



Technical Report

Diagnostic Study on the Application of Herbal and Traditional Medicine in the Prevention and Therapy of COVID-19 and other Diseases in the East African Community

November 2021



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ABBREVIATIONS

ABREMA	Burundi National Medicines Regulatory Authority
AfricaCDC	Africa Centre for Disease Control and Prevention
AfCFTA	African Continental Free Trade Agreement
ATRADIBU	Burundi Association of Traditional Practitioners
CBD	Convention on Biological Diversity
CCM	Chama Cha Mapinduzi
COVID	Corona Virus Disease
DFCA	Drugs and Food Control Authority
DSA	Department for Social Affairs EAC
F&V	Fruit and Vegetables
FDA	Food and Drug Authority
FGD	Focus Group Discussions
GACP	Good Agricultural & Collection Practices
GAP	Good Agricultural Practices
GFA	GFA Consulting Group
GIZ	German Technical Cooperation
GMP	Good Manufacturing Practices
GWP	Good Wild-crafting Practices
HTM	Herbal and Traditional Medicine
IK	Indigenous Knowledge
IPR	Intellectual Property Rights
ITM	Institute of Traditional Medicine
KII	Key Informant Interviews
MoH	Ministry of Health
NDA	National Drug Authority
NIRDA	National Industrial Research and Development
NTAPC	National Traditional and Alternative Practitioners Council
RBC	Rwanda Biomedical Centre
RIVA	Regional Industrial Value Addition
SEAMPEC	Support to the East African Market Driven and People Centred Integration
SOP	Standard Operating Procedure
SSD	South Sudan
TAWG	Tanga AIDS Working Group
TCE	Traditional Cultural Expressions
TCM	Traditional Complementary Medicine
TFDA	Tanzania Food and Drugs Authority
THP	Traditional Health Practitioners
THM	Traditional & Herbal Medicine
TK	Traditional Knowledge
TM	Traditional Medicine
TMDA	Tanzania Medicine/Medical Devices Authority
TMMC	Traditional Medicine Management Council
TMP	Traditional Medicine Practitioners
UNIPROBA	Unite for the Promotion of Batwa
WHO	World Health Organisation

EXECUTIVE SUMMARY

The EAC Regional Pharmaceutical Plan of Action 2017-2027, identifies herbal and traditional medicines as a niche market for the EAC. It notes that the EAC has a rich biodiversity and strong history in use of traditional and herbal medicines among its population. The advent of COVID-19 pandemic overwhelmed healthcare systems of advanced continents, with Africa predicted to face the worst of the pandemic death. This is because Africa, as a continent, is known to have very poor and weak health systems. However, surprisingly, despite the continent facing the brunt of COVID-19, the number of deaths remains lower than expected. While a number of reasons have been suggested for low death due to COVID, it is worth noting that up to 80% of the population in Africa relies on Traditional and herbal medicine for healthcare. In countries such as Tanzania, Uganda, Burundi, Kenya and others, traditional and herbal medicines were used by the population during the COVID-19 waves, however, no study had been conducted to explore the extent and impact of this. This report provides a better understanding of the scope and specifications of the application of herbal and traditional medicines in the prevention and therapy of COVID-19 and other diseases in the East African Community. This diagnostic study revealed that EAC countries relied heavily upon Herbal and Traditional medicines in the fight against COVID-19, with several Herbal products being developed, manufactured and approved by countries' drug regulatory agencies and sold for emergency use against COVID-19. The impact of these herbal products against COVID-19 have changed the populations perception of THM in the region. It has increased belief in the safety and effectiveness of THM in combating deadly diseases such as COVID-19. The economic value and demand for THM products has risen sharply, creating a strong potential for value addition and commercialisation. However, a number of bottlenecks, highlighted in the EAC Regional Pharmaceutical Plan of Action 2017-2027, still need to be addressed. Despite these bottlenecks, there appears to be some great progress and some best practices seen in Uganda and Tanzania, in the area of manufacturing, registration, sale and regulation of herbal and traditional medicine products, as well as in streamlining the practice thereof.

1 INTRODUCTION

1.1 BACKGROUND

There has been tremendous growth in the pharmaceutical sector, especially in terms of the capacity and quality of locally manufactured human medicines. These achievements are due to various policy measures and incentives, which have generated a high volume of both local and foreign investment. One of the Policy documents being implemented is the EAC Regional Pharmaceutical Plan of Action 2017-2027. Since 2019, the EAC Secretariat, with support from the RIVA project, embarked upon the promotion of herbal and traditional medicines in the region.

The EAC Secretariat (EACS), through the GIZ/EAC program "Support to the East African Market Driven and People Centred Integration (SEAMPEC)", agreed to implement a COVID Response 2021 Measure in the area of pharmaceuticals. The GIZ/EAC cooperation has supported the development of local pharmaceutical manufacturing in the EAC for over 10 years. The Regional Industrial Value Addition project of the GIZ SEAMPEC Program, which is implemented by GFA Consulting Group, jointly with the EACS, has identified several activities under this measure, one being to carry out the above diagnostic study.

In this context, the EACS and the EAC/GIZ SEAMPEC Program on Regional Industrial Value Addition (RIVA) agreed to seek the support of a consultant or a consultant team to carry out the above diagnostic study.

1.2 EAC POLICY DIRECTION

The EAC Regional Pharmaceutical Plan of Action 2017-2027, identifies herbal and traditional medicines as a niche market for the EAC. It notes that the EAC has a rich biodiversity and strong history in use of traditional and herbal medicines among its population.

Basic fact: World Health Organisation (WHO) reports that 60-80% of the African population use Traditional Medicine as their sole or primary health care option (WHO, 2002). In Uganda, one traditional healer serves about 300-500 people, whereby statistically, one medical doctor is available for 5,000-20,000 people. Traditional medicine development was part of agricultural production upscaling projects, and concentrated on the production of the raw material that was subsequently exported for final product development.

Challenges: Although traditional medicine is widely used, incorporating it into modern healthcare remains a challenge due to a number of factors, among them weak regulatory mechanisms, weak product development, little attention from development and research partners, and lack of quality, safety and efficacy standards in the sector, among others. The Action Plan notes that developing traditional medicine in East Africa could be a source of foreign exchange earnings and provide solutions to the public health challenges the region is currently facing.

Recommendation: The report recommends integrating traditional medicine into the mainstream economy by implementing policy changes in order to exploit the potential of the sector. It proposes Interventions across the whole value chain, from domesticating and harvesting medicinal plants through Good Agricultural and Collection Practices (GACP), to the standardisation and production of herbal extracts using Good Manufacturing Practices (GMP), among others.

Interventions: As part of the interventions to improve the framework conditions in the sector, the EAC/RIVA project organized an E-Learning human capacity development program on Good Manufacturing Practices for Medicines and Healthcare Products – Including Herbal and Traditional Medicines on 12th October to 20th November 2020.

Strategic framework(Other): The EAC Fruits and Vegetables Value Chain Strategy and Action Plan 2021-2031, currently under implementation has as one of its strategic interventions, the promotion of medicinal

indigenous fruits and vegetables by documenting and showcasing the medicinal Fruits and Vegetables (F&V) segment and identifying vision, priorities and approaches to developing the industry among other provisions.

Recommendations: The Sectoral Council on Trade, Industry, Finance and Investment meeting on 23rd April 2021, taking note of the progress in the development of the sector, recommended that the region establish mechanisms to promote nutritional and medicinal indigenous fruits and vegetables (EAC/ExSCTIFI/37/Decision 34) and to identify factories in the region manufacturing herbal products and partner with them in developing herbal medicines. (EAC/ExSCTIFI/37/Decision 38).

