doi: 10.5888/pcd13.150442.

APPENDIX ONE: SURVEY QUESTIONNAIRE

UCL IGP MEDICINAL PLANTS SURVEY QUESTIONNAIRE

Name:_____

County: _____ Location:_____

Contact: _____

Background

Our mission is to contribute to sustainable prosperity in Kenya and provide an inclusive and localized path for building autonomous and resilient communities. We aim to support the development of community-based medicinal plants growing and marketization and keep the community-based organisations involved to ensure local livelihoods benefit through the published TEEB method.

Individual free prior informed consent

I understand and support the purpose and objectives of the project.	**Yes**	**No**
I have been informed and understand both the potential risks and the potential benefits of participating in this project.	**Yes**	**No**
I understand my right to withdraw fully or partially from the project at any time, and that I may insist on the deletion of all data that I have collected as part of the project.	**Yes**	**No**
I agree that my stories be used for communication about the project.	**Yes**	**No**
I understand that my data will be stored anonymously and securely.	**Yes**	**No**

Questions

1. Which trees do you use in your household for medicine?
2. Where do you find these trees?

   a) In the forest b) On your land c) On the community land d) other places
3. What diseases have you treated with these medicinal plants?

a) malaria b) diabetes c) respiratory infections d) colds e) joint pains f) ulcers g) others: ___

4. Do you think these medicinal plants are useful in treating diseases?

   Yes or NO
5. What do you think are the advantages of using medicinal plants?

   a) low price. b) easily available. c) significant effects. d) low side effects.

   e) other advantages: ____. f) no advantage.

6. Have you ever dealt with KEBS? If you have, kindly narrate the experience?

   Yes or No

7. What was the scale of partnership?

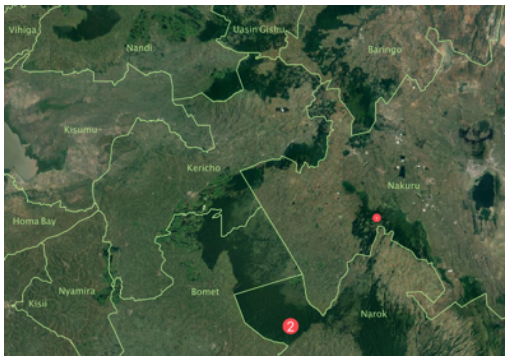
   a) Individual. b) community group. c) business community
8. Would you consider using KEBS to certify the honey? If not, why

   Yes or No
9. Have you ever commercially sold the medicinal plants to KEBS?

   Yes or No
10. How do you think KEBS could have an impact through the certification of medicinal plants?
11. Any other comments

APPENDIX TWO: SPECIES DISTRIBUTION

- Acacia abyssinica

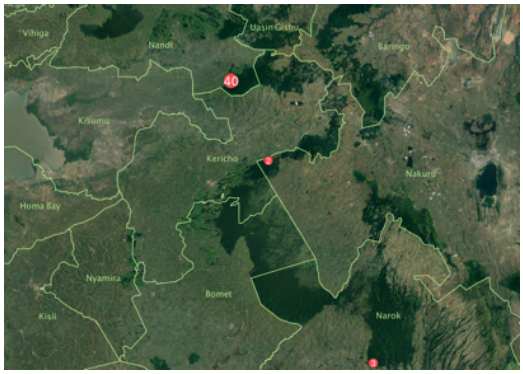


- Acacia breveispica

- Acacia gerradii

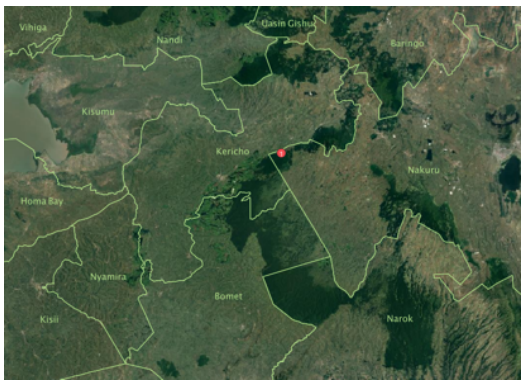
- Acacia hockii

- Acacia lahai (Nandi 40)



- Acacia sieberiana

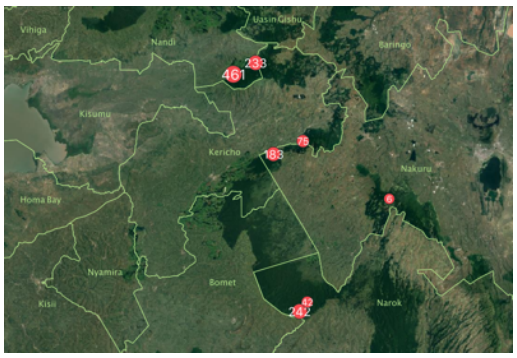
- Acanthus abyssinica



- Acanthus bussei

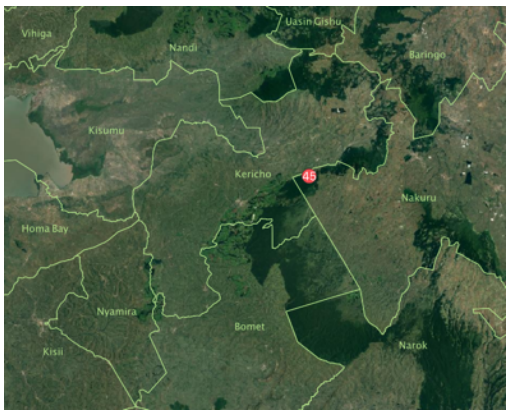
- **Acanthus eminens**

  (Nandi 694; Kericho 258; Bomet 284)



- Acanthus kame

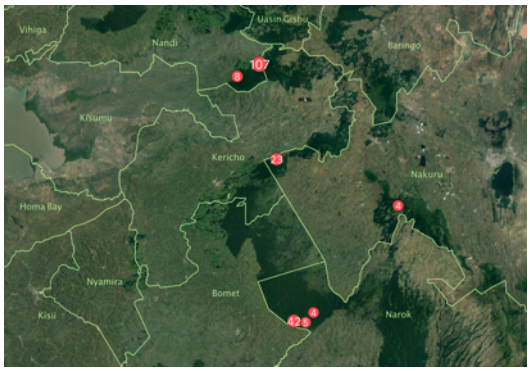
- Acanthus myrtina (Kericho 45)



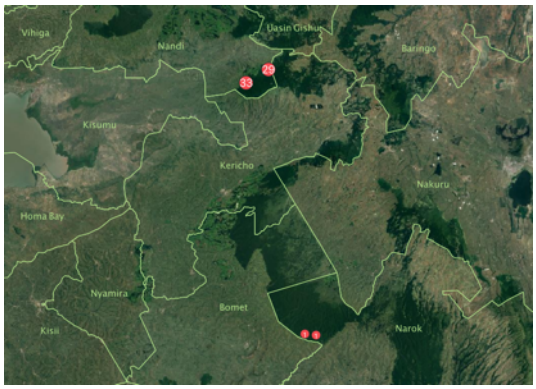
- Acanthus nimenens

- Acanthus prenoides

- **Albizia gummifera** (Nandi 115; Bomet 51)



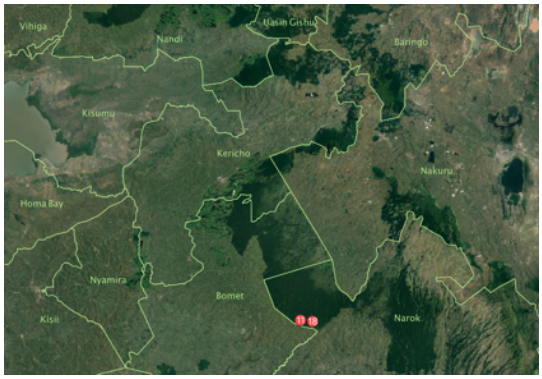
- Allophylus abyssinica (Nandi 62)



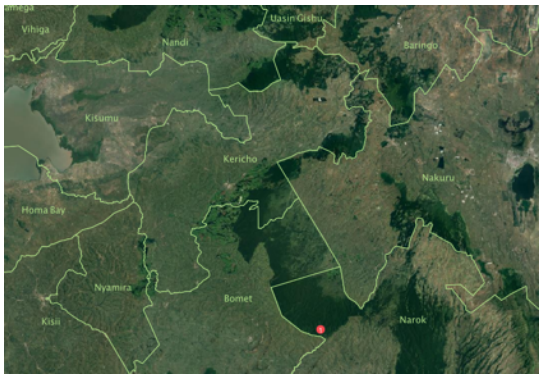
- Aloe dawe (Kericho 45)

- Anthocleista grandiflora

- Arundinaria alpina

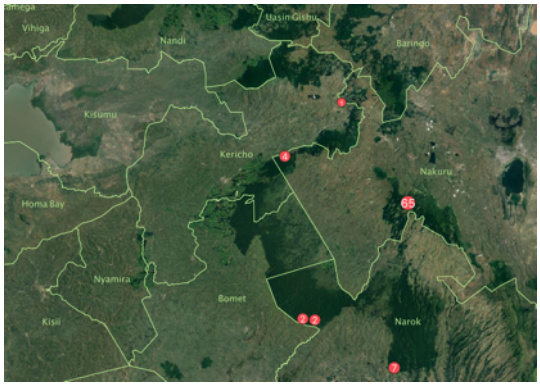


- Arundinaria eminens

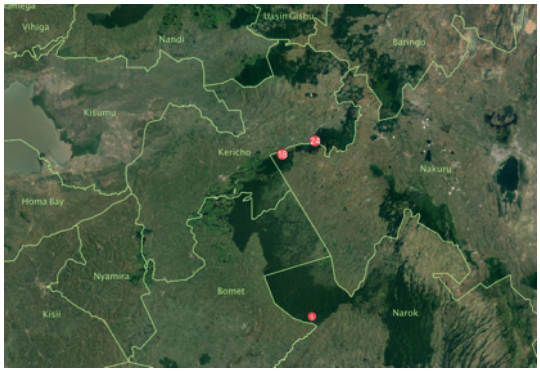


- Asclepias fruticosa

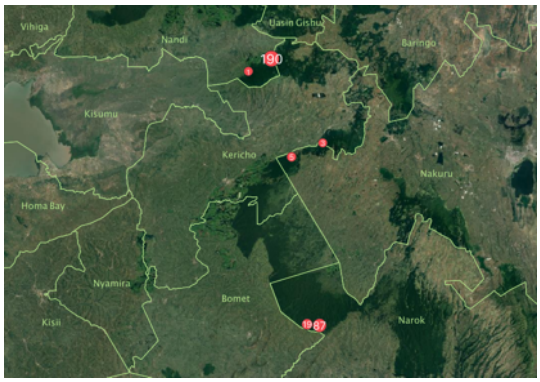
- Asparagus africana (Nakuru 65)



- Barleria micrantha (Kericho 42)

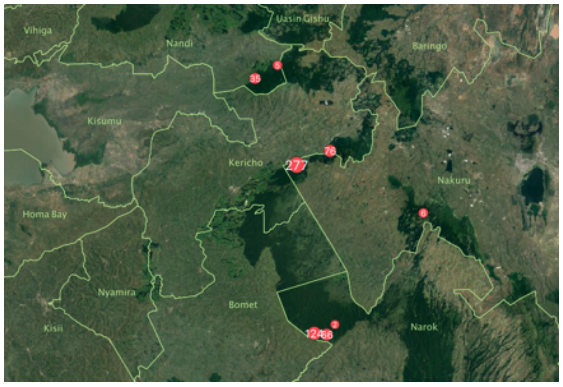


- **Barleria ventricosa (Nandi 191; Bomet 106)**

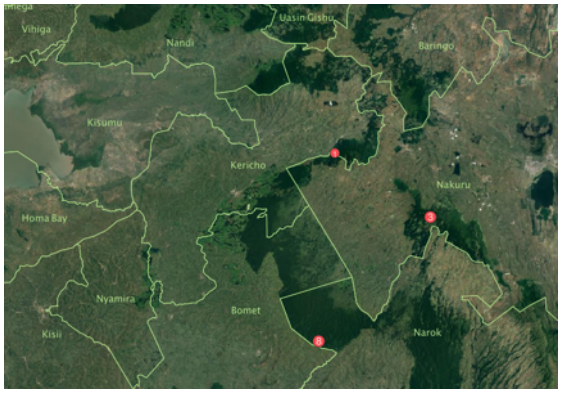


- Basella roch

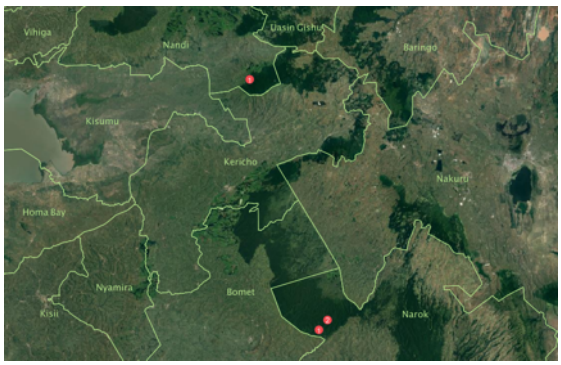
- Basella spp (Nandi 40; Kericho 353; Bomet 192)



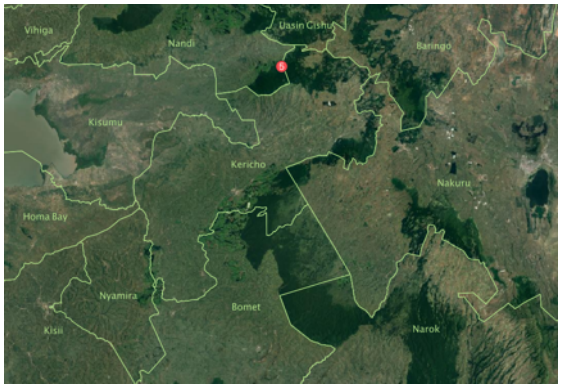
- Bersama abyssinica



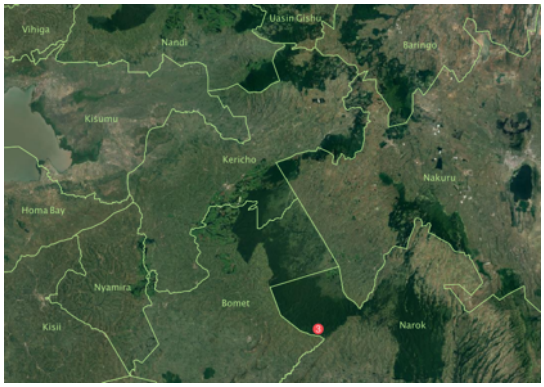
- Bridelia micrantha



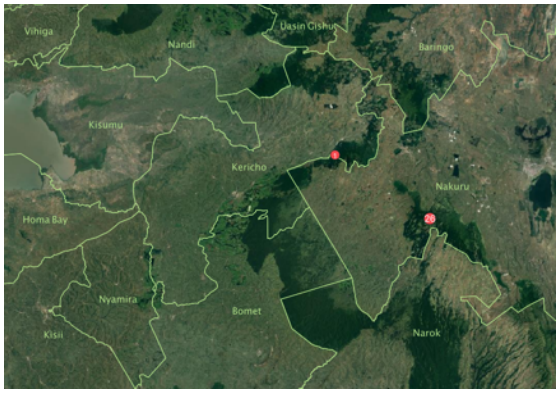
- Cadaba farinosa



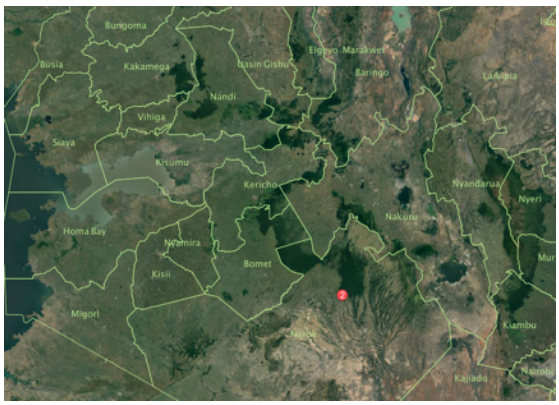
- Calodendrum cape



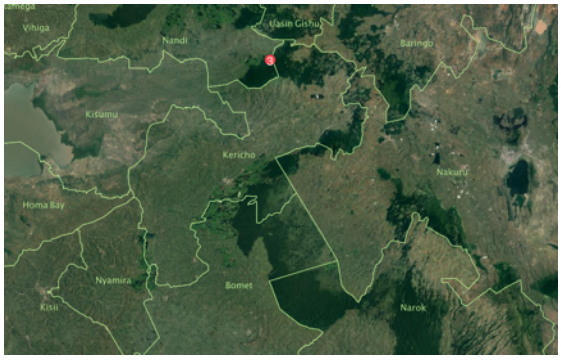
- Canthium lactescens



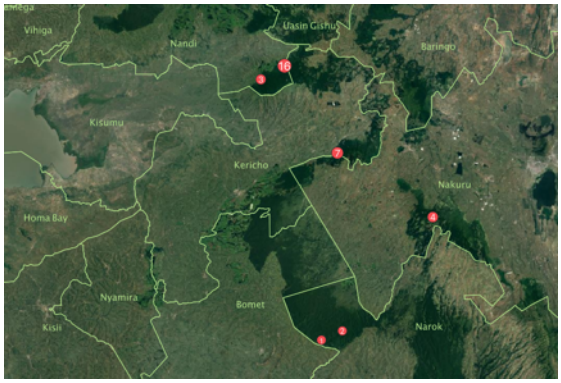
- Carissa spinarum



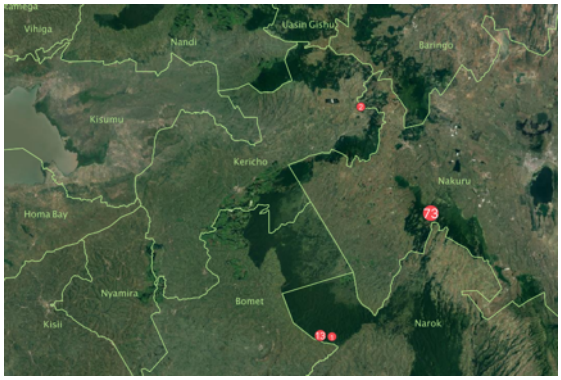
- Catha edulis



- Celtis africana

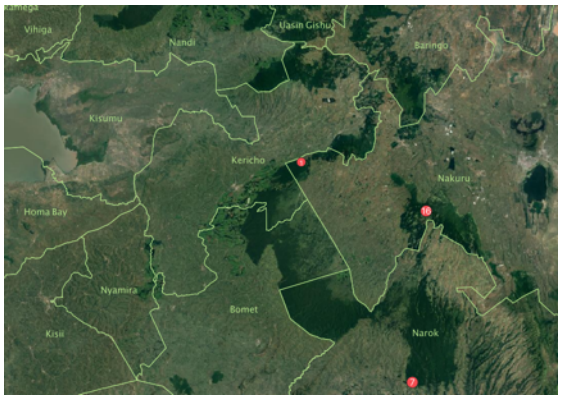


- Clutia abyssinica (Nakuru 73)

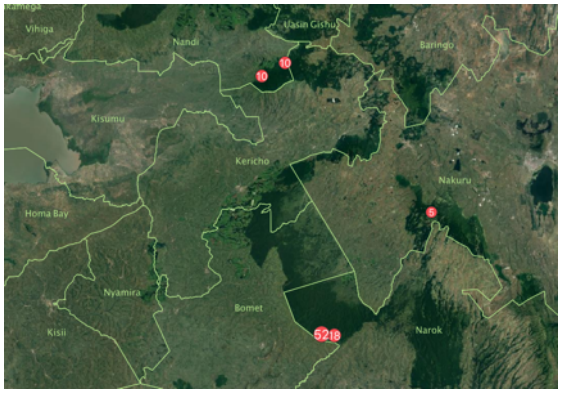


- Cissus quad

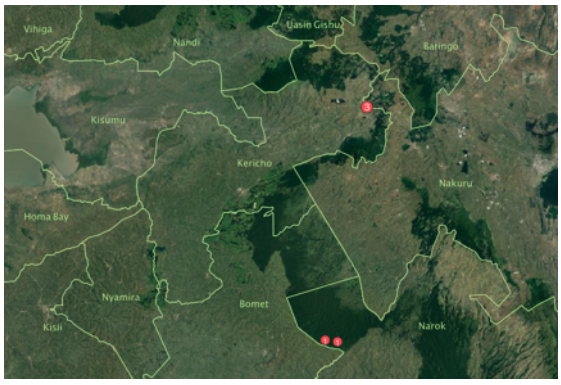
- Cordia africana



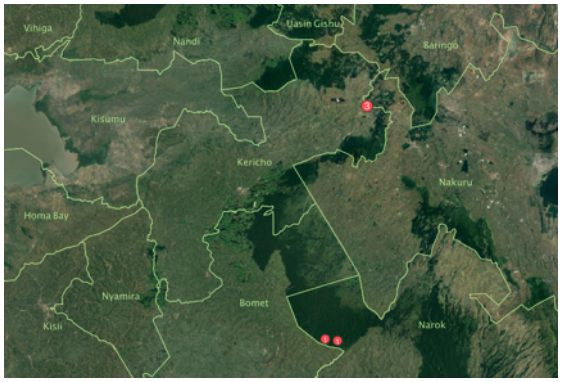
- Clerodendrum johnstonii (Bomet 70)



- Cordia monoica

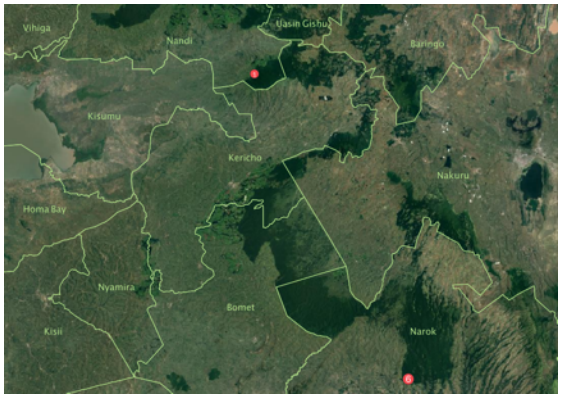


- Clerodendrum myricoides

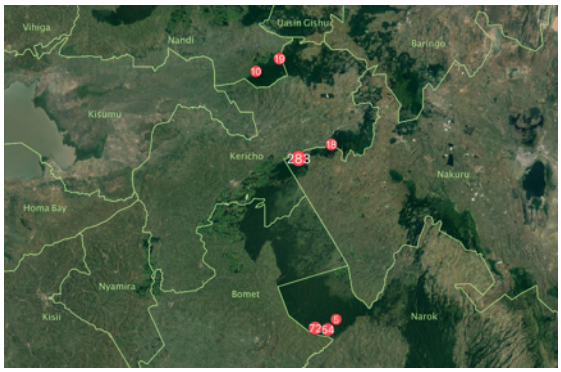


- Cordia oval

- Cotyledon barbeyi



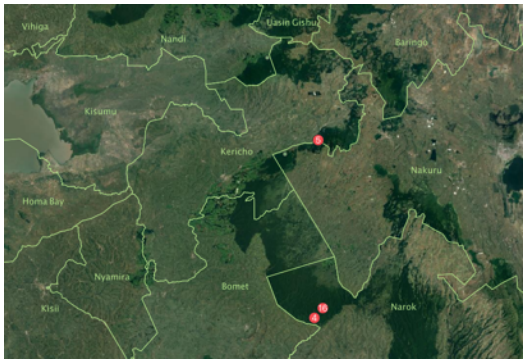
- **Croton macrostachyus (Kericho 301; Bomet 131)**



- Croton spp

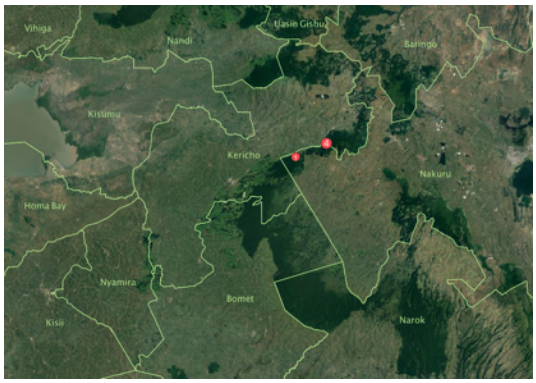
- Curroria volubilis

- Cussonia holstii



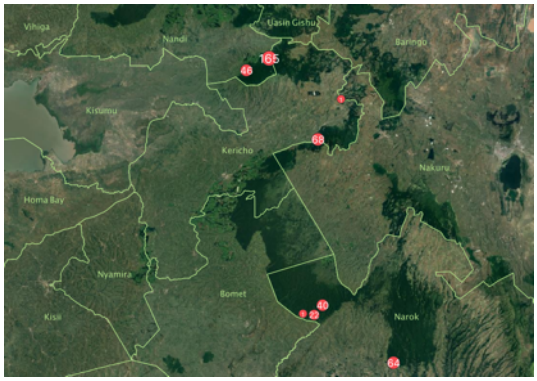
- Cussonia spicata

- Cyphostemma serpens

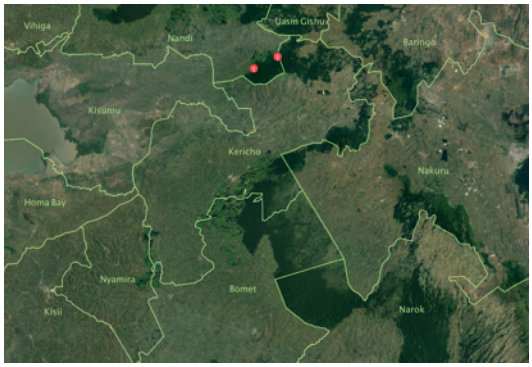


- **Diospyros abyssinica**

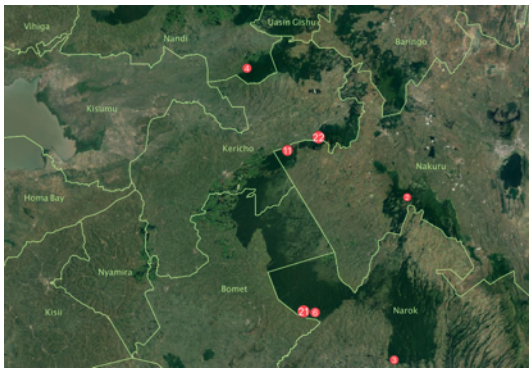
  (Nandi 221; Kericho 69; Bomet 63; Narok 64)



- Diospyros eminens



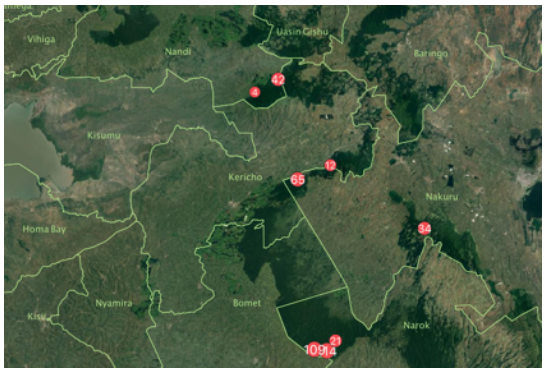
- Dombeya appalachian



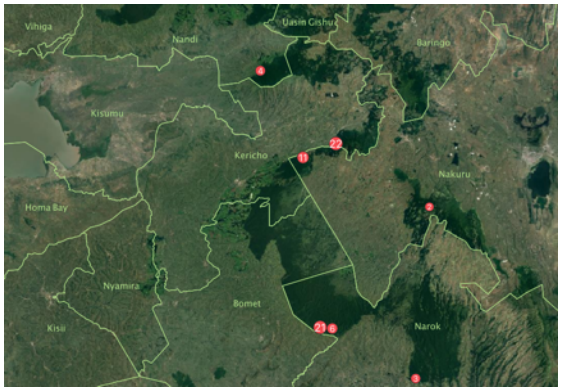
- Dombeya eminens

- **Dombeya rotundifolia**

  (Nandi 46; Kericho 77; Bomet 244)



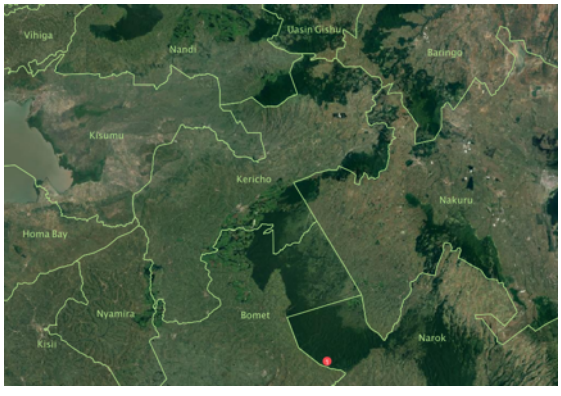
- Dovyalis abyssinica



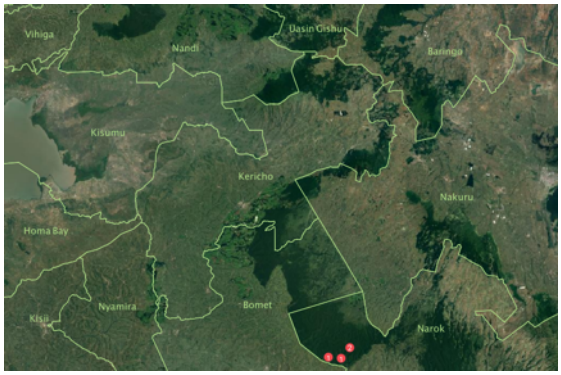
- Dovyalis caffra

- Dovyalis macrocalyx

- Dracaena africa

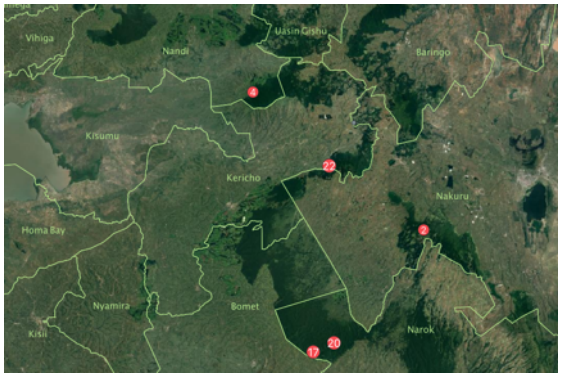


- Ekebergia capensis

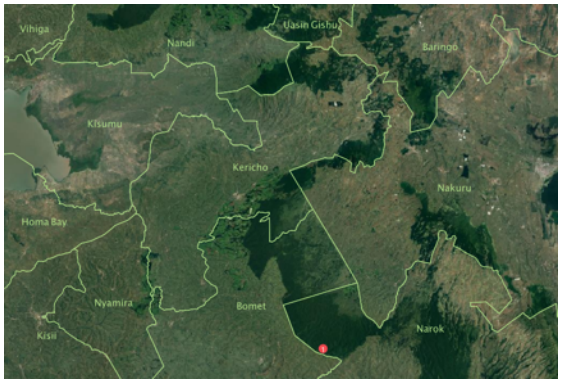


- Elaeodendron buchananii

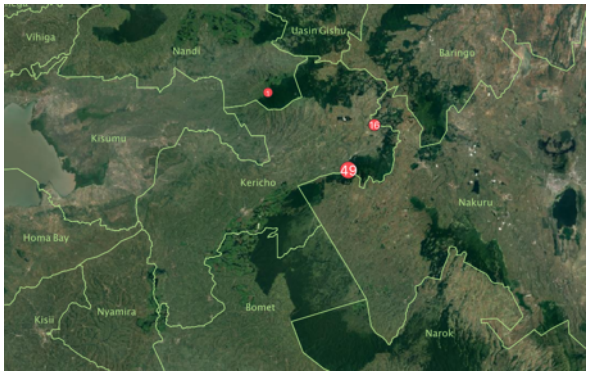
- Erythrina abyssinica



- Erythrococca bongensis

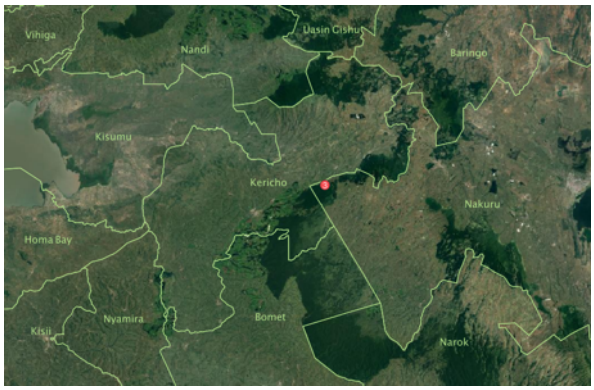


- Euclea divinorum (Kericho 55)