2 STUDY PURPOSE, OBJECTIVE AND SPECIFIC OBJECTIVES

The overall purpose of the study was to better understand the scope and specifications of the application of herbal and traditional medicines, in the prevention and therapy of COVID-19 and other diseases in the East African Community.

The overall objective was to develop a scientific diagnostic study on the application of herbal and traditional medicine in the prevention and therapy of COVID-19 and other diseases in the East African Community. The study addressed six specific objectives, as follows:

- To conduct a situational analysis with comprehensive information on applications of herbal and traditional medicines in disease prevention and therapy in the EAC Partner States, with specific focus on applications used in the context of the COVID-19 pandemic.
- To map the existing policies and current programs, initiatives and activities for the promotion of Herbal and Traditional Medicine in the EAC.
- To identify key stakeholders working in the Herbal and Traditional Medicine value chain in the EAC.
- To identify challenges, opportunities and risks connected to these applications, including production, regulation, distribution and consumption.
- To identify and deliberate international or regional best practices as well as international quality, safety and efficacy standards.
- To formulate practical interventions and policy recommendations on how to better utilize this indigenous knowledge as well as to formalize and commercialize these applications at national and regional level both from an economic and a health perspective.

3 SCOPE OF THE STUDY

3.1 STUDY LOCATION

The Study was carried out in the East African Community, in particular in Burundi, Kenya, Rwanda, South Sudan, Tanzania, Uganda.

3.2 SCOPE

The main scope of the study and specifically covered were as follows:

- Quick overview on existing studies and best practice projects in the area of herbal and traditional medicine, with a special focus on developing countries handling of COVID pandemic.
- Identified best practice projects with specific applications of herbal and traditional medicines in disease prevention and therapy in the EAC Partner States, including specific applications used in the context of the COVID-19 pandemic.
- Identified key challenges, opportunities and risks connected to these applications, including production, regulation and consumption of these medicines in the specific context of the EAC region but also in its

connection to other African Regional Economic Communities (RECs), the African Union in other international markets.

- Documented key case studies on international best practices of integrating of herbal and traditional medicines in disease prevention and therapy of COVID-19.
- Described applicable international quality, safety and efficacy standards as well as Good Manufacturing Practices (GMP), Good wild crafting Practices (GWP), Good Agricultural & Collection Practices (GACP) where applicable.
- Described current market trends of herbal and traditional medicines in disease prevention and therapy of COVID-19, at national, regional, international level,
- Suggest policy recommendations for the EAC Secretariat on how to promote and better utilize indigenous resources/knowledge, especially in the context of formalizing and commercializing these applications at national and regional level.
- Analysed the economic potential of herbal and traditional medicines in disease prevention and therapy of COVID-19.
- Analysed the public health dimension of herbal and traditional medicines in disease prevention and therapy of COVID-19.

4 TECHNICAL APPROACH

The technical approach:

- Conducted an online pre-preparation and a face to face inception meeting with the RIVA team as requested by the client. During the inception meeting, the consultants presented the detailed study methodology, data collection tools, approaches used and a detailed timeline for the proposed activities.
- Guided by the Treaty, Protocols and Council decisions of the EAC and work closely with the RIVA project team during the entire study.
- Undertook a comprehensive literature review, including scientific papers, project reports, media articles and other accessible grey literature.
- Identified key stakeholders through local (national) experts engaged in the study (see consultant list) and through the senior expert's teams national and regional professional networks.
- Conducted on-site face to face focus group discussions, while observing the Standard Operation Procedures (SOP) as described in the national regulations of the respective country to prevent COVID-19 transmission.
- Conducted in-depth interviews with relevant stakeholders in each targeted country either face to face or using online conferencing tools like ZOOM, Skype, WhatsApp.
- Conducted online primary and secondary data collection as much as accessible and feasible.
- Engaged relevant private sector players in the EAC Partner States, including manufacturers, regulators, standards authorities, health authorities, institutions and practitioners, universities, research centres, patients and/or their respective representatives (i.e. Professional Associations, Civil Society Organizations).
- Analysed and drew lessons from international best practices (desk review).

5 STUDY DESIGN

5.1 DESK REVIEW

The desk review of literature is conducted by an in-depth document, internet / library data search using pre-determined keywords and phrases. The team has access to online database libraries through the University Library and the national consultant's institutional affiliation (University, Research Centre and Government institutions). The review of literature is a continuous process in the study, spanning from the Inception Phase (IP)

up to the finalization of the study. Key literature reviewed will be available for download via DropBox, for a period for at least 4 weeks from submission of the final report.

5.2 STAKEHOLDER IDENTIFICATION

- a) The stakeholders were identified through the personal and professional networks of the senior experts and national consultants, referrals and through the desk review.
- b) The stakeholders were categorised into thematic groups, including Policy makers, Regulatory Authorities, Biomedical Health Practitioners (Pharmacists, doctors, Nurses), Scientists & researchers, Traditional medicine practitioners, Producers/ processors, Traders/distributors, Farmers/ Growers, Professional association leaders, Service users (patients/parents)/consumer associations, Forest /Conservation Agencies/ environmentalists, IP and Treaties experts, Pharmaceutical companies other.
- c) The stakeholder matrix was developed and populated with contact details, area of work/ specialisation and potential future engagement and follow-up.
- d) Specific tools were developed and administered for data collection (Questionnaire about, In-depth interview guide, Focus group discussions guide).

5.3 DATA COLLECTION:

- e) Customised data collection tools, e.g. interview guides / questionnaires suitable to the respective stakeholder category were developed.
- f) Field testing of the data collection tools (face to face and online engagement) used.
- g) Conducted data collection in Burundi, Kenya, Rwanda, South Sudan, Tanzania, Uganda though:
 - i. Key Informant Interviews (KII) Tools: The KII were used to address key questions on the stakeholders involved, traditional medicine practices and usage during COVID-19 Pandemic, and information on production, distribution and usage.
 - ii. Focus Group Discussions: FGDs are expected to offer additional advantages to the information gathered through desk review and KII interviews. By providing an opportunity for debate, FGDs were conducted to create an enabling environment to understand the facts gained through interview and literature research.

6 KEY FINDINGS OF THE STUDY

This section provides a brief overview of the findings by country.

Burundi

Herbal and Traditional Medicine is widely practiced in Burundi, urban and rural settings. The THM market is parallel to the pharmaceutical market and a sampling of 5 random pharmacies in Bujumbura in October 2021, resulted in no availability of herbal or traditional medicine sold. Consumers reported that HTM is sold at the market and small herbal shops, but not in outlets such as supermarkets and pharmacies. Most herbal medicine is sold in its fresh form.

A notable initiative in Burundi on the development and commercialisation of HTM and natural cosmetics is Karire Products Limited, a company founded in 2011 by Ms. Ginette Karirekinyana.



Photo 1: A selection of products by Karire Products Limited

Research of HTM in Burundi is scattered and at the time of the report the Centre for Research on Pharmacopoeia & Traditional Medicine (Centre Universitaire de Recherche sur la Pharmacopée & la Médecine Traditionnelle) of the University of Burundi is no longer operation and HTM research is now undertaken at Faculty of Science (Biology and Chemistry departments). Research and product development efforts are scattered with no national established research institution.

Currently there is no reference pharmacopoeia available and HTM medicines are sold with claims that are unproven. In Burundi no regulation of the manufacturing of herbal medicines to ensure their quality, and no safety requirements for herbal medicines.