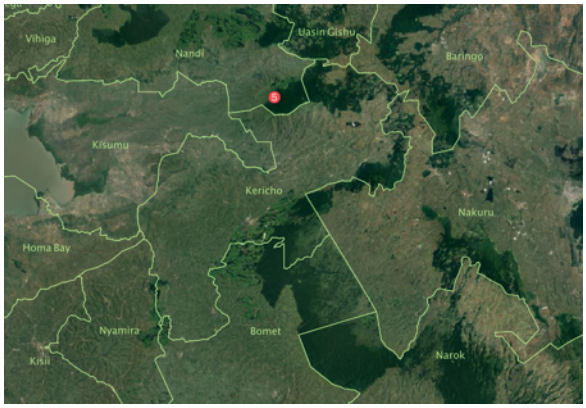


- **Euphorbia bussei (Nandi 249)**

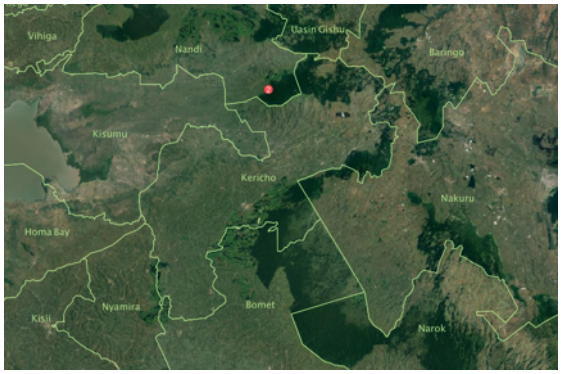
- Euphorbia candelabra



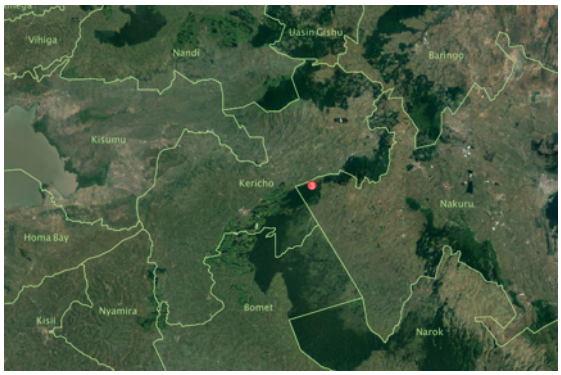
- Euphorbia eminens



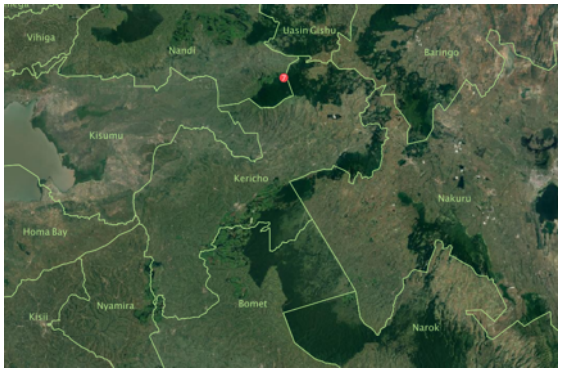
- Euphorbia hookeri



- Euphorbia kibwenzensis

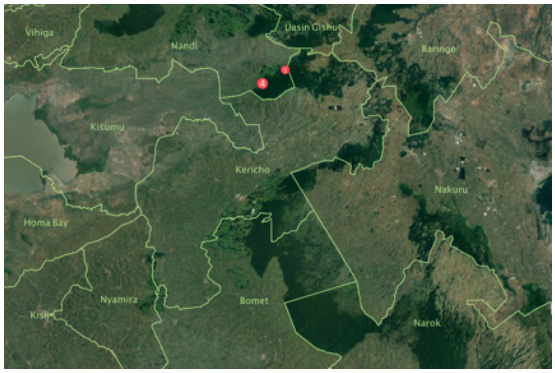


- Euphorbia obovalifolia

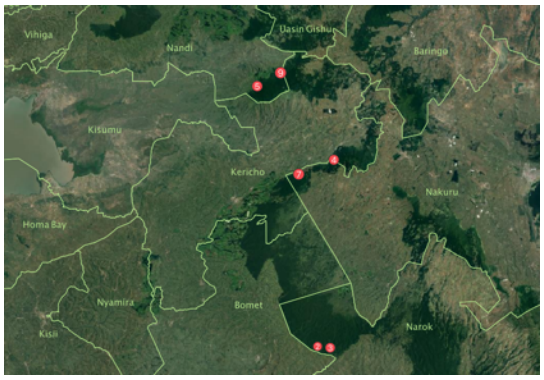


- Euphorbia var kibewezensis

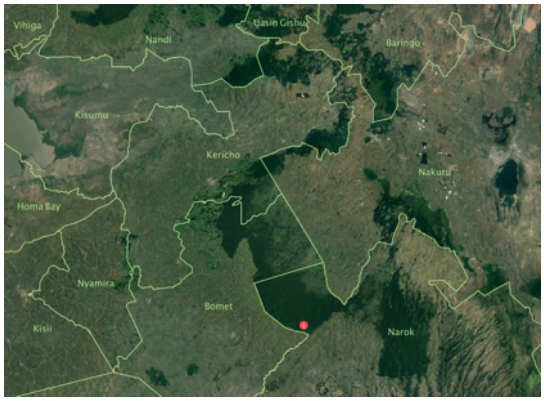
- Ficus sycomorus



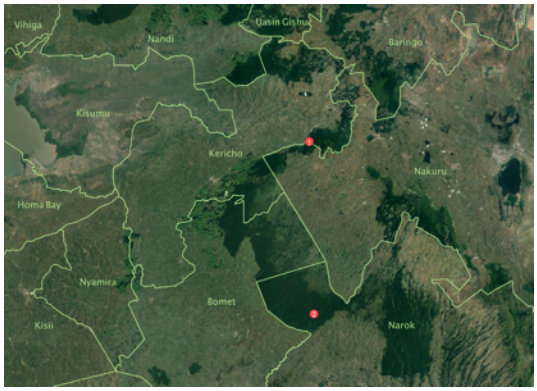
- Ficus thonningii



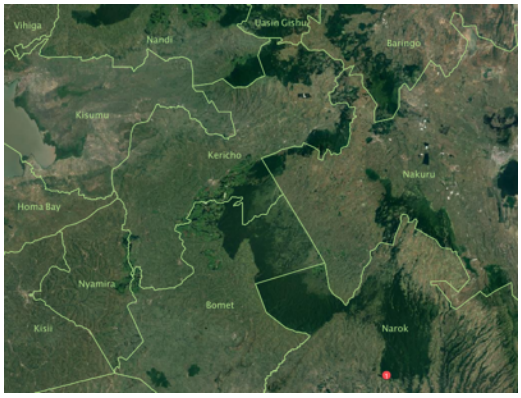
- Galiniera coffeoides



- Gnidia lamp

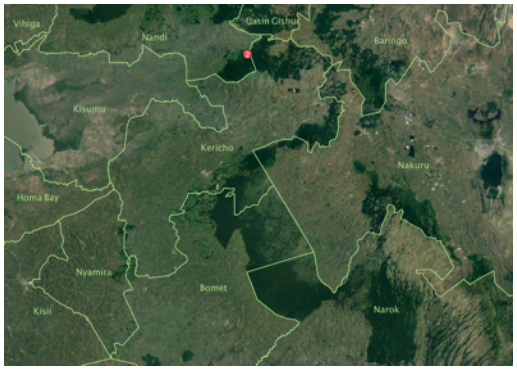


- Gomphocarpus semilunatus

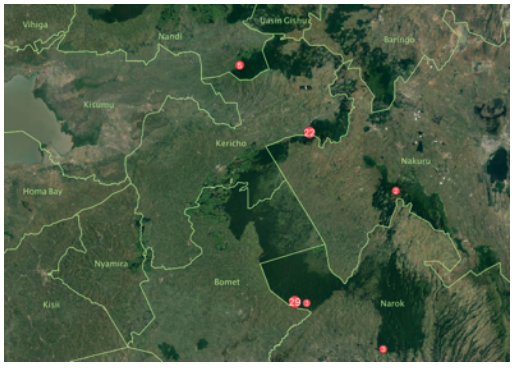


- Grewia similis

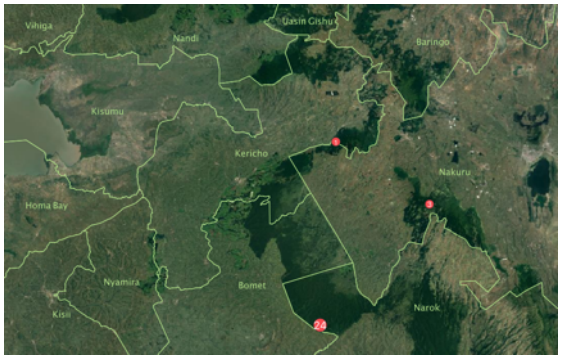
- Grewia tephrodermis



- Hagenia abyssinica

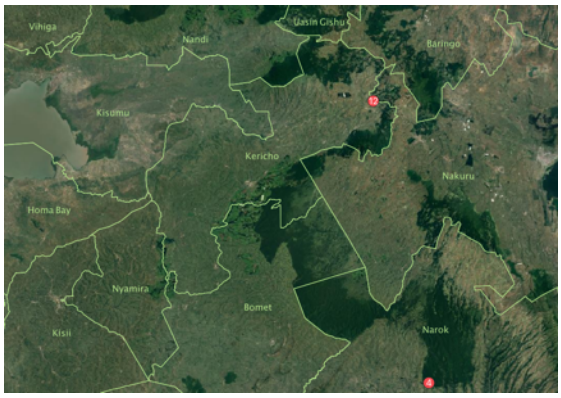


- Halleria lucida

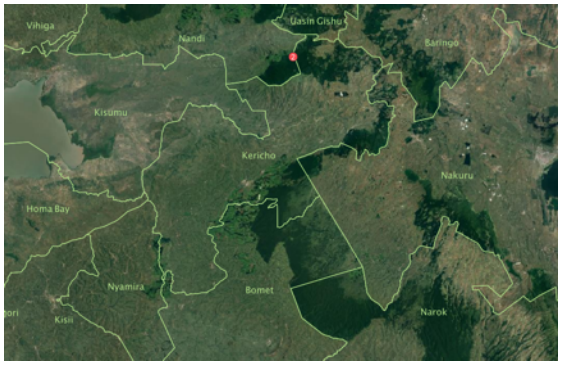


- Heinsenia diervilleoides

- Helichrysum setosum

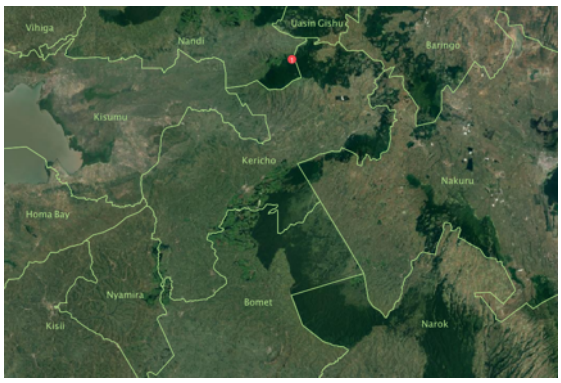


- Helinus mystacinus

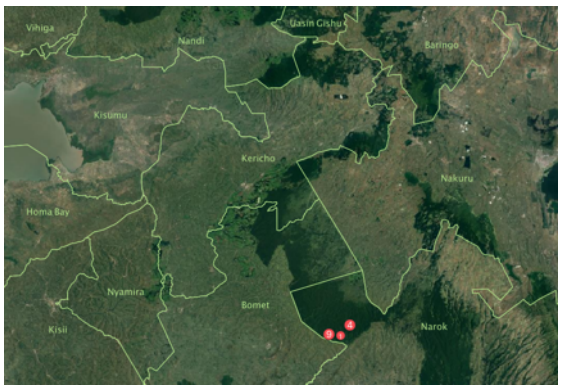


- Hypoestes verticillaris

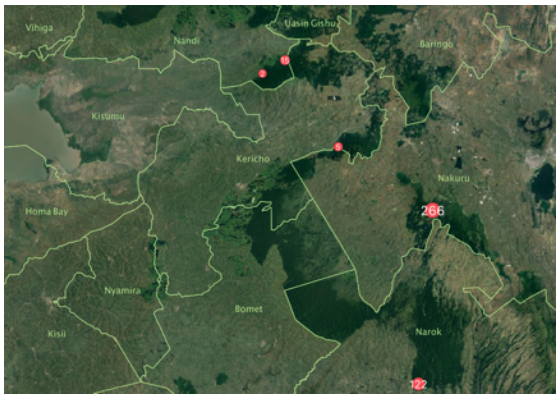
- Ilex mitis



- Jasminum floridum



- **Juniperus procera (Nakuru 266; Narok 122)**

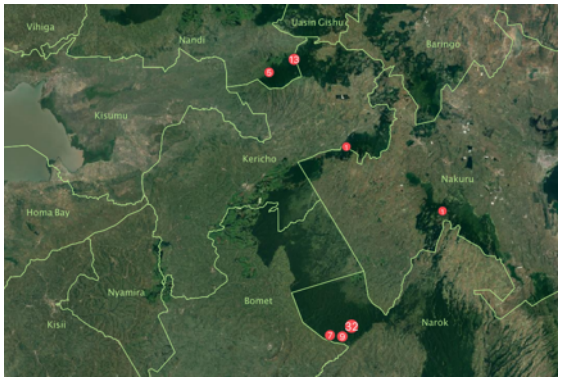


- Juniperus virginiana (Kericho 57)

- Kalanchoe densiflora

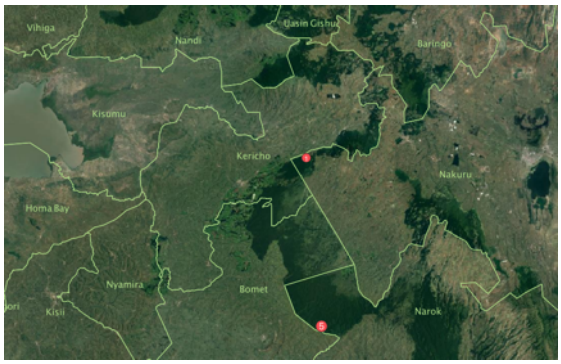
- Keetia gueinzii

- Landolphia buchananii (Bomet 48)



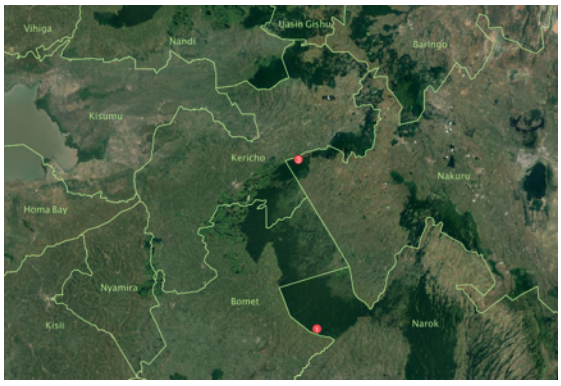
- Lannea schweinfurthii

- Leonotis nepetifolia



- Leucas calostachys

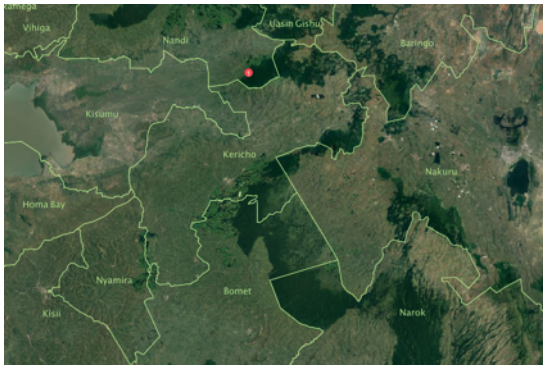
- Leucas grandis



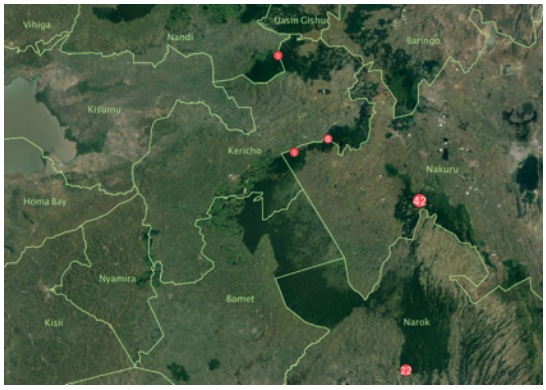
- Lippia javanica

- Macaranga kilimandscharica

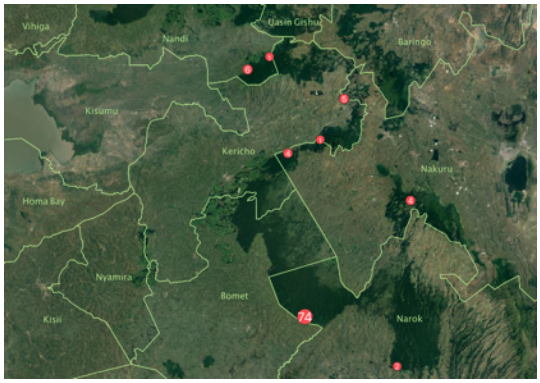
- Manilkara sulcata



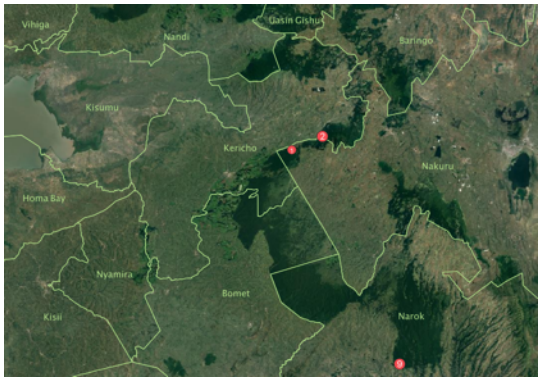
- Maytenus undata (Nakuru 42)



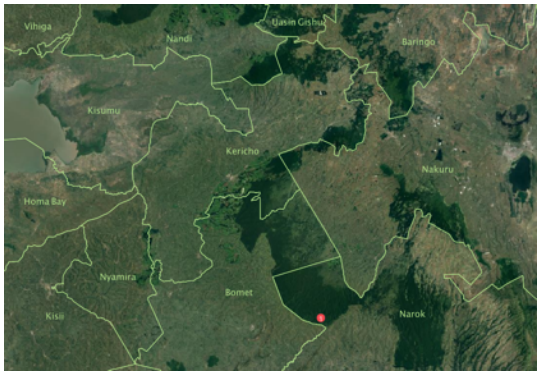
- Maytenus heterophylla (Bomet 74)



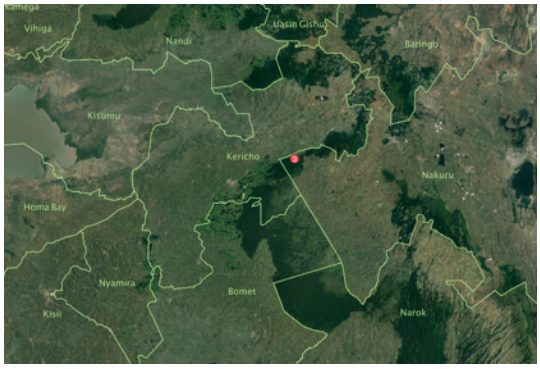
- Microglosa pyrifolia



- Mimulopsis solmsii

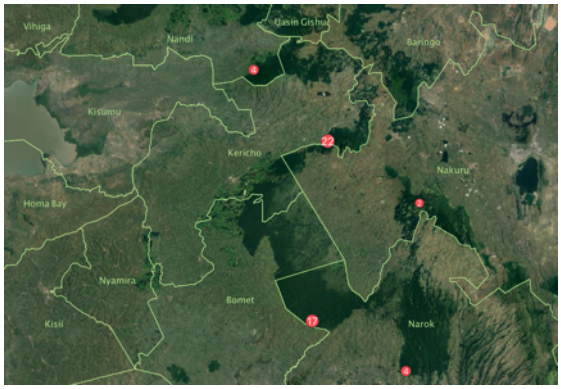


- Momordica foetida

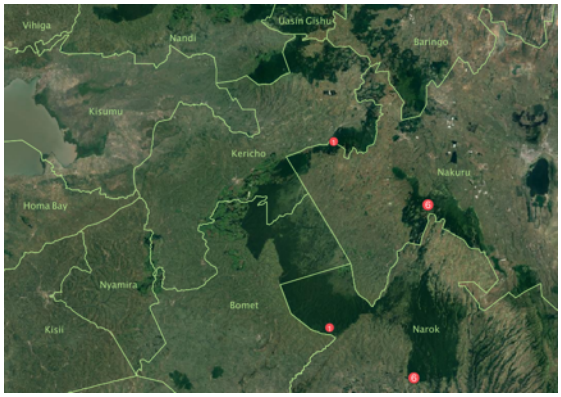


- **Myrsine africana (Nakuru 1005)**

- Mystroxylon aethiopicum

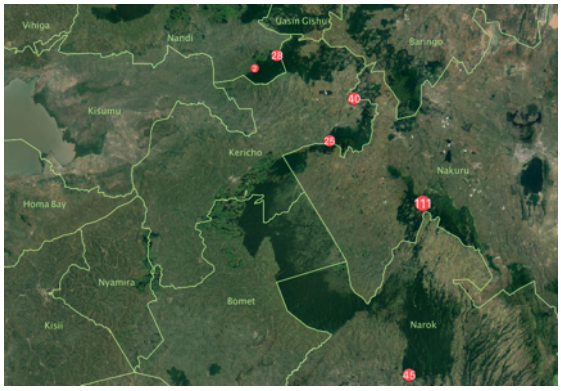


- Nuxia congesta



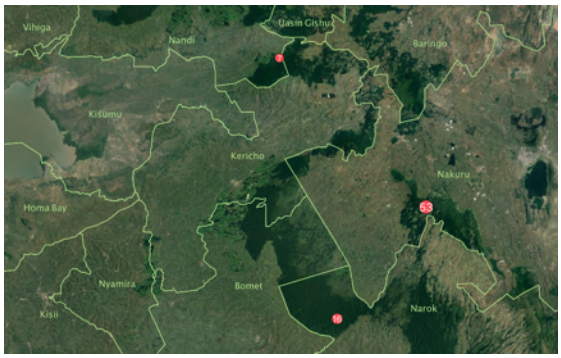
- Ochna holstii

- Olea africana (Nakuru 111)



- Olea camphoratus

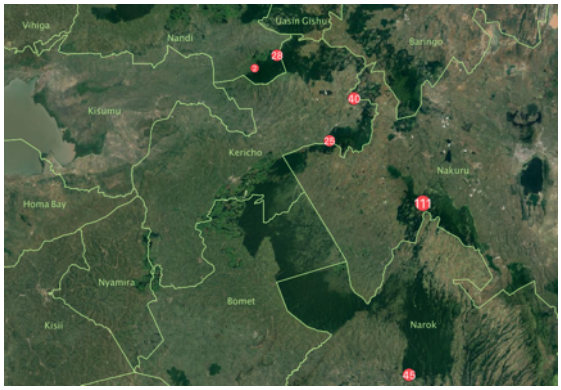
- Olea capensis (Nakuru 53)



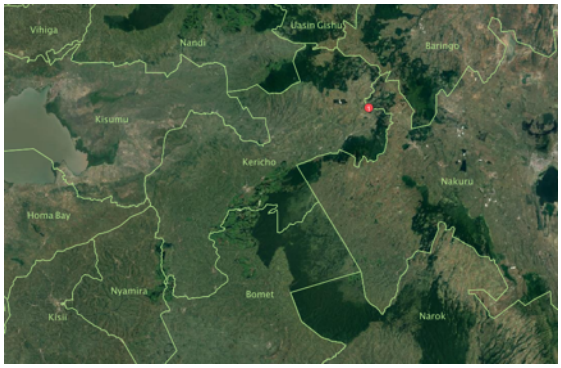
- Olea cuspidata

- Olea euro

- **Olinia africana (Nakuru 111; Narok 45; Kericho 65)**

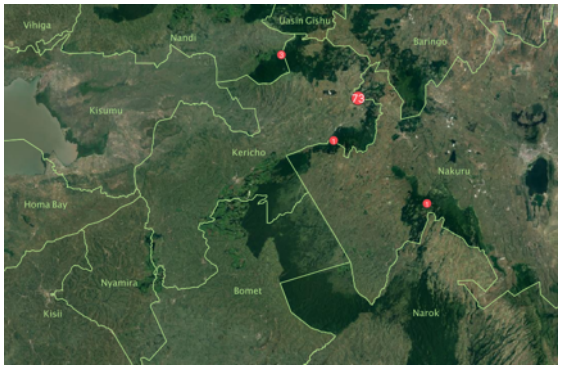


- Olinia punctulata



- Olinia roch (Kericho 65)

- Olinia usambarensis (Kericho 74)

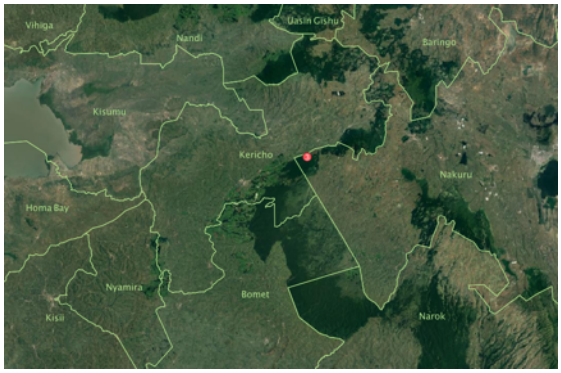


- Ormocarpum trachycarpum

- Osyris lanceolata

- Pappea capensis

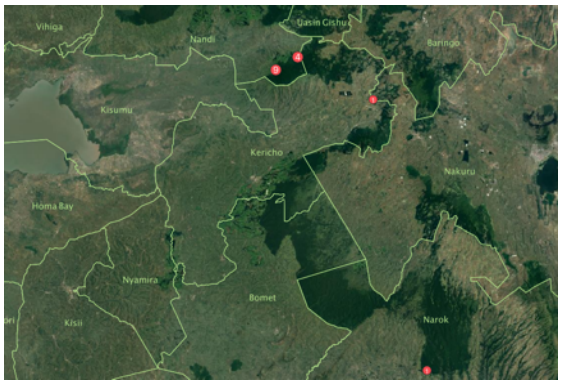
- Pavetta gardeniifolia



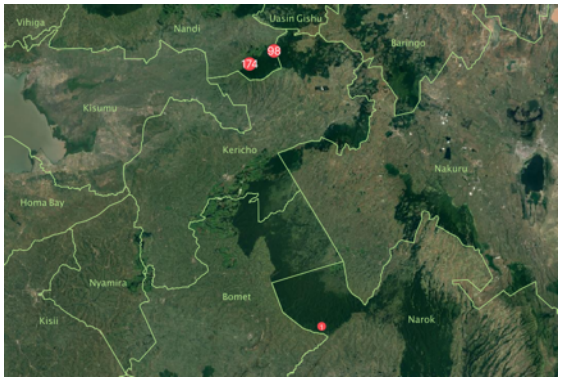
- Pavonia urens

- Peponium vogelii

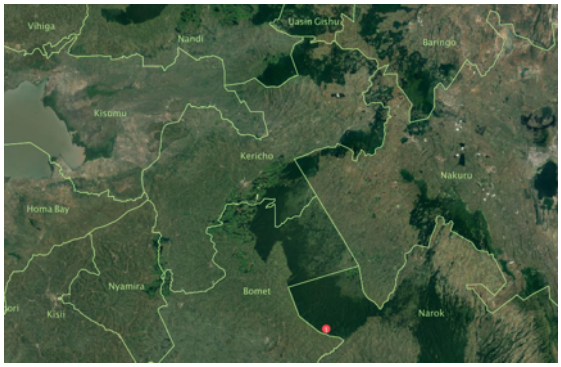
- Periploca linearifolia



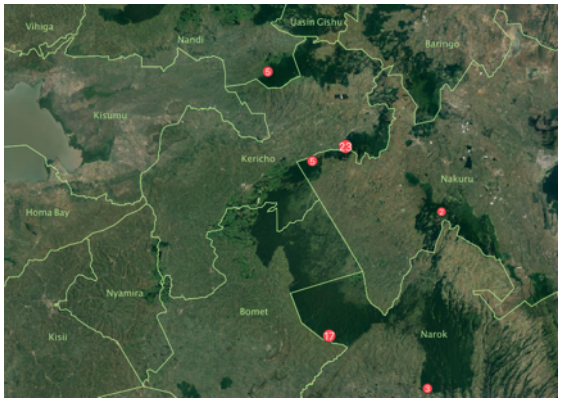
- **Pesudarthria hookeri (Nandi 272)**



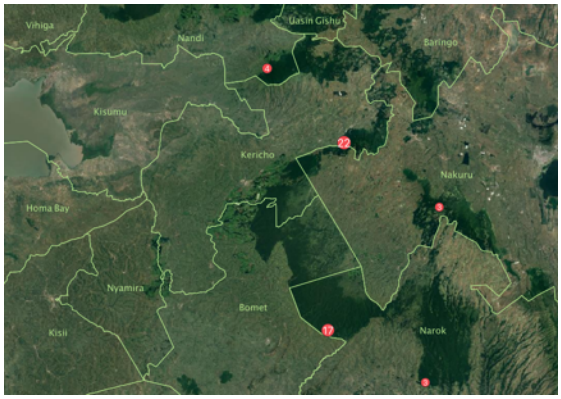
- Phoenix reclinata



- Pistacia aethiopica

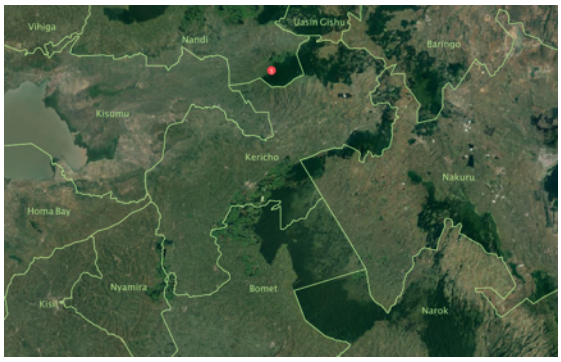


- Pistacia aethiopus

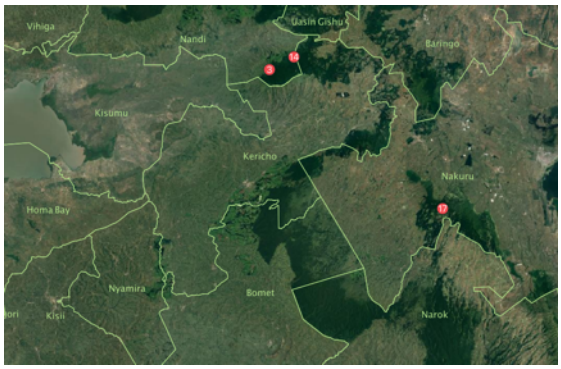


- Pittosporum lana

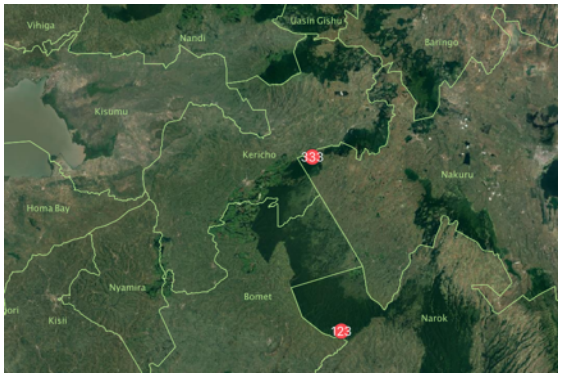
- Pittosporum linearifolia



- Pittosporum viridiflorum

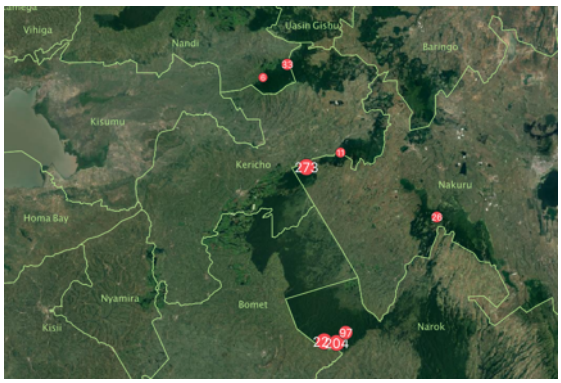


- Plectranthus kamerunensis
  (Kericho 333; Bomet 123)

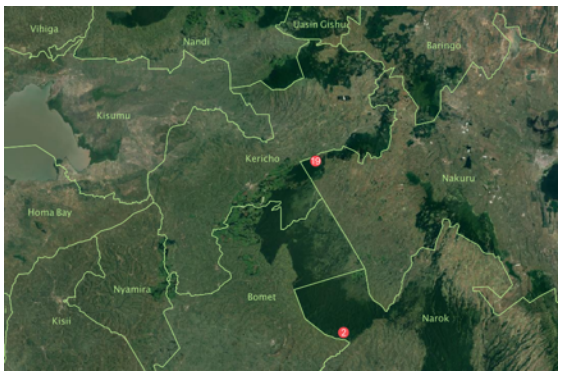


- Podocarpus falcatus (Nakuru 113)

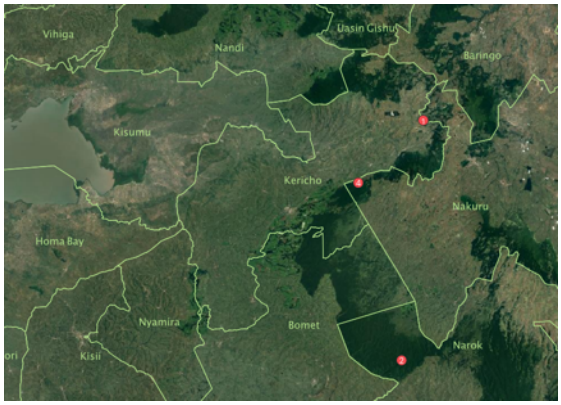
- **Podocarpus latifolius (Kericho 284; Bomet 521)**



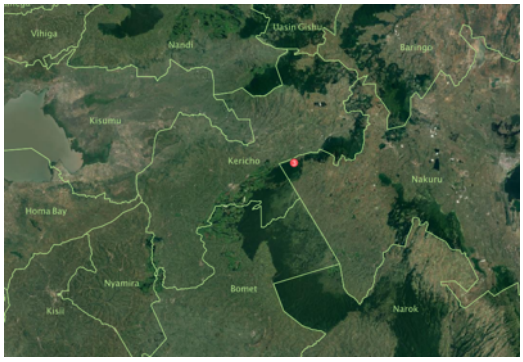
- Polyscias fulva



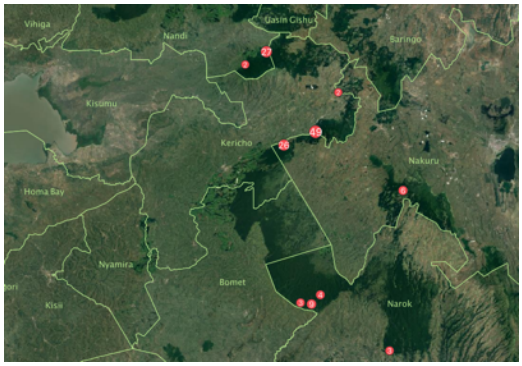
- Polyscias kikuyensis



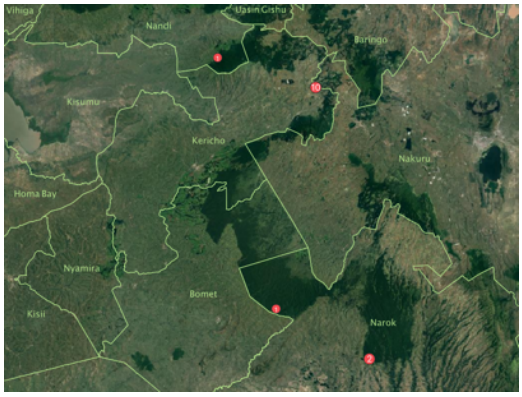
- Pordocapus kibwezensis



- Prunus africana (Kericho 77)

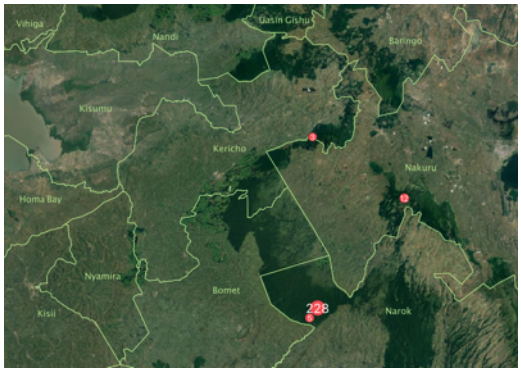


- Psiadia punctulata

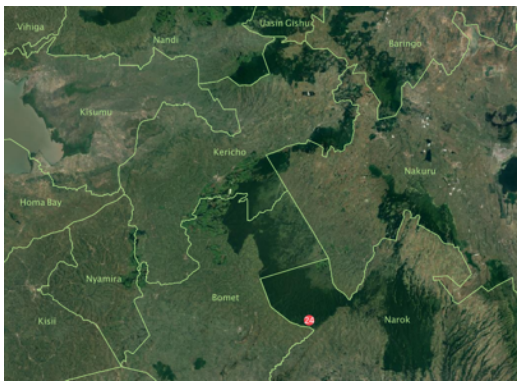


- Rapanea melanophloeos

- Rauvolfia caffra (Bomet 233)

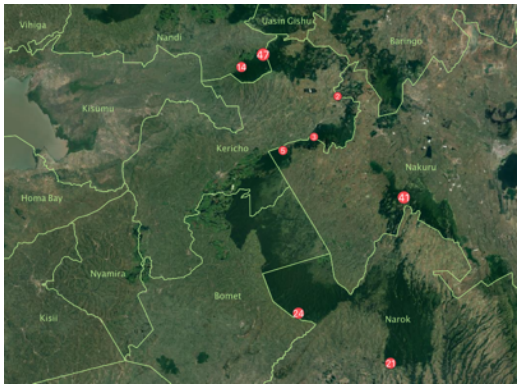


- Rauvolfia hols



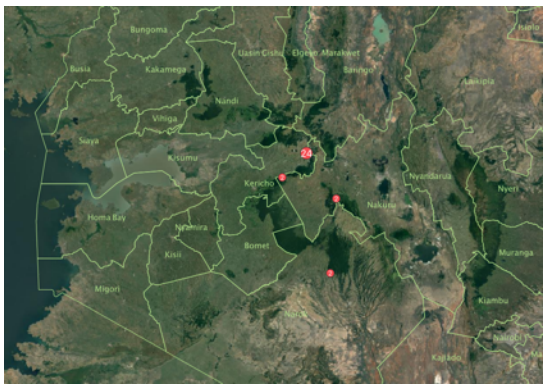
- Rhamnus natalensis

- Rhamnus prinoides (Nandi 61; Nakuru 41)