The Burundi HTM sector is generally weak, developed and HTM is not integrated in the national health care system.

Kenya

Use of HTMs is an age-old practice that continues to date amongst communities, despite little effort being put in to their study or research. Despite the existence of some policies pertaining to the safeguarding HTMs, there are no definitive guidelines regarding their use and distribution. Most of the knowledge being used is from indigenous communities in East Africa. Most of these communities are spread across national boundaries, and are therefore not domiciled to one country. Herbal and Traditional Medicine practitioners are rarely viewed as professionals and in Kenya they are normally registered by the Ministry of Sports and Culture. Very little has been done to protect the indigenous knowledge from unethical scientists who collect information from communities and go on to publish without any form of protection.

Rwanda

As proposed, questionnaires, interviews, focused group discussions, with guiding questions were used to collect data for this study. In total, 39 participants identified from different categories of stakeholders received the invitations, but 25 participants agreed to voluntarily participate and responded. Our study found that Herbal and traditional medicines (HTMs) are common in Rwanda, especially in rural areas. However, the first choice is conventional medicine and HTM last resort is probable. This can be explained by the availability of health insurance and the availability of health facilities throughout the country. Despite the community-based health insurance and accessibility of conventional health facilities, HTM is still popular. There are some culture-specific illnesses known locally as "Uburozi", translated as "poisoning" that can only be treated by HTM. In addition, low cost, flexibility in payment, accessibility and acceptability are major drivers to the use of HTMs. Different forms of TM exist in Rwanda. They include herbal medicine, reflexology, massaging, acupuncture, spiritual narratives, and medication. Some herbal/TM such as bathing with a mixture of herbs, infusion of herbs, have been reported for COVID-19 treatments. None of them have been regulated. The use of herbal and traditional medicine in Rwanda is not well documented, thus, it is hard to quantify how much it is used. To date, the trend of using TM is increasing, but the rate is not known. HTM is used by a large number of people, due to the fact that people and the government of Rwanda are looking for local/home-grown solutions to deal with diseases in general, and in particular, for the COVID-19 pandemic. Lessons have been learned since the emergence of COVID-19 where developed countries showed selfishness in dealing with the pandemic. As a result of the COVID-19 pandemic, traditional healers are more interested in contributing to medicine than ever before. They are now conscious of the benefits that they can get from practicing HTM. In Rwanda, there is a policy regarding the use of herbal and traditional medicines, nevertheless, there are no rules and regulations specific to the practice of HTM. For example, regulatory authorities, Rwanda Drug and Food authority (Rwanda FDA), Rwanda Biomedical Centre (RBC), are working with all concerned stakeholders to ensure the regulation of HTM. The regulation and legislation of TM could be the key to the integration of TM into existing public health systems. The regulatory authorities need more scientific evidence concerning the efficacy and the safety of HTMs. They are planning to organize training in good practice that will take into consideration: Harvesting, processing, production, packaging, storage, dosage, and route of administration.

There are many opportunities/benefits of herbal and TM. They include: Affordability, Belief that it is healthier, Safe, no negative/ side effects, Effective i.e. treats diseases quickly, treats many diseases e.g. COVID-19, Cheap and accessible, inherited from past generations, Generates financial benefits along the value chain of herbal medicine, Natural from Rwanda i.e. Rwanda natural medicine. Despite this, many challenges have been reported: Lack of legal framework (i.e. regulation, policies and procedures and for registration, etc.), Lack of quality assurance and quality control, Lack of knowledge of potential curative ingredients (active compounds) present in the plants, Worries (scepticism) about toxicity and drug resistance of the herbal products, Lack of trust among the public, especially the elite, for herbal products and their benefits (many think it does not work/treat any disease), Inadequate raw materials to sustain the sector at industrial scale, Lack of financial support for the sector, Lack of standards for processing, production/manufacturing and trading along the value chain, Lack of awareness among the public, Lack of standardized dosage of the products, Inadequate resource (personnel and infrastructure i.e. laboratory equipment for phytochemical analysis).

Our study has identified key stakeholders working in the herbal and traditional medicine value chain. They should include Policymakers, Regulatory Authorities, Biomedical Health Practitioners, Scientists & researchers, Traditional medicine practitioners, Producers/ processors, Traders/ distributors, Farmers/ Growers, Professional association leaders, Service users (patients/ parents)/ consumers, Service providers, Forest /Conservation Agencies, IP and Treaties, and Pharmaceutical companies. A clear understanding of the duties and responsibilities of each of these categories is essential to improving the quality of herbal and traditional medicine.

International or regional best practice, as well as international quality, safety, and efficacy standards, have been shown to be necessary for the herbal and TM. However, they must be applied in the context and culture of local communities.

The following points have been recommended: (i) Awareness and information sharing of herbal and traditional medicine, (ii) Identification of gaps and harmonization of the policies, regulations, and the laws in herbal and traditional medicine, (iii) Advancement of research and development (on efficacy, safety, and standards and best practices) of herbal and traditional medicine in general and COVID-19 in particular, (iv) Establishment of Legal Frameworks for Herbal and Traditional Medicine.

South Sudan

The study reported the high use of HTM due to its efficacy, affordability, accessibility in their vicinity, ease of administration, and self-prescription. Despite the presence of the Drugs and Food Control Authority (DFCA) department at the ministry of health (Justice et al., 2012), the widespread use of HTM in South Sudan, especially in the rural community setting, no regulatory body was established in the country to govern the use of HTM practice.

There was no link between the health system and the HTM practitioners. It is a rather neglected area, despite the extensive use by the local communities. There was less research work done to document indigenous knowledge, and most work remains unpublished. The knowledge on HTM is only passed verbally from generation to generation. Some groups reported using HTM as an alternative, when conventional medicine fails in the urban setting, especially for chronic diseases like hepatitis. They support the use, but with good information on its efficacy and safety.

There are many traditional medicines, used to treat various conditions, including Dikertimelo/Mordi (*Aris-tolochia bracteolata*) leaves and roots to treat malaria, headache, and general body pain, typhoid and stomach cramps. Winiloyango, Lokame, Lango back, Okengo, and Alima leave to treat Syphilis, menstrual cramps and menstrual period regulation, urinary tract infection for both men and Women, itching in private parts. Tonga to treat Boils. Kir (Mahogany tree bark), to treat Dysentery. Ringa to treat headache, general body pain and Mori to treat Stomach abscess/ swollen stomach. Lowidi is used to treat Dysentery. Rorok and Lorerek used to treat convulsion in new-born babies. Wild onion for Rheumatisms. Raw sesame oil for Asthma conditions. Most of the names of TMs were in local languages.

For treatment of COVID, they used Dikertimelo/Mordi (*Aristolochia bracteolata*), Ringa lemon leaves, guava leaves, mango leaves, and Eucalyptus leaves. Toga. Kileng intestine, Papaya roots, and Kuryuk are used to treat jaundice and hepatitis. The raw material/ medicines is sourced from nearby villages like Lobonok, Yei, and Terekea.

Based on the findings, communities should be enlightened, educated, and encouraged to plant wildfire-resistant crops. There needs to be a policy framework to protect TM and the practitioners and ensure sustainable use. Furthermore, the establishment of HTM centre and creation of a Department/unit in the ministry of health due to its high demand in the community.