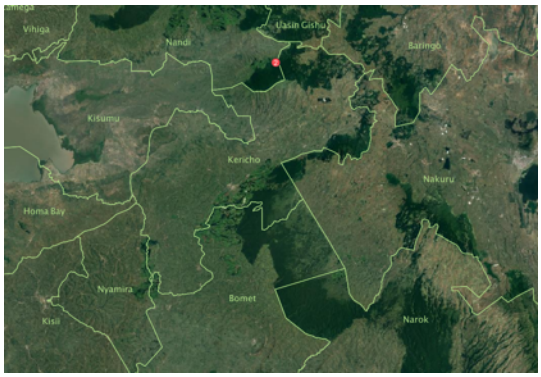


- Rhamnus procera

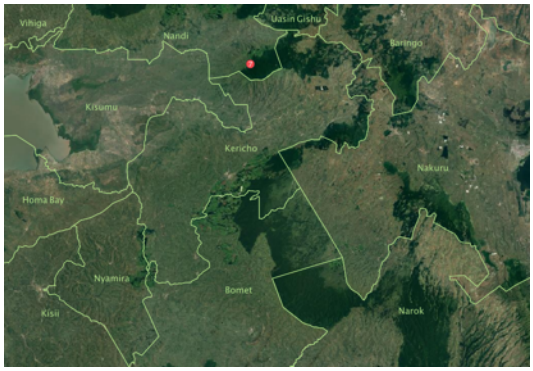
- Rhamnus staddo



- Rhamnus ventricosa



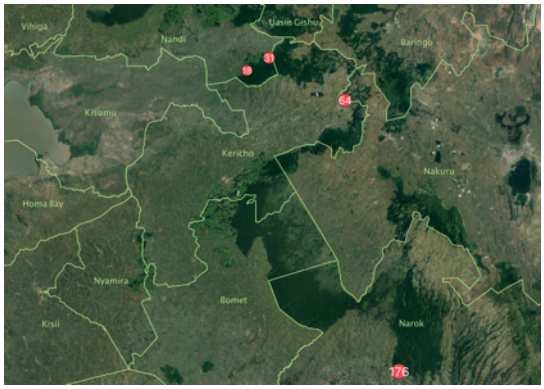
- Rhoicissus tridentata



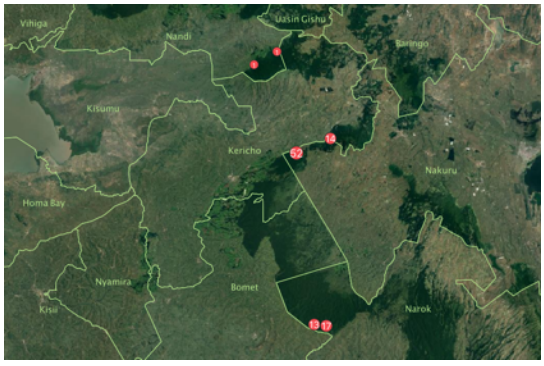
- Rhumnus prinoides

- Rhus camphoratus

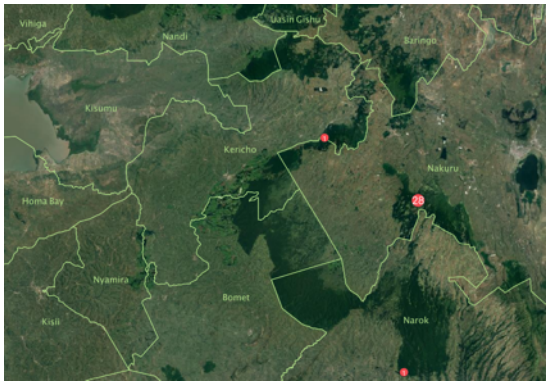
- **Rhus natalensis (Narok 176; Nandi 48; Kericho 64)**



- Ricinus communis (Kericho 66)

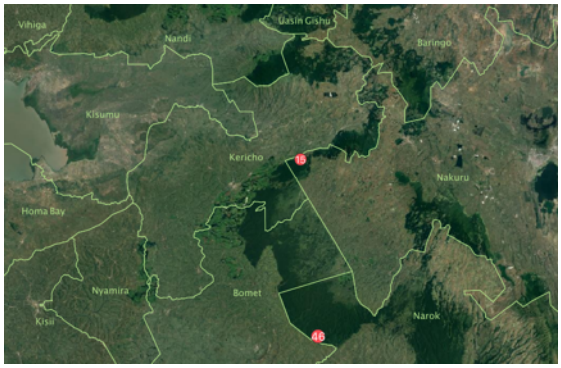


- Rubus apetalus

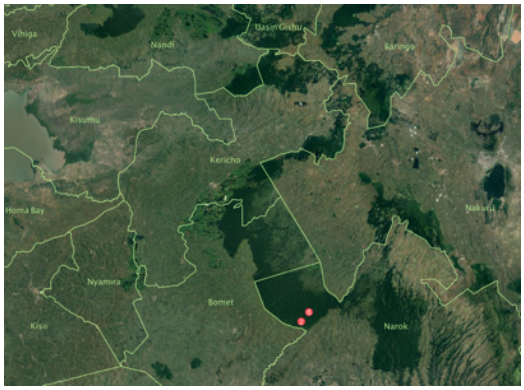


- Rubus spp

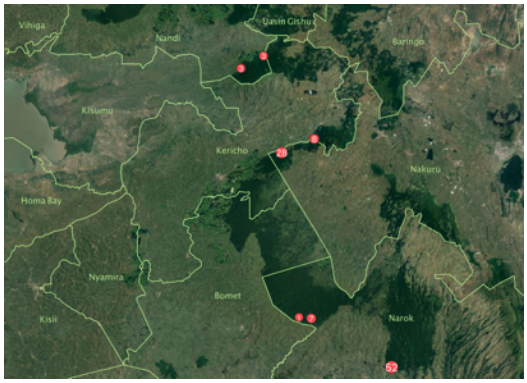
- Rubus steudneri (Bomet 46)



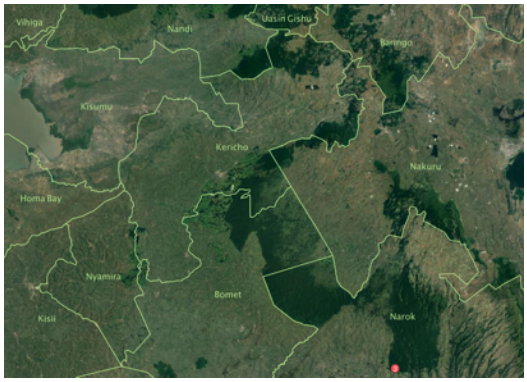
- Schrebera alata



- Scutia myrtina (Narok 52)



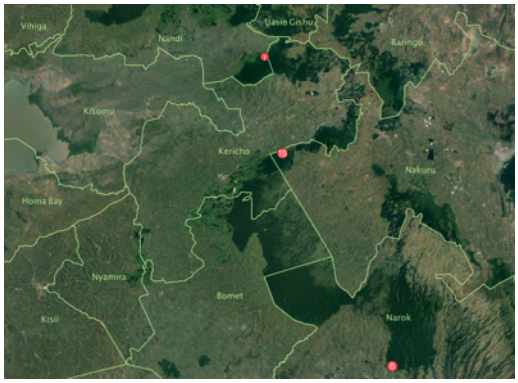
- Senecio hadiensis



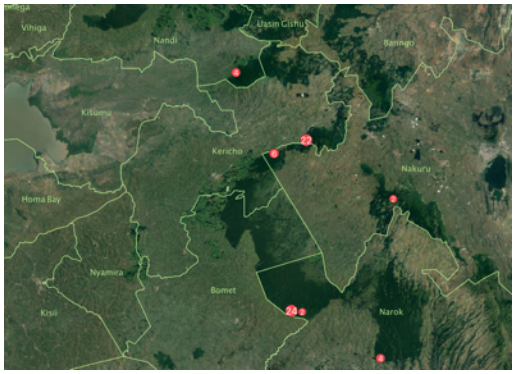
- Senna didymobotrya

- Senna septemtrionalis

- Solanecio mannuu

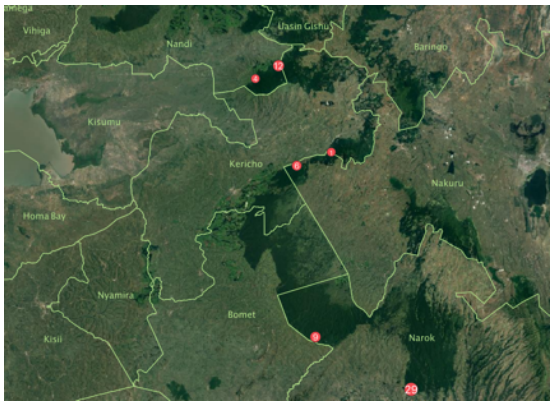


- Solanum aculeastrum

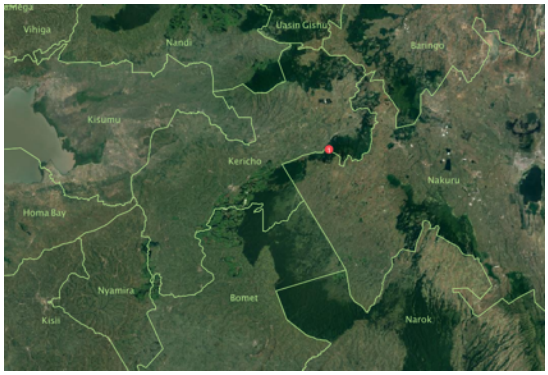


- Solanum denn

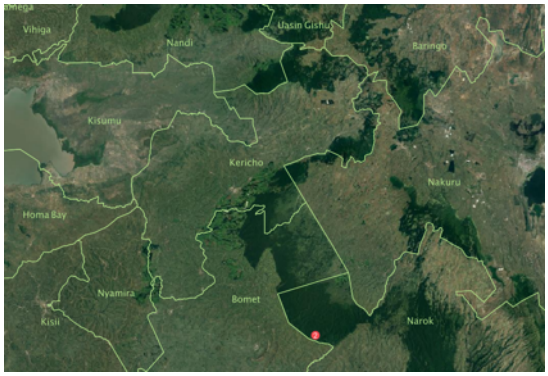
- Solanum incanum



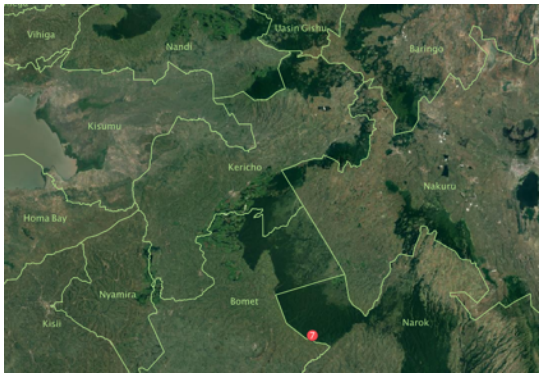
- Solanum maue



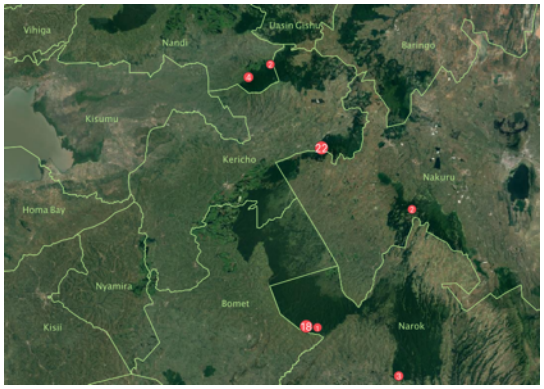
- Sparrmannia ricinocarpa



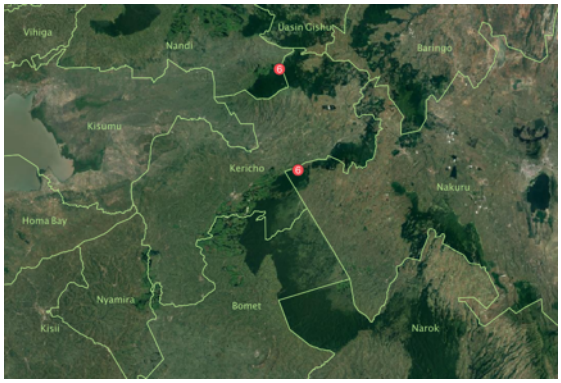
- Spathodea campanulata



- Stephania abyssinica

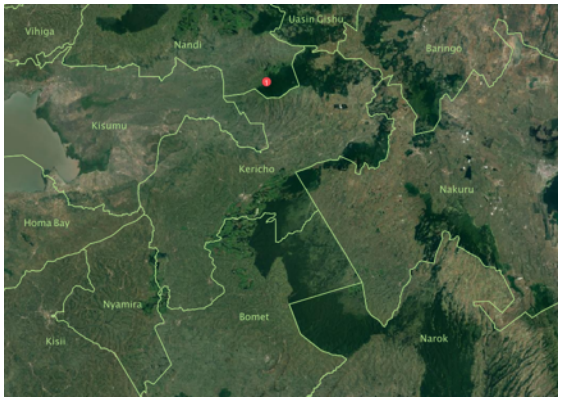


- Syzygium guineense



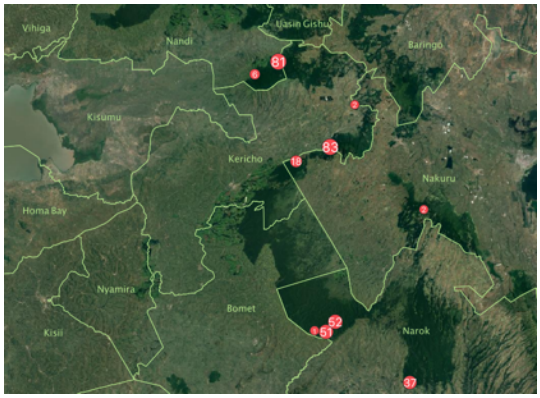
- **Tarchonatus camphoratus (Kericho 308)**

- Tarenna graveolens



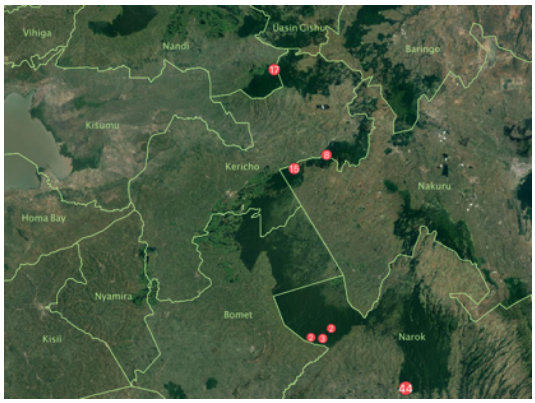
- Teclea kame

- Teclea nobilis (Nandi 87; Kericho 103; Bomet 204)

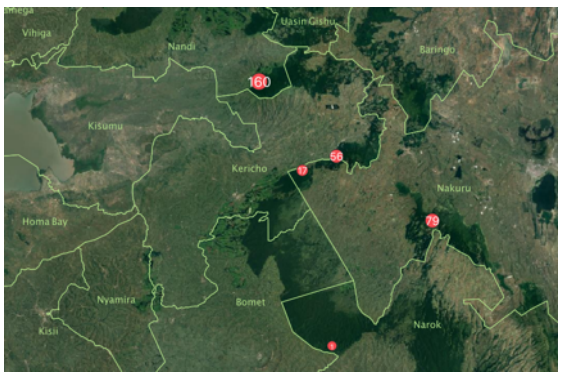


- Teclea simplicifolia

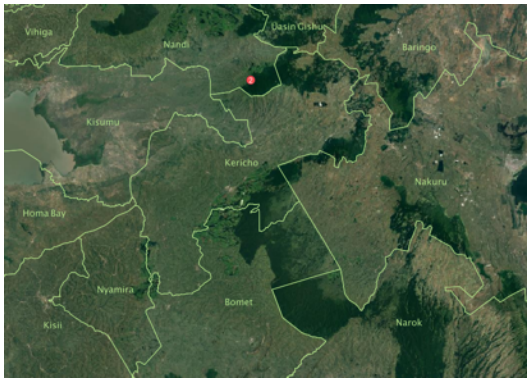
- Toddalia asiatica (Narok 44)



- Tragia brevipes (Nandi 160; Kericho 73; Nakuru 79)

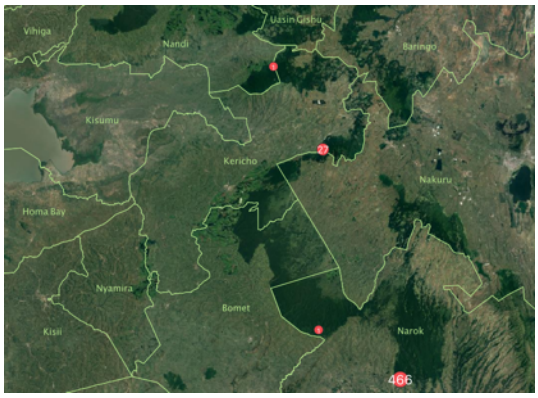


- Tragia eminens

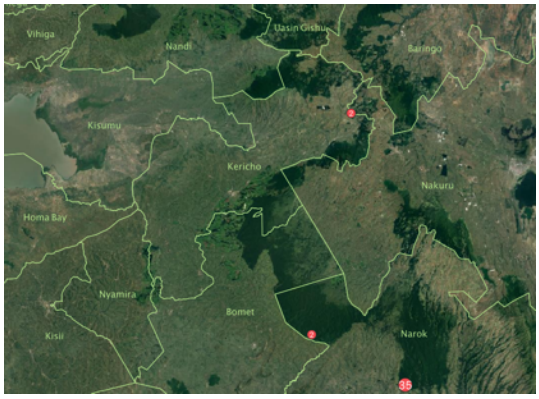


- Tragia previpes

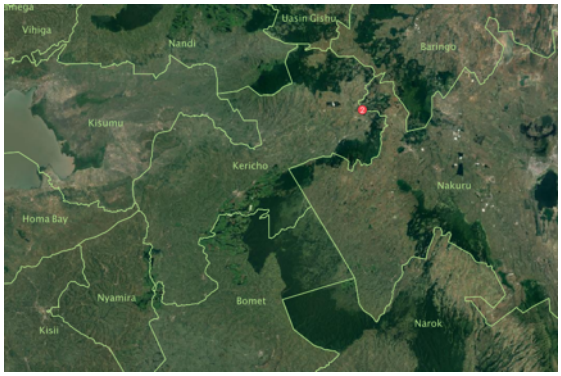
- **Trichocladua ellipticus (Narok 466)**