Challenges:

South Sudan has been in a state of civil war for decades, and gained its independence from the oppressive Khartoum Arab regime in 2011. South Sudan returned to civil war in 2013 after three years of independence. By then, there was nothing called South Sudan, so most of the research findings came under Sudan, even if conducted by South Sudanese, were still published under Sudan. Most research findings in ethnobotany and traditional medicine are from the University of Khartoum and Gezira, because those areas were stable security-wise. Due to continuous war in the Southern Part of Sudan, which is now South Sudan, Gezira and Blue Nile region were preferred because they have almost similar environmental conditions to South Sudan. South Sudan's information body of knowledge was negatively impacted by this and is the reason why there are no or fewer publications and projects about HTM in South Sudan (Kumsa, 2017).

Confusion between Traditional Medicine and spirituality has caused many setbacks in the development of HTM in South Sudan (Grant, 2018). According to Eye radio news and Alwatan newspaper dated 11th of September 2021, His worship, former mayor of Juba City Council, Maulana Kalisto Ladu Faustinon Nyigilo, has banned all the activities of traditional healers in the country. Mayor has arrested those who were found practicing witchcraft and imprisoned them. This has caused more fear among TM practitioners.

Most of the traditional medicines were given in the local languages. There is a need to further identify and classify them for future reference.

Tanzania

Regulation of Traditional medicine

The Tanzania Medicine and Medicinal Devices Authority (TMDA), which is responsible for medicine regulation, has no regulatory mechanism for herbal and other forms of traditional medicine. The following quote illustrates: "Currently at TMDA, we do not register herbal medicines, these tasks are being done by the traditional medicine council at the ministry of health, the reason for this is that most of these herbal medicines do not have sufficient data to support their claims and assess their safety. They are also not manufactured according to current good manufacturing practice (cGMP) standards, which makes regulation at TMDA difficult" (TMDA officer).

Mistrust between traditional healers and physicians

Participants in Dar Es Salaam were of the view that conventional medical doctors do not believe in traditional medicines, the following quote relates: "But when it comes to me (*Medical doctor*) it is difficult to prescribe these medicines (*Herbal medicines*) because I was only trained to certain type of drugs, that is a challenge to me now to accept that these other drugs can cure a lot of diseases" (Medical doctor).

In another instance, traditional medical practitioners were not comfortable sharing their traditional knowledge with medical officers at hospitals, because they believe that these medical officers will steal their knowledge and they will not benefit from it.

Uganda

World Health Organization (2003) defines Traditional Medicine (TM) as a set of health practices, approaches, knowledge, and beliefs that include plant, animal, and mineral-based medicines, spiritual therapies, manual techniques, and exercises that are used singly or in combination to diagnose, treat, and prevent illness or maintain health. Traditional medicine (TM) has been used by humans for thousands of years. In Africa, up to 80% of the population uses TM for Primary Health Care (Galabuzi et al., 2010). In the absence of an effective primary health care system, traditional medicine (TM) plays a major role in the provision of health care among rural populations in developing nations such as Uganda (Tabuti et al., 2012).

In Uganda, TM is used for day-to-day health care requirements by approximately 60% of the population, with women and children accounting for the majority of those who rely on this medicine (De Coninck, 2016; Galabuzi et al., 2010). The high reliance on traditional medicine is mainly attributed to its accessibility, affordability and the fact that it is firmly embedded within the faith systems of the people (Kaadaaga et al., 2014; Tabuti et al., 2003; Tugume & Nyakoojo, 2019). Furthermore, the country imports most of its drugs from abroad and often experiences serious shortages; this increases the reliance on traditional medicine products which is further compounded by the limited number of western-trained medical personnel. In fact, it is estimated that there is 1 traditional health practitioner for every 200-400 Ugandans compared to 1 western-trained doctor for every 20,000 (Galabuzi et al., 2010).

The stakeholder consultations *brought forth* some of the reasons why people use traditional medicine specifically herbal medicine, which is demonstrated in the table 1.

Table 1: Reasons why people use herbal medicine in Uganda

S/N	REASON
1.	<i>"I personally use herbal medicines because they're not very expensive and yet effective"</i> said Hilary
2.	<i>"People use herbal medicine because It's natural and has less effects compared to processed medicine".</i> Said Delinah
3.	<i>"All the way from indigenous knowledge from my guardian, herbal medicine is cheaper and readily available than the conventional drugs and It has greater potential to treat the fast-evolving pathogens like bacteria, parasites and viruses"</i> Said Immaculate .
4.	<i>Herbal Medicine is very safe and the healing process takes a short time. The side effects are minimal and can be controlled</i> (Consumer, stakeholder engagements).

The contribution of Uganda's traditional medicine practitioners (TMPs) to basic health care has, until recently, only received limited acknowledgement. This is due in part to the colonial past, which labelled culture as bad and primitive, and in part to an educational system that seldom recognizes indigenous knowledge (De Coninck, 2016). The Colonial government also used their Witchcraft Act 1957, to further punish traditional medicine practitioners then. Nevertheless, traditional medicine, specifically herbal medicine, has long been used to treat a variety of common conditions, including malaria, digestive and respiratory problems, toothaches, skin diseases, and childbirth complications, among others, as demonstrated in the table below.

Table 2: Evidence of herbal medicine Use in Uganda

S/N	USE OF HERBAL MEDICINE	DISEASE/ CONDITION
i.	<i>"The use of herbal medicine is very common in Uganda especially in rural areas mostly by individuals suffering from chronic conditions like diabetes and hypertension"</i> said a Pharmacist at an HTM workshop, 2021.	Chronic conditions e.g. Diabetes and Hypertension

ii.	<i>"The prevalence of herbal medicines use during the pregnancy is estimated at 20 % in Gulu district, Northern Uganda and the factors significantly associated with use of herbal medicines during pregnancy are mainly perception and having ever used herbal medicines during previous pregnancy" (Nyeko et al., 2016)</i>	During Pregnancy
iii.	<i>"In 2013, about 74.7% of the patients attending Uganda Cancer Institute used CAM; with Spiritual practices, herbal medicine, natural supplements and vitamins were the main forms of CAM used. And the reason it is used is mainly to alleviate symptoms, prolong life, improve quality of life, cure the disease and boost the immune system". (Freciah, 2013).</i>	Cancer
iv.	<i>"TMPs administer widely differing herbal medicine formulations with little overlap of plant species to treat HIV/AIDS" (Nyamukuru et al., 2017). "A cross-sectional study in western Uganda showed that about 71.6% of HIV patients used herbal medicines to treat HIV-related symptoms" (Lubinga et al., 2012).</i>	HIV/AIDS
v.	<i>In a Cross-sectional survey in Uganda, "about 57.4% of participants used herbal remedies either to prevent or treat COVID-19-like symptoms" (Musoke et al., 2021) "I personally had improvement after using herbal mixtures, when I had COVID-19 symptoms and a lot of people with COVID-19 symptoms came to my traditional medicine centre to seek herbal remedies" said a Traditional Medicine Practitioner at an HTM workshop, 2021. "My family stocked and used COVIDEX (herbal remedy) in treating and management of COVID-19 symptoms" said Moreen at an HTM workshop, 2021. "The Herbal remedy that was developed by Prof. Patrick (COVIDEX) saved me and my father when we were all Diagnosed with COVID-19" said Boas at an HTM workshop, 2021.</i>	COVID-19
vi.	<i>In a cross-section survey in 2012 "Over 76.0% of the women attending the infertility clinic at Mulago National Referral Hospital had used herbal medicines prior to seeking bio-medical care. Herbal medicine use was associated with the women's age, level of education, marital status, duration of infertility, prior history of conception, and duration of stay with the spouse". (Kaadaaga et al., 2014)</i>	Infertility in women

It has been observed that conventional medical treatment coexists alongside traditional medical practices in Uganda. Therefore, patients may take medication from a single health system exclusively, or they may obtain medicine from the other health system and utilize it concurrently or sequentially, resulting in medical pluralism (Langlois-Klassen et al., 2007; Nsibirwa et al., 2020). As a result, the importance of traditional medicine in basic health care, particularly at a time when access to modern medical facilities is limited, cannot be overstated.