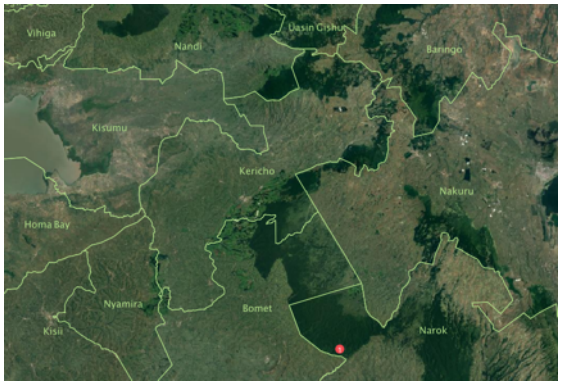
- Trimeria grandifolia



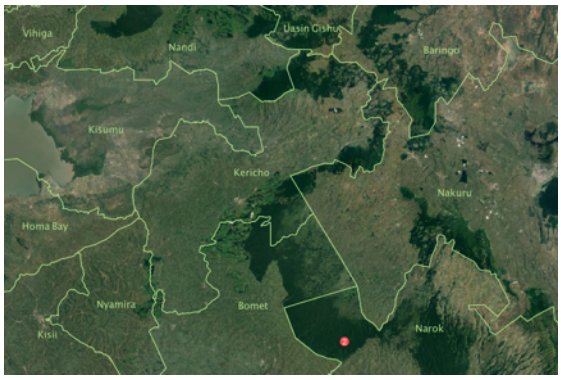
- Triumfetta rhomboidea



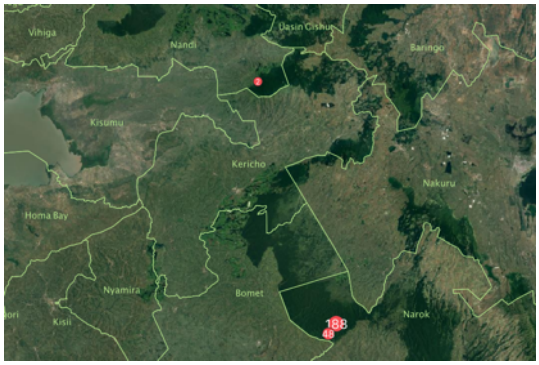
- Triumfetta tomentosa



- Turraca caffra

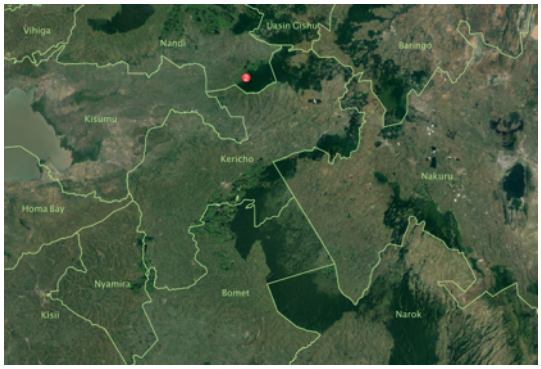


- Turraca holstii (Bomet 236)

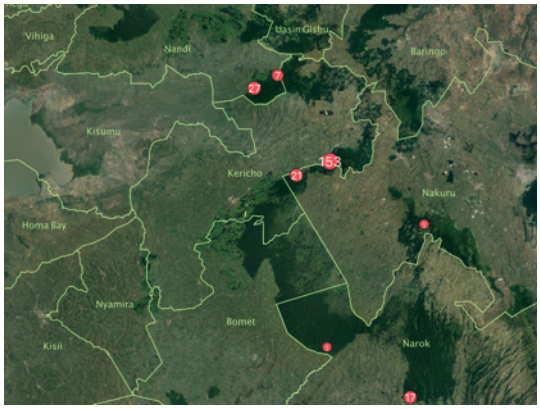


- Urera baccifera

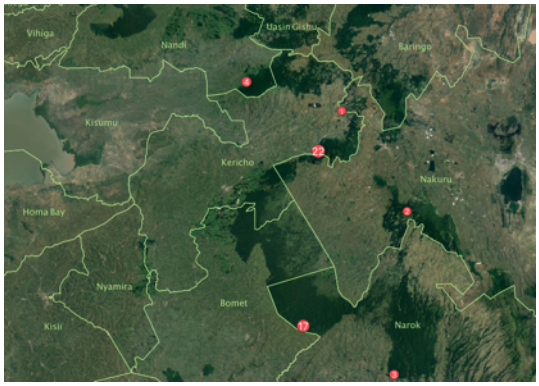
- Urera hyps



- **Vanguera apiculata (Kericho 174)**



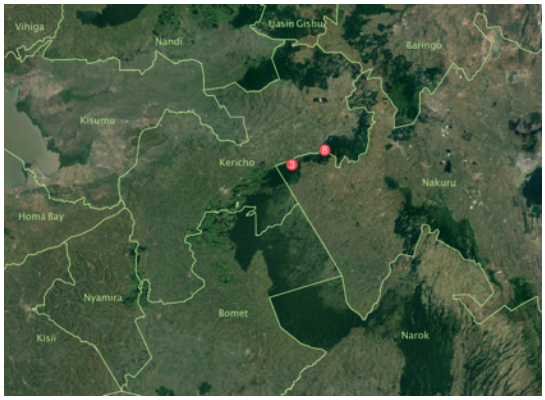
- Vangueria acutiloba



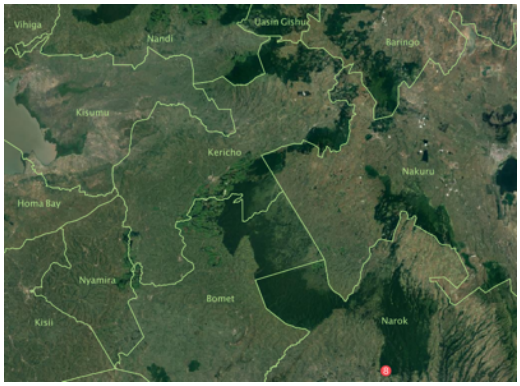
- Vangueria eminens

- Vangueria infausta

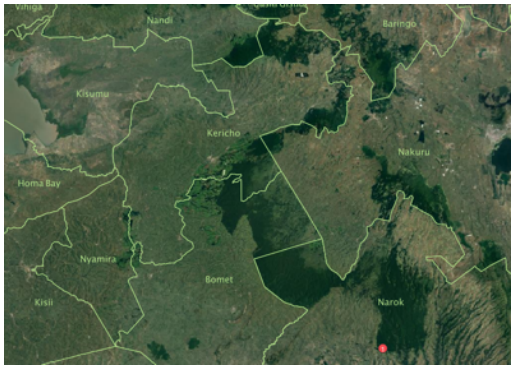
- Vangueria volkensii



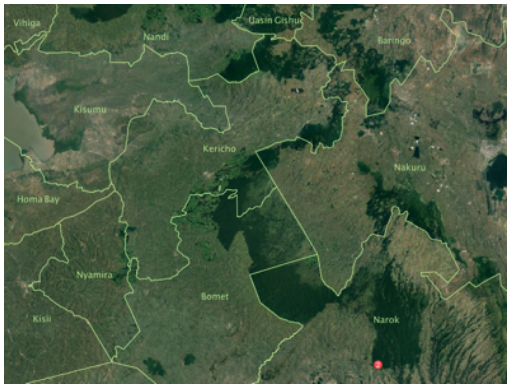
- Vernonia lasiopus



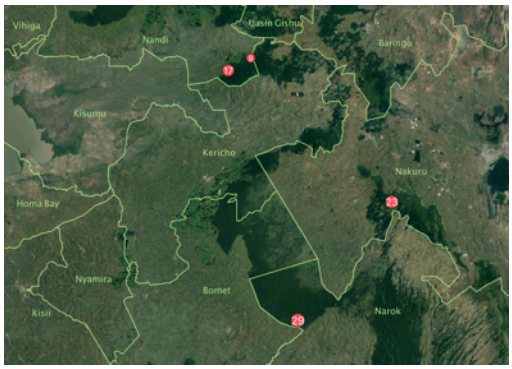
- Viscum tuberculatum



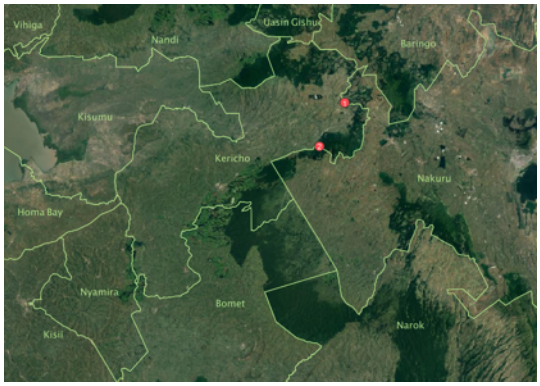
- Warburgia ugandensis



- Withania somnifera



- Zanthoxylum usambare



APPENDIX THREE: RECORDED USES OF MEDICINAL PLANTS IN MAU FORESTS

Name	Genus	Species	Location	Medicinal Use Categories	Ethnomedicinal Use(s)	Preparation Method(s)	Part(s) Use
Sirtiet, Sitotwet	Acacia	abyssinica	KIPTUNGA, NAIROTIA A	Gastrointestinal disorder	Treat indigestion and VD	Pounded	Leaf, root
Takarariet	Acanthus	abyssinica	CHEPSIR B	Urological disorder; Skin disorder; Neurological disorders	Diuretic, treat burns and wrap dislocated joints, soothe damaged nerves	Plaster, infusion	Root
Mororta, Sasuriet, Chepkorkoriet	Allophylus	abyssinica	NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Skin disorder	Skin problems, fatigue, boost immunity	Chew	Fruit
Empereempapa	Asparagus	abyssinica	LONDIANI-MASAITA	Urological disorder; Ski disorder; Cancer	Laxative, diuretic and contraceptive effects, treat neuritis, rheumatism, cancer, toothache relieve, face acne lesion, stimulate hair growth.	N/A	Leaf
Cheptorogoruet, Cheptorurogwet	Bersama	abyssinica	KIPTUNGA	Infertility	Infertility in men	Decoction	Root
Orkiparnyeny, Enkipanyeny, Kurpanyet, Olkiparnyai, Engiparnyeng, Oseketeki; Ktuparuyaa	Clutia	abyssinica	KIPTUNGA, LONDIANI-MASAITA, NAIROTIA A	Gastrointestinal disorder, Respiratory system disorders, Malaria	Antiviral, antifungal, treat influenza, coughs, colds, fevers, malaria, liver problems, stomach aches and indigestion, headaches, intestinal worms	Decoction	Multiple parts
Cheptuyiet, Olchartuyian	Diospyros	abyssinica	KEDOWA, LONDIANI-MASAITA, NAIROTIA A, NAIROTIA B, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Malaria	Treat malaria, leprosy and dysentery, promote wound healingtreat	Decoction	Multiple parts
Nukiat, Olmorogi, Emorogi, Ormorogi, Olmurugi	Dovyalis	abyssinica	CHEPSIR B, KEDOWA, KIPTUNGA, NAIROTIA A, NAIROTIA B, NKARETA, TINDERET SOUTH WEST	Gastrointestinal disorder	Treat indigestion and VD	Pounded	Leaf, root
Kogerwet, Kogoruet	Erythrina	abyssinica	LONDIANI-MASAITA, NAIROTIA A	Malaria; metabolic disorders; Respiratory system disorders; Diabetes	Treat bacterial and fungal infections, malaria, leprosy, tuberculosis (cough), inflammatory diseases, HIV/AIDS, cancer, diabetes mellitus, obesity, and anaemia	Decoction, pounded	Bark, root
Pondet, Mopondet	Hagenia	abyssinica	NAIROTIA B, TINDERET SOUTH WEST	Malaria; Cancer; Respiratory system disorder	Anthelmintic, abortifacient, treat malaria, diarrhoea and stomachache, cancer	N/A	N/A
Tabarariet	Stephania	abyssinica	NAIROTIA B, TINDERET CENTRAL	Gastrointestinal disorder	Treat dysentery, diarrhoea, vomiting, stomach complaints, sexually transmitted diseases, menstrual disorders and sterility in women; antidote to snakebites.	Decoction, pounded	Leaf, root

Sigowet, Sikawet, Osikawai	Solanum	aculeastrum	CHEPSIR B, NAIROTIA A, NAIROTIA B, NKARETA	Toothache disorders, Skin disorder, Immune system disorder	Treat cancer, toothaches, and ringworm	Decoction	Fruit
Olgumi	Vangueria	acutiloba	LONDIANI-MASAITA	Malaria	Treat intestinal worm infections and malaria	Infusion	Root, bark
Chepkororyiet, Chepkorokwet	Pistacia	aethiopica	CHEPSIR B, KEDOWA, TINDERET SOUTH WEST	Gastrointestinal disorder, Respiratory system disorders, Urological disorder, Toothache disorders.	Analgesic, antitussive, carminative, diuretic, expectorant, odontalgic, sedative and stimulant	N/A	Resin
Olodong'anayioi	Mystroxylon	aethiopicum	NKARETA	Gastrointestinal disorder	Treat stomach ache, anaemia and coughs	Decoction	Bark
Kokorwet	Pistacia	aethiopus	KIPTUNGA	Gastrointestinal disorder, Respiratory system disorders, Urological disorder, Toothache disorders.	Analgesic, antitussive, carminative, diuretic, expectorant, odontalgic, sedative and stimulant	N/A	Resin
Emperempapa	Asparagus	africana	CHEPSIR B, KIPTUNGA, NAIROTIA B, NKARETA, NAIROTIA A	Sexually transmitted diseases	Treatment against syphilis, gonorrhoea; treat haematuria, coughs and schistosomiasis.	Decoction, macerated, pounded	Root, branchlet, multiple parts
Chepkeleliet, Chepleliet	Celtis	africana	KEDOWA, KIPTUNGA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Respiratory system disorders	Treat fever, headache and general malaise, sore eyes, treat pleurisy	Decoction, pounded	Root, leaf, multiple parts
Orkujuk	Cordia	africana	CHEPSIR B, KIPTUNGA, NKARETA	Musculoskeletal disorders, Skin disorder, Neurological disorders	Treat headache, nose bleeding, dizziness, vomiting during pregnancy, skin-troubles, worms, jaundice and schistosomiasis	Decoction	Bark, leaf, root
Oseketeki, Sitotwet, Seketeki	Myrsine	africana	KIPTUNGA	Respiratory system disorders	Anthelmintic, treat dropsy, colic, dysmenorrhoea, blood purifier	Boiled, pounded, Chewed	Bark, root, fruit
Emitiot, Oloirien, Imitiot, Emitiyet, Oltarakwai, Engoirien	Olea	africana	KEDOWA, KIPTUNGA, LONDIANI-MASAITA, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Respiratory system disorders	Colds, influenza, pneumonia, respiratory	N/A	Multiple parts
Olkirinyet	Olinia	africana	LONDIANI-MASAITA	N/A	N/A	N/A	N/A
Cheptuiyet, Olkujuk, Olchartuiyan oibor, Olchartuiyan orok, Tendwet, Kiptuyiet	Prunus	africana	CHEPSIR B, NAIROTIA A, NAIROTIA B, NKARETA, KEDOWA, KIPTUNGA, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder	Increase appetite, stomachache	Pounding	Leaf
Lelechwe	Tarchonatus	africana	LONDIANI-MASAITA	Skin disorder	Insect repellent, anti-irritant, anti-edema, decongestant and soothing	N/A	N/A
Kobukeriet, Lamayiat	Schrebera	alata	NAIROTIA A	Toothache disorders; Neurological disorders.	Treat tooth complaints, pharyngitis and headache, colds, cough, fever.	Pounded, chewed	Root, twig, bark, leaf
Labatiet	Dracaena	africa	NAIROTIA B	Gastrointestinal disorder; Sexually transmitted diseases; Mood disorder	Vermifuge, treat stomachache, gonorrhoea, chest pains, mental illness	Pounded, infusion	Ash, root, leaf