6.1 OVERVIEW ON EXISTING STUDIES AND BEST PRACTICE IN THE HERBAL AND TRADITIONAL MEDICINE (HTM)

Scope 1: quick overview on existing studies and best practice projects in the area of herbal and traditional medicine with a special focus on developing countries and including the COVID pandemic:

Asia

Knowledge of traditional medicine, particularly in South East Asia, is widespread. Unlike other world regions, Asian traditional medicine system is characterized by well-defined systems. The most notable ones are: Ayurveda (India), Traditional Chinese Medicine (China), and the Kyoro system of traditional medicines in Democratic

People's Republic of Korea (DPRK). Similarly, Cuba also has a very highly developed herbal medicine, the "Green Pharmacy". The success of these traditional medicine systems could be linked with the national effort which include a well-developed Herbal and Traditional Medicine sector, Faculties / Universities, research centres as well as health facilities specialised in HTM among others.

Africa

According to WHO African region, there are at least 34 research institutes for African traditional medicines, moreover, in about 15 countries including Tanzania, Ghana, Mali etc. Public funding is allocated on a regular basis to traditional medicine research. As a result, more herbal products are authorized for domestic marketing and are included in national essential medicines lists.

Mali and Ghana have fully integrated traditional medicine into health care systems. In Ghana, most of the traditional medical practitioners are recognized and licensed in various associations, under the umbrella of the Ghana Federation of Traditional Medicine Practitioners' Association. Interestingly, Ghana, Mali and South Africa have established partial health insurance coverage for traditional medicine products and services, thus protecting people from financial hardship in line with action towards universal health coverage.

The World Health Organization (WHO), the Africa Centre for Disease Control and Prevention (Africa CDC) and the African Union Commission Department of Social Affairs (DSA) has constituted a 25-member Expert Committee on Traditional Medicine for COVID-19 from research institutions, national regulatory authorities, traditional medicine programmes, public health departments, academia, medical and pharmacy professions and civil society organizations of Member States. The committee is tasked with supporting countries to enhance research and development of traditional medicine-based therapies against the virus and provide guidance on the implementation of the approved protocols to generate scientific evidence on the quality, safety and efficacy of herbal medicines for COVID-19 (WHO 2020).

6.2 BEST PRACTICE PROJECTS WITH SPECIFIC APPLICATIONS OF HTM

Scope 2: Identified best practice projects with specific applications of herbal and traditional medicines in disease prevention and therapy **in the EAC Partner States**, including specific applications used in the context of the COVID-19 pandemic:

Burundi

In Burundi, one best practice project is Karire Products Limited, a company founded in 2011 by Ms. Ginette Karirekinyana 30min from Bujumbura, was identified with the potential to become a centre of excellence in the commercialisation of HTM and natural cosmetics, health beverages. The notable initiative has gained regional recognition by various development partners, including National and international institutions including Bioinnovate Africa Program run by International Centre of Insect Physiology and Ecology (icipe), Kenya, University of Burundi, Burundi, Karire Products Ltd, Burundi, Gudie Leisure Farm, Uganda, Jicho Communicative Ltd, Tanzania. Karire Products Limited is maintaining an outlet (shop) at the small scale processing facility in town with a wide range of products, as well as being furnished with a 6 seating table for small meetings, presentations and receiving guests. The Company is currently expanding its infrastructure including production facilities, laboratory, storage and offices.

Kenya

Existing studies on HTMs are mainly focused on formulations of medicines for diseases that existed prior to the COVID era, such as lifestyle diseases, non-communicable diseases and common ailments like malaria. There has not been any in-depth study of HTMs, since most researchers and scientists are not familiar with or interested in them. At the same time there is little to no support given to HTMs use or research.

New studies have been published on COVID in relation to cures; however, most of the HTM knowledge is held by the community and HTM practitioners, who at times are reluctant to share it. Studies have to also be made

about efficacy, safety and dosage, which will be followed by standardization. Since the area is just being studied, more still needs to be done before getting into in-depth best practises. Further findings on improving the delivery and availability of the HTMs should also be explored both in in-vitro and in vivo.

Documentation of the knowledge of HTMs, Training and passing down of the knowledge, Registration and licensing of the practitioners, Change in attitudes of the younger generation in relation to HTMs use. Standardisation in the growing, harvesting, processing, distribution and use of HTMs to also protect the consumers.

According to the stakeholders, especially the scientists and researchers present during the workshop and interviews, most of the existing studies are based on formulations on conditions that were existing pre- COVID era in Kenya. Most of these were lifestyle diseases, infertility, allergies and skin conditions. Therefore, less has been done in the post COVID era as of now. Diarrhoeal, skin, respiratory tract, Urogenital and viral infections were among the key communicable infection most studied in Kenya. Also, some work has been done on asthmatic related infections.



22nd October 2021 at Sarova Stanley Hotel, Nairobi - Kenya

Photo 2: Pharm-Biotechnology & Traditional Medicine Center Training Workshop

Rwanda

The National Industrial Research and Development (NIRDA), local scientists and researchers, in collaboration with the Ministry of Health (MoH), Rwanda FDA, and RBC have been involved in many research studies in HTMs (unpublished data). This is in line with the government of Rwanda promoting HTM as one of the key sectors in the search for home grown solutions to cope with diseases. Different studies have been conducted and published from Rwanda in relation with HTM, for instance (Kimenyi, 2018; Vlietinck *et al.*, 1995; Sindambiwe *et al.*, 1999; Muganga *et al.*, 2010; Umulisa Rwagitare, 2011; Kamagaju *et al.*, 2013; Anastos *et al.*, 2015; Celestin *et al.*, 2020; Gahamanyi *et al.*, 2021) are a selection. More studies are yet to be published. This shows that HTM is an area of research in Rwanda. For COVID-19, potential medicinal plants have been identified (NIRDA, not published) through traditional practitioners and ongoing studies are being undertaken to ensure the efficacy and safety of those plants.

According to NIRDA and Rwanda FDA, different best practice projects have been developed around HTM. They want to contribute toward the development of the phytomedicines value chain by standardizing the HTM production process. Those projects include: (1) Awareness and sharing knowledge/information on HTM, (2) More training of HTM that can take into consideration: Harvesting, processing, production, packaging, storage, dosage, and route of administration, (3) Good organization: "We need to know who does what and their capacity in terms of knowledge and skills for that" (Rwanda FDA participant), (4) Mapping of HTM practitioners to know their skills, education level, and their knowledge (This will help to organize them, and plan training based on their priority (what do they want to know better) and needs for improvement, (5) Mobilization of funds to promote HTM sector, and (6) Establishment of Collaboration framework among EAC state partners or other stakeholders.

South Sudan

Like in any other African countries in the continent, South Sudan also has perception variation towards traditional medicine, majorly confusion between conventional medicine, HTM and witchcraft, although the use for treatment of many ailments is very high with high rural density, few small cities used traditional method of treatment (Grant, 2018; Lado et al., 2020; Mathew., 2016; Mathew et al., 2021, 2020).

There was no specific best practice project carried out in South Sudan and no established body in the MOH to monitor, regulate and encourage the HTM production. Although, herbal raw materials and imported herbal medicines are being sold in the market.