Tegat, Tekyat	Arundinaria	alpina	NAIROTIA A, NAIROTIA B	Respiratory system disorders	Treat cough	N/A	Multiple parts
Engayakuji, Olayakuji, Takamamiet	Rubus	apetalus	KEDOWA, KIPTUNGA, NKARETA	Diabetes	Treat anaemia and diabetes	Decoction	Fruit, leaf
Kimolwet, Molwet, Olgumi	Vanguera	apiculata	CHEPSIR B, NAIROTIA A, KEDOWA, KIPTUNGA, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder	Cure stomach-ache, rid the body of intestinal worms	Decoction	Root, leaf
Silbwet	Dombeya	appalachian	NAIROTIA A	Gastrointestinal disorder	Treat intestinal ulcers, headaches, stomach complaints, haemorrhoids	Decoction, pounded	Root, bark, leaf
Chepintoruet, Oleparmunyuo, Chepindorwet	Toddalia	asiatica	KEDOWA, CHEPSIR B, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, NKARETA	Gastrointestinal disorder; Respiratory system disorders	Increase appetite, stomachache; Bronchial pain, colds, respiratory diseases	Decoction	Bark; Fruit, root, multiple parts
Kipsotet	Urera	baccifera	NAIROTIA B	Urological disorder; Musculoskeletal disorders	Diuretic, treat muscle pain	Decoction, infusion	Leaf, root
Olmasiligi, Kuserwet	Cotyledon	barbeyi	NKARETA, TINDERET SOUTH WEST	Toothache disorders; Skin disorders.	Treat bacterial infection, toothache, earache, abscesses, skin rashes, syphilis.	Pounded	Multiple parts
Kusisitiet	Erythrococca	bongensis	NAIROTIA B	Gastrointestinal disorder	Anthelmintic, antitussive, stomachic and tonic	Decoction, infusion	Leaf, root
Orgiguri/Wait abit	Acacia	breveispica	KEDOWA	Malaria	Malaria; Cleaning of the uterus after birth, facilitate lactation, facilitate placenta expulsion after birth	Decoction, pounded	Bark; Root
Entamejoi, Siwot, Sting weed	Tragia	brevipes	CHEPSIR B, KEDOWA, KIPTUNGA, TINDERET SOUTH WEST, NAIROTIA A	Gastrointestinal disorder	Purgative, promote conception, treat poliomyelitis, cure gonorrhoea, kill internal parasites, treat stomach-ache, diarrhoea and gastroenteritis	Decoction, burning	Root, leaf, twig
Osoket	Elaeodendron	buchananii	KEDOWA, NAIROTIA A	Gastrointestinal disorder	Abortifacient, oxytocic, tonic and vermifuge, treat fever, diarrhoea, digestive upsets, coughing with blood	Chewed, decoction	Root, leaf
Ngingichet, Tuneiyet, Tunoyiet, Nginyngichet	Landolphia	buchananii	KEDOWA, KIPTUNGA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Sexually transmitted diseases	Wounds, gonorrhoea, molluscicides	Infusion (external)	Leaf
Ntakariat	Acanthus	bussei	NAIROTIA A, TINDERET SOUTH WEST	Urological & Skin disorder	Diuretic, treat burns and dislocated joints	Infusion	Root
Mapoontet, Mopondet	Euphorbia	bussei	TINDERET SOUTH WEST	Gastrointestinal & Skin disorder	Induce vomiting, treat skin inflammation	N/A	N/A
Ormorogi	Dovyalis	caffra	LONDIANI-MASAITA	Musculoskeletal disorders	Relieving pain and rheumatism	N/A	Leaf, twig
Rerendet	Rauvolfia	caffra	KEDOWA, KIPTUNGA, NAIROTIA A	Gastrointestinal disorder; Respiratory system disorders	Treat wounds, coughs, diarrhoea and other stomach ailments	Infusion, chewed	Bark

Chesiseyiet	Turraca	caffra	NAIROTIA A	Mood & Respiratory system disorders	Treat fever, swellings, rheumatism, hepatitis, abdominal pain, tranquilizer.	Decoction, pounded	Multiple parts
Ngechepchat	Leucas	calostachys	LONDIANI-MASAITA	Gastrointestinal disorder	Severe diarrhea with blood	N/A	N/A
Olsinoni	Lantana	camara	LONDIANI-MASAITA	Malaria; Skin disorders	Treat malaria, chickenpox, ulcer, swelling, eczema, tumour, high blood pressure, bilious fever, sores, measles, colds	Oil	Leaf
Nandiflame	Spathodea	campanulata	NAIROTIA B	Malaria; Diabetes; Gastrointestinal &Urological & Skin disorder; Sexually transmitted diseases	Treat malaria, HIV, diabetes, oedema, dysentery, constipation, gastrointestinal disorders, skin diseases, wounds, fever, urethral inflammation, liver complaints.	Extracted	Leaf, bark, flower
Tarakwet	Juniperus	camphoratus	LONDIANI-MASAITA	Gastrointestinal disorder; Urological disorder	Treat stomachache, UTIs, kidney and bladder stones.	Oil, decoction	Berry
Emitiot	Olea	camphoratus	LONDIANI-MASAITA	N/A	N/A	N/A	N/A
Masiriat	Rhus	camphoratus	LONDIANI-MASAITA	Gastrointestinal disorder	Treat diarrhea and hemorrhage	Decoction	Gall
Olsentu, Oleleshwa, Lelechwet	Tarchonatus	camphoratus	LONDIANI-MASAITA	Skin disorder	Insect repellent, anti-irritant, anti-edema, decongestant and soothing	N/A	N/A
Olpopongi	Euphorbia	candelabra	CHEPSIR B	Immune system disorder, Respiratory system disorders	Anti-tumour, treat coughs, tuberculosis, malaria and HIV infections.	Decoction	Multiple parts
Kipkakaria	Calodendrum	cape	NAIROTIA A	Skin disorders	Skin ointments	Crushed, boiled	Bark
Ororwet	Ekebergia	capensis	NAIROTIA A, NAIROTIA B	Skin disorder	Skin allergies	Boiled, chewed	Bark
Ololiontoi, Masaita	Olea	capensis	KIPTUNGA, NAIROTIA A, TINDERET CENTRAL	Immune system disorder	Dewormer, blood cleanser	Boiled, dried, and pound to powder	Bark
Olkisikongu	Pappea	capensis	LONDIANI-MASAITA	Skin disorder	Purgative and treat ringworm, restore hair, make soap.	Burning	Leaf, Bark
Chepokyot	Galiniera	coffeoides	NAIROTIA A	Gastrointestinal disorder	Anthelmintic	N/A	N/A
Oldule, Tagaratwet, Singorwet, Chesisiyiat, Rhicinus	Ricinus	communis	CHEPSIR B, KEDOWA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder	Purgative, stomachache, diarrhea	Pounding, decoction	Seed, root, multiple parts
Choruet/Olpiron	Nuxia	congesta	KEDOWA, KIPTUNGA, NAIROTIA A, NKARETA	Gastrointestinal disorder	treat indigestion	Chewed, boiled	leaf, bark
Oloirien	Olea	cuspidata	KEDOWA	Malaria; Toothache disorders	Malaria, refresh the mouth and cure mouth infections, blood purifier	Decoction	Leaf, bark, root
Tangaratwet	Aloe	dawe	CHEPSIR B	Gastrointestinal disorder	Diarrhea, stomachache	N/A	Multiple parts

Lapotwet	Solanum	denn	NAIROTIA A	Gastrointestinal disorder; Skin disorder	Treat stomachache, diarrhoea, piles and dysentery, boils, cuts, wounds and bruises	Decoction	Leaf, bark
Ormasiligi, Emasiligi	Kalanchoe	densiflora	KIPTUNGA, NKARETA	Neurological disorders	Detoxicant	Pounded	Multiple parts
Senetwet, Osenetoi	Senna	didymobotrya	CHEPSIR B, KIPTUNGA, NKARETA	Gastrointestinal disorder	Laxative and purgative, treat abdominal pains, expel intestinal worms and treat ringworm, treat abscesses of the skeletal muscles and venereal diseases	Decoction, infusion, pounded	Multiple parts
Masaita	Heinsenia	diervilleoides	CHEPSIR B	N/A	N/A	N/A	N/A
Lamaiyat, Olkinyei, Uuswet	Euclea	divinorum	CHEPSIR B, KEDOWA, LONDIANI-MASAITA, NKARETA, TINDERET SOUTH WEST	Gastrointestinal disorder	Anthelmintic, constipation, emetics, purgatives, stops vomiting	Decoction	Multiple parts, bark, roots
Tumayiot	Catha	edulis	TINDERET CENTRAL	Neurological disorders	induce mild euphoria and excitement, reduce physical fatigue or hunger	Chewed	Leaf
Olpalgilagi, Parkeyuet	Trichocladus	ellipticus	KEDOWA, NAIROTIA A, NKARETA, TINDERET CENTRAL	Gastrointestinal disorder	improve digestion and to cure an upset stomach	Decoction	Bark
Ndakarariet, Takarariet, Ntakariat, Tegeldet, Tangarariet, Tekeldet, Tekeldit	Acanthus	eminens	CHEPSIR B, KEDOWA, KIPTUNGA, LONDIANI-MASAITA, NAIROTIA A, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder; Musculoskeletal disorders	Abdominal cramps, joint pains	Decoction, burning	Whole shrub
Tegat	Arundinaria	eminens	NAIROTIA A	Musculoskeletal disorders, Urological disorder	Stimulate the kidneys and renew strength	Decoction	Root
Takariat	Canthium	eminens	KEDOWA	Diabetes, Skin disorder	Diabetes, wound healing, neck swelling.	Decoction	Leaf, root
Cheptuyiet	Diospyros	eminens	TINDERET CENTRAL, TINDERET SOUTH WEST	Skin disorder, Immune system	Treat wounds, ulcers, dysentery, fever	Pounded	Juice, fruit
Silibwet	Dombeya	eminens	CHEPSIR B	N/A	N/A	N/A	N/A
Mopondet	Euphorbia	eminens	TINDERET SOUTH WEST	Respiratory system & Gastrointestinal & Skin & Sex system disorders	Treat coryza, bronchitis, jaundice, pimples, gonorrhea, digestive problems.	Decoction	Multiple parts
Siwot	Tragia	eminens	TINDERET SOUTH WEST	Skin & Neurological & Respiratory system disorders	Treating asthma, fever, skin problems, epilepsy and snakebite.	N/A	Root
Olgumi	Vangueria	eminens	KEDOWA	Diabetes, Malaria, Skin & Gastrointestinal disorders	Treat diabetes, malaria, pain, parasitic worms, skin diseases	Chewed	Fruit
Emitiot	Olea	euro	KEDOWA	Respiratory system disorders	Colds, influenza, pneumonia, respiratory	N/A	Multiple parts

Olchani lenkai, Olpolto, Oseketeki, Orpondo	Podocarpus	falcatus	KIPTUNGA	Respiratory system disorders	Chest complaints	N/A	Sap
Porwet	Cadaba	farinosa	TINDERET CENTRAL	Respiratory system disorders	Treat dysentery, colds, various internal disorders and dermatological conditions, treat coughs and rheumatism.	Pounded	Leaf, root
Chepokyot	Jasminum	floridum	NAIROTIA B	Cancer, Gastrointestinal disorder	Treat hepatitis, liver pain, dysentery, relaxation, aphrodisiac, cancer.	N/A	Flower
Cheptenderet, Chebindorwet	Momordica	foetida	CHEPSIR B	Gastrointestinal disorder; Respiratory system disorders	Abdominal pains, amoebiasis, fever	Chewed	Leaf
Entiakuleti	Asclepias	fruticosa	LONDIANI-MASAITA	Diabetes, Malaria, Gastrointestinal & Musculoskeletal disorders	Treat liver troubles, malaria, abdominal pains, body pain, diabetes, infertility.	Decoction, infusion	Leaf, root, fruit
Aonet	Polyscias	fulva	CHEPSIR B, NAIROTIA A	Malaria; Respiratory system disorders	Treat fever, malaria, colic, and purgative; treat coughs, haemoptysis and tuberculosis	Decoction, infusion	Bark, leaf
Lepekwet, Chorwet, Olpiron	Pavetta	gardeniifolia	CHEPSIR B, NKARETA	Malaria	Malaria	N/A	N/A
Chebitet	Acacia	gerradii	KEDOWA	Malaria	Malaria; Cleaning of the uterus after birth, facilitate lactation, facilitate placenta expulsion after birth	Decoction, pounded	Bark; Root
Masombobet	Anthocleista	grandiflora	NAIROTIA B	Malaria; Gastrointestinal disorder	Malaria; treat diarrhoea	Chewed, Decoction	Leaf; Bark
Chepkowet, Oledat	Trimeria	grandifolia	NAIROTIA B, LONDIANI-MASAITA, NKARETA	Gastrointestinal disorder	Treat abdominal problems and coughs.	Infusion	Leaf
Mositiot/Olbibi	Leucas	grandis	CHEPSIR B, NAIROTIA B	Skin disorder, Gastrointestinal disorder	Treat cough, loss of appetite, skin disease, headache, snake bite.	N/A	Multiple parts
Chepkorwet	Tarenna	graveolens	TINDERET SOUTH WEST	Sex system	Aphrodisiac effects	Extracted	Root bark
Cheplelkwelet	Keetia	gueinzii	NAIROTIA B	Respiratory system disorders	Treat asthma, pneumonia, coughing, allergy	N/A	N/A
Lamaiyat	Syzygium	guineense	CHEPSIR B, TINDERET CENTRAL	Gastrointestinal disorder	Purgative	Infusion	Bark, root
Setiot, Seet, Albizia(bitter), Sehet	Albizia	gummifera	CHEPSIR B, KIPTUNGA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder, Malaria	Dewormer, diarrhea, emetic, purgative, tapeworm; Anti-malarial	N/A	Bark, multiple parts
Olairamirami	Senecio	hadiensis	NKARETA	Musculoskeletal disorders, Urological disorder	Myalgia, kidney disease, blood cleanser, soap	Boiled	Stem, root, leaf
Kikorwet, Olamurunyai, Oleparmunyo	Maytenus	heterophylla	CHEPSIR B, KIPTUNGA, LONDIANI-MASAITA, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST, NAIROTIA B, KEDOWA	Gastrointestinal disorder	Treat painful menstruation, diarrhoea, emetic, anthelmintic, hernia and syphilis.	Infusion	Leaf, root, bark, multiple parts

Chesayiet	Turraea	heterophylla	NAIROTIA B	Gastrointestinal disorder	Arthritis, rheumatism	N/A	Bark, leaf, root
Katet	Acacia	hockii	KIPTUNGA, NAIROTIA B	Malaria, Cancer	Treat malaria, abdominal pains and applied to abscesses	Decoction, pounded	Bark, Root
Rerendet	Rauvolfia	hols	NAIROTIA A	Cancer, Mood disorder, Diabetes, Gastrointestinal disorder	Treat convulsions, fever, weakness, mental disorders, arthritis, cancer, high blood pressure, diabetes.	N/A	Root, leaf, stem
Lukumeita, Mangoita, Oloiururr	Cussonia	holstii	KEDOWA, NAIROTIA A, TINDERET CENTRAL	Reproductive system disorder	Clean the uterus and remove the placenta after giving birth; stop vomiting; improve the health of children and treat blood diseases.	Decoction, infusion	Bark
Olchartuyian	Ochna	holstii	KEDOWA	Gastrointestinal & Respiratory system disorders	Digestive tonic, treat sore throats, worms	N/A	Bark, root
Chesusayet, Chesayiet, Chesiseiyet	Turraca	holstii	NAIROTIA A, TINDERET SOUTH WEST	N/A	N/A	N/A	N/A
Mopontet	Euphorbia	hookeri	TINDERET SOUTH WEST	Respiratory system disorders	Treat asthma, bronchitis, chest congestion	Decoction	Multiple parts
Nopkontet, Chepkorkoryet	Pesudarthria	hookeri	NAIROTIA A, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder, Reproductive system	Epilepsy, stomach problems, dysentery and venereal diseases	N/A	Root, leaf
Kipsotiet	Urera	hyps	TINDERET SOUTH WEST	Reproductive system	Abdominal pain	decoction, chew	Stem, bark
Lapotwet/Oltulelei , Lepekuet	Solanum	incanum	KEDOWA, CHEPSIR B, NKARETA, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Skin disorder	Cuts, skin diseases, sores, warts, whitlow	Pounding	Fruit
Kimoluet	Vangueria	infausta	LONDIANI-MASAITA	Gastrointestinal disorder, malaria	Anthelmintic, antidote, purgative, malaria, pneumonia, coughs and other chest troubles	Decoction	Root
Olsinoni	Lippia	javanica	LONDIANI-MASAITA, NKARETA	Gastrointestinal disorder, Skin disorder	Coughs, colds, bronchial problems, asthma, chronic coughs. pleurisy, scratches, stings, bites	Decoction	Multiple parts
Singorwet, Kosisityot	Clerodendrum	johnstonii	KIPTUNGA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Musculoskeletal disorders; Toothache disorders	Joint pains, toothache	Boiled	Twigs, roots
Takarariet	Acanthus	kame	CHEPSIR B	Urological & Skin disorder	Diuretic, treat burns and dislocated joints	Infusion	Root
Kuriot	Teclea	kame	NAIROTIA A	N/A	N/A	N/A	N/A
Chesamisiet	Plectranthus	kamerunensis	CHEPSIR B; NAIROTIA A	Gastrointestinal disorder, skin disorder	Skin problems	N/A	Multiple parts
Olkushurui	Euphorbia	kibwenzensis	CHEPSIR B	Respiratory system disorders	Treat asthma, bronchitis, chest congestion	Decoction	Multiple parts

Saptet	Pordocapus	kibwezensis	CHEPSIR B	Blood disorder	Tonic for the heart, kidneys, lungs	Decoction	Stem, fruit
Aonet	Polyscias	kikuyensis	CHEPSIR B, LONDIANI-MASAITA, NAIROTIA A	Malaria, Gastointestinal disorder	Fever, Malaria, coughs, haemoptysis, tuberculosis	Infusion, decoction	Bark, leaf
Chepmintilit	Pavonia	kilimandscharica	KEDOWA, TINDERET CENTRAL, TINDERET SOUTH WEST	Malaria	Malaria	N/A	N/A
Lemeyuet	Macaranga	kilimandscharica	CHEPSIR B	Gastrointestinal disorder	Treatment of bilharzia, coughs and colds	Decoction	Roots
Kimolwet, Ololiontoi, Emoliloi, Olmoliloi	Canthium	lactescens	KEDOWA, KIPTUNGA	Gastrointestinal disorder	Purgative	Pounded	Roots
Chebitet, Oltepesi, Sertwet, Kipsertet	Acacia	lahai	CHEPSIR B, NKARETA, TINDERET SOUTH WEST	Malaria	Malaria; Cleaning of the uterus after birth, facilitate lactation, facilitate placenta expulsion after birth	Decoction, pounded	Bark; Root
Masariat	Gnidia	lamp	KEDOWA, NAIROTIA A	Malaria	Malaria	Decoction	Root
Chemaroryet	Pittosporum	lana	LONDIANI-MASAITA	Skin disorder	Antispasmodic, antipruritic, galactogogue. Treat eczema, pruritis and colds.	Pounded	Multiple parts
Olosensiai, Olosesei, Psertet, Kipseret, Sertet	Osyris	lanceolata	LONDIANI-MASAITA, TINDERET SOUTH WEST	Gastrointestinal disorder, Skin disorder	Diarrhoea, inflammation, headache, anaemia, cuts, wounds	Decoction, pounded	Multiple parts
Olmusakwa	Vernonia	lasiopus	NKARETA	Malaria	Malaria, antimalarial, antiviral and analgesic	Decoction	Multiple parts
Sepetet, Podocapus, Pribiriet	Podocarpus	latifolius	CHEPSIR B, KIPTUNGA, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST, KEDOWA, NAIROTIA A	Gastrointestinal disorder	Treat stomach pains, clear the intestinal tract of internal parasites.	Decoction	Bark, leaf
Sinendet, Osinantei	Periploca	linearifolia	LONDIANI-MASAITA, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Skin disorder; Neurological disorders; Gastrointestinal disorder	Treat wounds, whitlow, warts and ulcers, mastitis, snakebites. Treat diarrhoea, intestinal worms and insanity.	Decoction, pounded	Bark, leaf
Masaita	Pittosporum	linearifolia	TINDERET SOUTH WEST	Malaria	Treat fever, malaria, inflammation, stomach ache, and as an antidote for insect bites	Decoction	Multiple parts
Chorwet	Halleria	lucida	KEDOWA, KIPTUNGA, NAIROTIA B	Skin disorder	Skin and ear complaints	Soaked in water	Leaf
Cheptabirbir	Dovyalis	macrocalyx	NAIROTIA B	Skin disorder; Neurological disorders	Seizures, skin rashes, synergistic plant	Boiled, chewed	Stem, root, fruit

Tepeswet, Chepeswet, Sapetet, Kipsepwet	Croton	macrostachyus	CHEPSIR B, KEDOWA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Respiratory system disorders; Skin disorder; Malaria	Ridding the body of parasites and toxins, antibacterial, anthelmintic, treat fever, oedema and cough, treat jaundice, sores, warts and ringworm, malaria.	Decoction, pounded	Multiple parts
Olmusakwa, Chepkurbet	Solanecio	mannuu	NKARETA, TINDERET CENTRAL, CHEPSIR B	Gastrointestinal disorder	Purgative, treat fever and gonorrhoea, stomach trouble, bad circulation in babies.	N/A	Multiple parts
Lapotuet	Solanum	maue	KEDOWA	Gastrointestinal disorder	Treat dysentery, stomach complaints	Infusion	Fruit, juice
Olenkabura	Rapanea	melanophloeos	KIPTUNGA	Respiratory system disorders	Cure TB-related symptoms (fever, cough, chest disease, night sweats)	N/A	Multiple parts
Olosida	Barleria	micrantha	CHEPSIR B, NAIROTIA A, KEDOWA	Urological disorder; Toothache disorders	Treat toothache, whooping cough, urinary infection, jaundice, fever, diuretic	Chewed	Multiple parts
Muteririet	Bridelia	micrantha	TINDERET SOUTH WEST, NAIROTIA A	Gastrointestinal disorder, Skin disorder	Stomach-ache, diarrhoea, headache	Decoction	Bark, root, leaf
Tongotuet	Ilex	mitis	TINDERET CENTRAL	Gastrointestinal disorder, Skin disorder	Colds, wounds, constipation	Chew, pounded	Bark
Oseki	Cordia	monoica	NAIROTIA A	Gastrointestinal disorder	Chest pain, eye disease	Decoction, pounded	Leaf, root
Chesamisiet	Clerodendrum	myricoides	LONDIANI-MASAITA, NAIROTIA A, NAIROTIA B	Malaria; Sexually transmitted diseases; Respiratory system disorders.	Treat gonorrhea, rabies, measles, glandular TB, colic, eye disease, malaria, swellings, wound dressings, asthma, aphrodisiac.	N/A	Leaf, root
Takarariet	Acanthus	myrtina	CHEPSIR B	Urological & Skin disorder	Diuretic, treat burns and dislocated joints	Infusion	Root
Osanangururi, Esanangungeri, Simenjwet, Olmepuongoruo	Scutia	myrtina	CHEPSIR B, KEDOWA, NAIROTIA A, NAIROTIA B, NKARETA, TINDERET CENTRAL	Skin disorder	Astringent	Chew	Fruit
Borowet	Helinus	mystacinus	TINDERET CENTRAL	Malaria	Cure malaria and abdominal pain	N/A	Multiple parts
Kugula	Rhamnus	natalensis	LONDIANI-MASAITA	N/A	N/A	N/A	N/A
Olmisigiyioi, Siriat, Masiriat, Olpiron	Rhus	natalensis	LONDIANI-MASAITA, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder	Liver and spleen diseases, peptic ulcers, invigorant	Boiled, chewed, burnt to soot	Leaf, root, higher parasite, fruit
Chemositiot/olbibi	Leonotis	nepetifolia	CHEPSIR B, NAIROTIA B	Gastrointestinal disorder	Dysentery, indigestion, relieve stomach cramps	N/A	Root, leaf
Tegeldet	Acanthus	nimenens	CHEPSIR B	Urological & Skin disorder	Diuretic, treat burns and dislocated joints	Infusion	Root

Kuriot, Olgilai, Kuryot, Guryot, Kiptuyiet	Teclea	nobilis	CHEPSIR B, KIPTUNGA, NAIROTIA B, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST, KEDOWA, LONDIANI-MASAITA, NAIROTIA A	Neurological disorders	Reduce pain and fever	Oil	Leaf, bark
Kuresiet	Euphorbia	obovalifolia	TINDERET CENTRAL	Respiratory system & Gastrointestinal & Skin & Sex system disorders	Treat coryza, bronchitis, jaundice, pimples, gonorrhea, digestive problems.	Decoction	Multiple parts
Nogirwet	cordia	oval	NAIROTIA A	Gastrointestinal & Sex & Urological & Respiratory system disorder	Treat dyspepsia, fever, diarrhea, leprosy, gonorrhoea, diuretic, demulcent, purgative, expectorant, tonic, ulcer, cough	N/A	Leaf, stem
Tegeldet	Acanthus	prenoides	CHEPSIR B	Urological & Skin disorder	Diuretic, treat burns and dislocated joints	Infusion	Root
Entamejoi	Tragia	previpes	KEDOWA	N/A	N/A	N/A	N/A
Kosisitiet; Orkonyil	Rhamnus	prinoides	CHEPSIR B, KIPTUNGA, LONDIANI-MASAITA, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST, NAIROTIA B	Musculoskeletal disorders	Arthritis, backaches, rheumatic	Decoction	Root
Oleparmunyo	Rhumnus	prinoides	KEDOWA	Respiratory system disorders	Pneumonia, gonorrhoea rheumatism, stomach-ache	Decoction	Bark, leaf
Oltarakwai, Ortarakui, Tarakwet, Turukwet	Juniperus	procera	KEDOWA, KIPTUNGA, NAIROTIA A, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Cancer	Cancer	Decoction	Bark, root
Orkonyil	Rhamnus	procera	KIPTUNGA	Gastrointestinal disorder	Cathartic, depurative, diuretic, laxative	Chewed	Fruit
Olkirenyi	Olinia	punctulata	LONDIANI-MASAITA	N/A	N/A	N/A	N/A
Olobai/Partolu, Bartolo, Chepkumiat	Psiadia	punctulata	LONDIANI-MASAITA, NKARETA, TINDERET SOUTH WEST, NAIROTIA B	Diabetes	Analgesics, expectorant, antimicrobial and antiparasitic remedies	N/A	Leaf, Root
Ologumati	Microglosa	pyrifolia	KEDOWA, CHEPSIR B, NKARETA	Malaria; Musculoskeletal disorders	Treat colds, headache, malaria, limb fractures	Decoction, pounded	Leaf, root
Chepseriat	Cissus	quad	NAIROTIA A	Musculoskeletal disorders; Diabetes	Hemorrhoids, obesity, allergies, asthma, bone loss, gout, diabetes, high cholesterol	Decoction, pounded	Leaf, root, stem
Sosiyot	Phoenix	reclinata	NAIROTIA B	Reproductive system disorders	Urinary infections	N/A	Sap, spine
Berekeiwet	Hypericum	revo	NAIROTIA A	Mood & Skin disorders	Treat anxiety, depression, cuts, and burns.	Extracted	Aerial parts
Masiot	Triumfetta	rhomboidea	LONDIANI-MASAITA	Gastrointestinal disorder	Diarrhoea, dysentery, internal haemorrhages, gonorrhoea	Decoction, pounded	Multiple parts

Meswot	Sparrmannia	ricinocarpa	NAIROTIA B	Gastrointestinal disorder	Treat constipation	Decoction	N/A
Tepengwet	Basella	roch	CHEPSIR B	Urological disorder	Diuretic, emollient, demulcent	Pounded	Multiple parts
Museset, Chesamisiet, Orkinyei	Olinia	roch	CHEPSIR B, KEDOWA	Urological disorder	Oral candidiasis, urinary tract infections	Boiled	Bark
Osupukiai, Silibwet	Dombeya	rotundifolia	KEDOWA, CHEPSIR B, KIPTUNGA, NAIROTIA A, NAIROTIA B, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder	Purgative, treat stomach pain, syphilis, infertility, diarrhoea, rheumatism, headaches.	Decoction, pounded	Multiple parts
Chepchai	Lannea	schweinfurthii	LONDIANI-MASAITA	Reproductive system disorders; Respiratory disorders	Treat birth-related disorders, blood pressure and diarrhoea, headache, infestations, snakebite	N/A	Root, bark, leaf
Entakule	Gomphocarpus	semilunatus	NKARETA	Malaria; Mood disorder	Treatment malaria, fever and madness	Decoction	Multiple parts
Senetwet	Senna	septemtrionalis	NAIROTIA B	Hormonal disorders	Stimulating menstration	N/A	N/A
Olordoi	Cyphostemma	serpens	CHEPSIR B, KEDOWA	Cancer	Treat cervical/skin/Breast cancer	Decoction	Bark, leaf
Eleleshwa ekop	Helichrysum	setosum	LONDIANI-MASAITA, NKARETA	Gastrointestinal disorder; Skin disorder	Treat allergies, skin inflammation, wound healing, stomachaches, indigestion.	Oil	Multiple parts
Oltarara	Acacia	sieberiana	NKARETA	Gastrointestinal disorder; Urinary system disorder	Trest stomach-ache, acne, tapeworms, urethral problems, oedema	Decoction	Multiple parts
Oirri	Grewia	similis	NKARETA	Gastrointestinal disorder; Skin disorder	Treat diarrhoea, wounds, sores, snakebite	Decoction, pounded	Leaf,stem, root, bark
Kuriot	Teclea	simplicifolia	CHEPSIR B	Respiratory disorders	Treat pneumonia	Decoction, hot water extract	Root
Setiot, Setyot	Mimulopsis	solmsii	NAIROTIA A, NAIROTIA B, TINDERET SOUTH WEST	N/A	Associated with circumcision and other rites	N/A	Flower
Chepterkekiat, Saiyet	Withania	somnifera	KIPTUNGA, NAIROTIA A, NAIROTIA B, TINDERET CENTRAL, TINDERET SOUTH WEST	Neurological disorders	Treat meningitis, cerebral malaria, anthrax, detoxify meant from infected animal	Boiled and mix with soup	Multiple parts
Oloiurur	Cussonia	spicata	CHEPSIR B, KIPTUNGA, NKARETA	Gastrointestinal disorder	Abdominal upsets	Chew, boiled	Bark
Olamuriaki	Carissa	spinarum	NKARETA	Gastrointestinal disorder, Toothache disorders	Anthelmintic, expectorant, treat intermittent fever, diarrhoea, oral inflammation and earache, relieve toothache	Decoction, pounded	Multiple parts

Tekeldet, Tebeswet, Chepesuet, Tebengwet	Basella	spp	CHEPSIR B, KEDOWA, KIPTUNGA, NAIROTIA A, NAIROTIA B, TINDERET SOUTH WEST,	Gastrointestinal disorder	Gastro-protective activity, ulcer healing, anti-inflammatory activity, wound healing activity.	Decoction	Leaf
Tebeswet	Croton	spp	CHEPSIR B	Gastrointestinal disorder, Respiratory system disorders, Skin disorder	Treat diarrhea, nausea and dysentery; Treat flu and cold; Treat carbuncles, itching or eczema.	N/A	Multiple parts
Takamamiet	Rubus	spp	NAIROTIA A	Gastrointestinal disorder, Cancer	Treat cancer, dysentery, diarrhea	Chew	Fruit
Orkonyil, Orkokola, Kugula, Ngungula, Olkokola, Olkokola	Rhamnus	staddo	CHEPSIR B, KIPTUNGA, LONDIANI-MASAITA, NKARETA	Malaria	Treat malaria, venereal disease and anaplasmosis	N/A	Multiple parts
Takamamiet, Olayakuji	Rubus	steudneri	CHEPSIR B, NAIROTIA B	Diabetes, Immune system & Gastrointestinal disorder	Treat indigestion, gastritis, diarrhoea and diabetes mellitus	N/A	Root
Lalwet	Manilkara	sulcata	TINDERET SOUTH WEST	Skin disorder; Neurological disorders	Treat snakebite, rashes in children	Crushed, rubbed	Leaf, root
Mogoyuet	Ficus	sycomorus	TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder; Respiratory system disorders	Treat scrofula, coughs, throat, dysentery, diarrhoea, and chest diseases	N/A	Bark, leaf
False branding bush, Seletit	Grewia	tephrodermis	TINDERET CENTRAL	Gastrointestinal disorder; Skin disorder	Treat diarrhea, stomacache, aphrodisiac in men, edema, skin rashes	Decoction, pounded	Bark
Simotuet, Simatwet, Oreteti	Ficus	thonningii	CHEPSIR B, NAIROTIA B, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST, KEDOWA, NAIROTIA A	Respiratory system disorders	Treat colds, sore throat, dysentery, wounds, constipation, nosebleed and to stimulate lactation	Decoction	Bark, root, fibre
Mesiot	Triumfetta	tomentosa	NAIROTIA A	Gastrointestinal disorder; Skin disorder	Treat dysentery, burns, washing the stomach after childbirth, scabies	Decoction	Leaf
Sambukike	Ormocarpum	trachycarpum	LONDIANI-MASAITA	Gastrointestinal disorder	Rheumatism	Decoction	Ash, roots, leaf
Olkilenyei	Rhoicissus	tridentata	TINDERET SOUTH WEST	Reproductive system & Gastrointestinal disorder	Treat infertility, stomach, kidney and bladder complaints, dysmenorrhea	Decoction	Multiple parts
Olmeigarru Kewan	Viscum	tuberculatum	NKARETA	Gastrointestinal disorder	Treat diarrhea	Decoction	Root
Osokonoi	Warburgia	ugandensis	NKARETA	Malaria	Malaria	Decoction	Bark, multiple parts
Olkirusha	Maytenus	undata	CHEPSIR B, KEDOWA, KIPTUNGA, NKARETA, TINDERET CENTRAL	Gastrointestinal disorder	Anti-tumour, anti-asthmatic, analgesic, anti-inflammatory, antimicrobial and anti-ulcer, treat stomach problems.	Decoction	Leaf
Osupukiai	Pavonia	urens	KEDOWA	Gastrointestinal disorder; Respiratory system disorders; Oxytocic	Treatment diarrhoea in babies, cough, insanity, nausea and abdominal pain, oxytocic.	Decoction, pounded	Root, leaf

Sagawaita	Zanthoxylum	usambarense	LONDIANI-MASAITA, KEDOWA	Musculoskeletal disorders	Rheumatic pain, backache, joints pains	Decoction	Bark, leaf
Olkirinyei	Olinia	usambarensis	KEDOWA, KIPTUNGA, LONDIANI-MASAITA, TINDERET CENTRAL	Gastrointestinal disorder; Respiratory system disorders; Malaria	Antihelminthic, treat fever, rheumatic pain, backaches, scabies and madness, malaria	Decoction	Bark, root, leaf
Orkushurui	Euphorbia	var kibwezensis	CHEPSIR B	Gastrointestinal disorder	Purgative, stomachache, diarrhea	Pounding, decoction	Seed, root, multiple parts
Olosida, Turkwet, Turkyot, Odule, Kerundut	Barleria	ventricosa	CHEPSIR B, KEDOWA, NAIROTIA A, NAIROTIA B, NKARETA, TINDERET CENTRAL, TINDERET SOUTH WEST	Neurological disorders	Treat snake bites	N/A	Leaf
Kosisitiet	Rhamnus	ventricosa	TINDERET CENTRAL	Neurological disorders	Treat snake bites	N/A	Leaf
Turukwet (dominant)	Hypoestes	verticillaris	CHEPSIR B	Respiratory system disorders	Treat naso-pharyngeal affections, pulmonary troubles, dropsy, swellings	N/A	Root, leaf, multiple parts
Tarakwet, Turukwet (dominant), Oltarakwai	Juniperus	virginiana	CHEPSIR B, LONDIANI-MASAITA, NAIROTIA B, NKARETA	Respiratory system disorders	Treat colds, worms, rheumatism, coughs, induce sweating,	Decoction, burning	Leaf, fruit
Oltingararia, Masaita/olmasei	Pittosporum	viridiflorum	KIPTUNGA, TINDERET CENTRAL, TINDERET SOUTH WEST	Gastrointestinal disorder	Treat stomach complaints, abdominal pain and fever, aphrodisiac.	Decoction, infusion	Bark
Oltulelei	Peponium	vogelii	KEDOWA	Gastrointestinal disorder; Menstrual disorder	Treat menstrual problems, maturate abscesses and furuncles, treat leprosy, treat stomach-ache.	Pounded, poultice	Leaf, fruit
kimolwet	Vangueria	volkensii	CHEPSIR B	Respiratory system disorder; Skin disorder	Antibacterial ability for S. aureus	N/A	Multiple parts
Simatwet	Curroria	volubilis	NAIROTIA A	Oxytocic; Malaria	Oxytocic, malaria, enhance lactation	Decoction	Bark