As such, there is a need for the EAC secretariat to encourage research and mobilize funds to bring all the EAC partner states to the same level of herbal medicine formulation and harmonize the system so that other countries that are lagging come up with the rest.

Tanzania

In Tanzania, traditional medicine comes under the ministry of health. In 2002, the country passed the Traditional and Alternative Medicine Act No. 23 of 2002, that became operational in 2005. This act makes provision for the promotion, control and regulation of traditional and alternative medicines practice, to establish the



Dr. Emmanuel Peter, National Institute for Medical Research - Tanzania is leading a session at the stakeholder consultation on 12th October 2021 in Dar es Salaam

Photo 3: Dr Emmanuel Peter, National Institute for Medical Research, Tanzania

Traditional and Alternative Health Practice Council and to provide for related matters. This latest legislation aims at integrating traditional medicine in the national health care system, and encourages cooperation between traditional healers and physicians. It also provides protection against theft of the traditional healers' products.

Consequently, Tanzania adopted use of traditional medicine to complement COVID-19 prevention and case management efforts. Over 50 Traditional Health Practitioners (THPs) were involved in this undertaking countrywide and more than 17 traditional remedies were used for both oral and inhalation; including, NIMRCFA, COVIDOL, COVOTANXA, PLANET++, BINGWA, BUPIJI, UZIMA Herbal Drops, etc. Two

critical institutions: The Institute of Traditional Medicines (ITM) founded in 1991 and the Traditional Medicines Research and Development Center (NIMR-Mabibo), under the ministry of health are championing the development of traditional medicine. Currently, the government is funding major projects to identify and research potential herbal medicines and nutraceuticals for COVID-19.

Trade on traditional medicine products: There is no legal or formal record of the volume of trade within and between the borders of the country. However, several local vendors can be seen along the street selling crude herbal materials in the form of powders, bark, leaves or simple extracts.

Best practices: The Dakika Medicine Plant Growing Group, based in Arusha. The group focuses on growing the Neem tree (*Azadirachta indica*), used for making organic pesticides and to use as ingredients in traditional medicines (DAKIKI, 2005).

The Tanga AIDS Working Group (TAWG), is another initiative that demonstrated the potential of traditional healers working with physicians. The group has treated over 4000 AIDS patients with herbs prescribed by local

healers. With support from the World Bank's Indigenous Knowledge (IK) for Development Program, TAWG has organized community-to-community exchanges, involving their healers, people living with AIDS and staff working with patients to provide medical care and alternative income generating opportunities, in exchanges of IK with other communities in Tanzania http://web.worldbank.org/archive/website00297C/WEB/0_CO-79.HTM.

Uganda

In Uganda, several herbal medicine companies have strived to ensure application of best practices in the production of herbal medicines. One of the companies striving to have quality herbal products on the market is Jena Herbals Uganda limited. This company manufactures a wide range of herbal medicines, used in the management and treatment of various ailments such as cough and flu, diabetes, prostate enlargements, ulcers, sickle cell anaemia, oral infections, as well as a medicine for malaria prophylaxis. In a bid to attain quality products, the company has established a number of quality control mechanisms such as: 1) establishment of GMP facility with adequate space and equipment for manufacture and quality control of materials and products; 2) employment of highly trained professional and technical staff including 2 pharmacists; 3 pharmaceutical scientists, 1 pharmacy technician, 1 Engineer with specialty in Health and safety, 1 microbiologist, 1 Medical officer; 3 professional accountants and Assistant, stores managers, administrator etc; 3) training of staff in Good manufacturing standards; 4) Qualifying the suppliers to ensure that quality raw materials are provided; 5) running quality control tests on the products; 6) established consumer feedback channels; 7) ensuring standard operating procedure followed during manufacturing; 8) Batch records and documentation; 9) notification of all their products with NDA. Jena Herbals Uganda limited is partnering with several scientists and researchers with notable achievements in development of safe and effective herbal medicines from several research institutions and universities, including Mbarara University of Science and Technology. In this regard the company endeavours to ensure that quality, safe and efficacious products are put on the market. On 29 June 2021, National Drug Authority notified one of the company's popular products (COVIDEX®) that widely used against COVID-19 during second wave as a local herbal medicine for the treatment of viral infection including Covid-19. As a standard procedure, NDA continues to monitor the safety of COVIDEX® through post market surveillance, where consumers are given a toll free line to report any side effects from using the product. Furthermore, Jena Herbals limited partnered with renowned and licenced pharmaceutical distributing companies such as Rocket Health, Spring Pharmacy and EcoPharm Pharmacies to distribute its herbal products such as COVIDEX®. Additionally, more tests are still being carried out as the product undergoes the recommended clinical trials to get more empirical evidence regarding the product's efficacy under funding president of Uganda initiative. Jena Herbals Uganda Limited has over 12 NDA notified products currently sold in Pharmacies, drug shops and herbal stores in Uganda.

Doctor's Choice Limited is another company in Uganda that employs best practices in manufacturing of its herbal products. The company strives to maintain the highest level of safety when it comes to testing, manufacturing and transferring its products. The company's factory has all the necessary certifications to manufacture drugs for global distribution, including Suitability of Premises, cGMP and both National Drug Authority and National Bureau of Standards approvals. The products are approved and distributed throughout West Africa, East Africa, South Africa and Europe. The fully automated facility enables the company to manufacture high quality medicines. The company tests all its products at WHO certified laboratories and employs reference African Nutritional Value requirements when branding and labelling. Furthermore, most of the company's distribution partners are ISO9001 certified, thus can help ensure safe and effective distribution of healthcare solutions. Most importantly, through its scientific advisory board, the company collaborates with leading scientists to design and deliver innovative nutritional therapeutic products.

6.3 KEY CHALLENGES, OPPORTUNITIES AND RISKS CONNECTED TO HTM

Scope 3: Identified key challenges, opportunities and risks connected to these applications, including production, regulation and consumption of these medicines in the specific context of the EAC region but also in its connection to other African Regional Economic Communities (RECs), the African Union in other international markets,

Burundi

In Burundi, traditional healers have no opportunity of training in Good Manufacturing Practices (GMP), Good wild crafting Practices (GWP), Good Agricultural Practices (GAP) for the development / practice of HTM. The medicine is not regulated, herbalists can sell raw plants, processed powders and highly processed herbal medicine without regulatory oversight. Existing good practice initiatives can provide a good starting point for interventions. During the stakeholders meeting, stakeholders expressed great interest in promoting / strengthening the HTM sector.

Kenya

The growing traditional medicine industry is associated with limited knowledge on medicinal properties and comes with a myriad of safety and health concerns. In the African context, traditional medicine practitioners do not disclose vital information about their trade to patients or even researchers. Most HTMs are ignorant of the possibility of herbal interactions that may alter drug efficacy or cause adverse reactions. Herbal-conventional drug interactions may disrupt drug absorption and metabolism. Lack of cooperation and collaboration between traditional healers and biomedical practitioners is a huge impediment towards the integration of traditional medicine. It is hard to quantify the actual trade in medicinal plant products in the markets based on the complexity and informal nature of traditional medicine markets. It is also difficult to project the economics involved in such a subsistence-based trade, which is largely conducted in open-air markets. Lack of a proper legal framework that can be used for policies and registration of not only HTMs but also the practitioners.

The absence of formal processes for traditional medicine may escalate safety concerns, aid trade malpractices and facilitate loss of traditional medicine knowledge. Formalization of traditional medicine and linking it to formal health care systems, promotes determination of medical effects of medicinal plants in terms of diseases and their symptoms. A formal environment the sharing of medical knowledge, drug discoveries and better understanding of pathology and ethno-pharmacology. Despite the regulatory bodies insisting on quality assurance, there has been insufficient registration of HTMs due to lack of trust in the system. The conventional medical practitioners are also sceptical, or at times pretend to not use herbal remedies when it comes to their use. In addition, HTMs provide benefits when used in the EAC, including Affordability and ease of access to not only their resources but also formulations for treating various ailments and conditions. The side effects of most HTMs are less severe compared with conventional medications and their multiplicity of mode of action can be used to treat various ailments and conditions simultaneously, due to the various phytochemicals they possess. HTMs can be used for a long period of time, since it is rare to develop resistance due to their diverse mode of reaction and metabolic pathways. Most HTMs possess nutritional value, since for the most part they are derived from what most refer to as traditional vegetables. This means that when they are taken, not only do they cure, they also improve the overall health of an individual. In essence, this supports the economy through farmers who, despite the fact that they will cultivate a specific plant as a medicinal one, may also use it as an alternative source of income as a horticultural product.

HTMs also face the major problem of becoming extinct as the populations of our communities are increasing, hence the search of space for agriculture to aid food production is at the increase hence clearing of these



Herbal shop in the centre of Bujumbura, the owner explained that he received training from a relative in a neighbouring country, he has a trading licence (operating a shop) but no licensing for herbal medicine in Burundi

Photo 4: Herbal Shop in Bujumbura

medicinal plants. This is coupled with the fact that most information on herbal and medicinal plant usage is being transmitted orally from one generation to another and, therefore, we may end up losing crucial information on their usage.

Opportunities;

- Botanists and Biomedical scientists should document and produce books and manuscripts on medicinal plant use in EAC.
- Scientific knowledge should be generated with regard to HTMs bioactivities and concentrations to be used, that will support their usage.
- Scientists are encouraged to create end products that are locally made, but are more efficient and safe as they will assist in alleviating the common diseases locally at a cheaper cost.
- Findings from scientific studies should be implemented more so in policy formulations that will support HTMs usage
- Propagation of the HTMs should also be encouraged through modern techniques like tissue culture, so that seedlings can be given to farmers to plant them - this will aid conservation of the active HTMs.

Rwanda

The stakeholders have highlighted the following challenges: i) Herbal and traditional medicine practitioners are not willing to share the information/knowledge on HTM. They consider the information/knowledge to be family secrets. This leads to mistrust from authority to consumers, ii) Lack of legal framework (i.e., regulation, policies, and procedures and for registration, etc.), iii) Lack of quality assurance and quality control, iv) Lack of knowledge of potential curative ingredient (active compounds) present in the plants, v) Worries (scepticism) about toxicity and drug resistance of the herbal products, vi) Lack of trust among the public, especially the elite, for herbal products and their benefits (many think it does not work/treat any disease), vii) Inadequate raw materials to sustain the sector on an industrial scale, viii) Lack of financial support for the sector, ix) Lack of standards for processing, production/manufacturing, and trading along the value chain, x) Lack of awareness among the public, xi) Lack of specialized skills/competencies on HTM, xii) Lack of standardized dosage of the products, xiii) Inadequate resource (personnel and infrastructure i.e., laboratory equipment for phytochemical analysis), xiv) Tough and aggressive competition with modern pharmaceutical companies.

The stakeholders have reported the following Opportunities: i) Affordability of HTM (Low cost and flexibility in payment, ii) Belief that it is healthier, iii) Safe, no negative side effects, iv) Effective i.e., treats diseases quickly, v) Treats many diseases e.g., COVID-19, vi) Cheap and accessible, vii) Inherited from past generations, thus it is more trusted, viii) Generates financial benefits along the value chain of herbal medicine, ix) Natural from Rwanda i.e., Rwanda natural medicine.

According to stakeholders, the risks associated with HTM are: i) Degradation of Loss of biodiversity, ii) Extinction of some plant species (depletion of plants), iii) Safety and fear of toxicity, iv. Lack of standards, v. Lack of standardized dosage of the products, vi. Lack of awareness among the public, vii. Practicing HTM without clear rules and regulations can lead to serious punishments, including paying fines and Losing the HTM job.

South Sudan

Challenges and Risks:

1. No training on the GMP for the existing TM practitioners that's why they don't have formulated herbal medicine.
2. No clear link between the researchers and the traditional practitioners.
3. The bridge between main stakeholders as far as herbal /medicinal plants are concerned in South Sudan is lacking.

4. There are various kinds of traditional medicines used by the communities for treating various condition/ailments in the country, but these remain undocumented.
5. No regulatory body formed/existing to govern the use of HTM and the National Food and Drug authority has no personnel or dedicated department addressing regulation of HTM. There is much confusion between HTM and Witchcraft.
6. No indication of antidote, thus creates a problem in overdose or drug interaction. Some herbalists mix herbal medicine with spirituality. HTM is not integrated into the health system as such, it is not always prescribed in hospitals.

Opportunities:

1. If HTM is documented and well-studied, it can be the source of other biochemical conventional drugs like quinine and artemisinin.
2. By establishing the HTM department in the Universities, this will help researchers to venture into this neglected area of the research and development of human resources and research capacity needed to develop HTM.
3. Thereafter, when HTM is well studied and its safety and efficacy documented, it can be incorporated into government Health Policy.



Anke Weisheit (right) is presenting a wide range of herbal medicine from Uganda, demonstrating the potential of HTM

Photo 5: Presentation of a wide range of herbal medicine from Uganda

Tanzania

Opportunities:

Strong political will: The market for traditional medicines, particularly herbal based, is growing. In realization of this trend, the ruling political party, the Chama Cha Mapinduzi (CCM) has identified traditional medicines as one of the priority areas for development and is therefore, included in the CCM manifesto 2020. The documents state that, "Establishing a large centre for the study and research of medicinal plants and establishing a strategic factory to produce herbal medicines". the ruling party also strengthened the registration of traditional medicine practitioners who meet the requirements through the council for traditional medicine, including natural medicine clinics (CCM, 2020).

Existing HTM research and development institutions available with tangible research outputs and localised sales of manufactured HTM products including the Mabibo Traditional Medicine Centre at the National Institute for Medical Research (NIMR) and the Institute of Traditional Medicine located in Muhimbili University of Health and Allied Sciences which has the opportunity for advancement and build a good foundation for innovation incubation initiatives for HTM producers.

Adequate availability of raw materials: The current small scale producers of herbal medicines sourced raw materials mainly from the wild because Tanzania has a large forest area. However, opportunities to train local farmers to cultivate particular plant species also exist.

Uganda

Challenges and Risks:

The herbal medicine sector in Uganda is mired with a number of challenges and risks including the following:

1. Some medicinal plants are at risk of extinction due to overharvesting in addition to using unsuitable methods of harvesting. *"Those harvesting don't know the conservation skills for the medicinal plants, in fact herbal medicine production has led to depletion and extinction of some plants, you find a person harvesting the whole bark of a tree including, thus interrupting the water and nutrient transport system of the plant, some people cut down trees just to get the leaves, others uproot the whole plant, this kills the plant"* a concern raised by a forest manager during an HTM workshop. Therefore, high dependence on wild populations of medicinal plants as sources is not sustainable and often results in an unreliable supply of raw materials for herbal medicine production.
2. Traditional medicine practitioners are secretive about the ingredients of their medicine, resulting in indigenous medicinal knowledge remaining concealed and sometimes being lost when the healer dies. This hinders the process of validation and large scale production of some effective herbal medicines. *"The lack of trust between the practitioners and researchers'/policy makers/regulatory agencies and fear of loss of livelihood by the practitioners is still a big challenge in the TCM sector and this will consequently derail the integration of TCM in the primary health care system"* said Thomas, MoH.
3. Negative attitudes and perceptions on the value and quality of herbal medicine still exist among the public. People still think that all traditional medicine is associated with witchcraft. *"I am herbalist as well a son of an herbalist, I know where herbal medicine has come from many people say herbal medicine is satanic and people use to refer to me as witch doctor"* said a Traditional Medicine Practitioner
4. Regarding regulation of herbal medicines, the process of registration of herbal products by NDA is considered to be lengthy by the traditional medicine practitioners and some of them are still not confident about revealing the contents of their herbal products because they are not sure if this information will be safeguarded by the authority. Furthermore, information on the efficacy of some herbal medicines is not clear, which affects the decision to use these herbal medicines.
5. Commercial production and value addition of herbal medicines requires high level skills and equipment, which individual practitioners often lack and have no financial capital to invest in such ventures. Thus, TMPs resort to inefficient processing techniques leading to low yields and poor quality products. Furthermore, lack of entrepreneurship skills in marketing, branding, packaging and record keeping is a limitation to the economic benefits attained by traditional medicine practitioners.
6. Research conducted on herbal medicine is on the isolated compounds from the extracts yet the end users use them as crude combinations most of the time. In the end there is limited empirical evidence with regards to the crude herbal mixes on the market. Furthermore, lack of the necessary equipment like Gas Chromatography Mass Spectrometry (GC-MS), Liquid chromatography-mass spectrometry (LC-MS), High-performance liquid chromatography (HPLC) and Nuclear magnetic resonance (NMR) used in determining the structures molecules that are active or responsible for disease prevention and therapy in herbal medicines is a limitation to advancing research and science in the herbal medicine sector.
7. The shelf life of natural products is not predictable, which often leads to the traders and distributor experiencing economic losses in the country.
8. Inadequate and irregular enforcement of regulations and laws relating to herbal medicine products often results in poor quality, adulteration, contamination and duplication of herbal products on the market.

Key Opportunities

In Uganda, the demand for herbal medicine will continue to grow, promising a bright future for the industry. It is also evident that potential growth of Traditional medicine is important for Uganda's economic growth. Given the fact that sustained globalization of trade markets for traditional and complementary medicine products, along with medicinal plant explorations, is expected to rise, therefore bringing awareness about and utilization of TCM products; the TCM sector in you Uganda presents several opportunities including the following:

1. Increased use of traditional herbal remedies, as well as research into the prospects for successful integration within a public health framework provides key prospects for such as research into natural products, agro-technology, standardization, and quality control of herbal medicines. Understanding the socio-economic context and policies that favour research is needed to ensure development of Uganda's TCM sector in a sustainable manner.
2. The growth of herbal medicine provides communities with an alternative healthcare system, which is important for better and more cost-effective treatments, as well as provision of livelihood for TCM practitioners.
3. The enactment of Traditional and complementary medicine Act 2019 presents opportunities for integration of herbal medicine into the mainstream health care system of Uganda. *"I believe that herbal medicine can be integrated into conventional health care when the safety, quality and efficacy are well known"* Said Thomas, Ministry of Health.
4. The increasing demand for quality herbal medicinal products globally, provides opportunities for entrepreneurs to add value to these products through processing, thus generating huge employment avenues in addition to increasing trade opportunities for Ugandan herbal products on the global market through export.
5. The supply of indigenous medicines depends upon native plants, which are generally harvested from wild sources. But these wild sources are declining due to unsustainable harvesting practices, land degradation and lack of enforceable management regulations. This presents a niche opportunity to invest in the establishment of medicinal gardens that will serve as sustainable sources of medicinal plants and at the same time provide income and revenue to farmers and producers.
6. Recognizing the important role of TCMs and capitalizing on the knowledge of their uses by rural communities in primary healthcare offers the unique opportunity for traditional medicine practitioners and healers especially in rural communities to effectively use their indigenous knowledge to take a centre stage in the global herbal medicine market.
7. The growth of herbal medicine provides communities with an alternative healthcare system which is important for better and cost-effective treatments as well as provision of livelihood for TCM practitioners.

6.4 CASE STUDIES ON INTERNATIONAL BEST PRACTICES OF HTM

Scope 4: Documented key case studies on international best practices of integrating of herbal and traditional medicines in disease prevention and therapy of COVID-19.

Rwanda

The following key points have been highlighted as benchmarks to the integration of HTM in disease prevention and therapy of COVID-19: i) Integrating existing legal framework to regulate the sector, ii) Capacity building for all stakeholders, especially the TM knowledge holders (Capacity building), iii) Putting in place guidelines and standards, etc., iv) Involve Ministry of Health and Rwanda Biomedical Centre in the processes of R&D of new products, v) Regulations of the activities and practices of Traditional Healers, vi) Professionalization of Rwanda Association of Traditional Healers Network, vii) To have support to quality and adhere to the safety standard of the herbal medicine products, viii) Farmers and producers must be equipped with the knowledge on best practices e.g., Good Farming Practices and Good Manufacturing Practices, ix) Provide Training and Education to all stakeholders along the herbal/traditional medicine value chain, x) Adherence to WHO guidelines (WHO Expert Committee on Specifications for Pharmaceutical Preparation, 2018; World Health Organization (WHO), 2018).

Tanzania

Tanzania adopted use of traditional medicine to complement COVID-19 prevention and case management efforts. Over 50 Traditional Health Practitioners (THPs), were involved in this undertaking countrywide and more than 17 traditional remedies were used for both oral and inhalation; including, NIMRCAF, COVIDOL,

COVOTANXA, PLANET++ , BINGWA, BUPIJI, UZIMA Herbal Drops, etc. Two critical institutions; the Institute of Traditional Medicines (ITM) founded in 1991 and the Traditional Medicines Research and Development Center (NIMR-Mabibo), under the ministry of health championing the development of traditional medicine. Currently, the government is funding major projects to identify and research potential herbal medicines and nutraceuticals for COVID-19.

Uganda

The Ugandan government established a presidential Initiative on Epidemics to promote research and development of solutions to COVID-19 including therapeutics from THM. One of the products that was supported for clinical trial at Mulago National Referral Hospital is UBV01, which is a locally produced Bee Venom formulation. In addition, government is also supporting clinical trials of another THM trademarked COVIDEX, a product that was widely used in Uganda and neighbouring countries.

6.5 APPLICABLE INTERNATIONAL HTM STANDARDS (GMP, GWP, GAP...)

Scope 5: Described applicable international quality, safety and efficacy standards as well as Good Manufacturing Practices (GMP), Good Wild Crafting Practices (GWP), Good Agricultural Practices (GAP) where applicable.

For the development of HTM, not all six east African countries have incorporated or utilised applicable international quality, safety and efficacy standards as well as Good Manufacturing Practices (GMP), Good wild crafting Practices (GWP) and Good Agricultural Practices (GAP), most notably Burundi and South Sudan.

Rwanda

Reference can be made to WHO guidelines (WHO Expert Committee on Specifications for Pharmaceutical Preparation, 2018; World Health Organization (WHO), 2018). In Rwanda, HTM practitioners do not apply specific international HTM standards. They produce and process HTM according to the knowledge shared from the past generation. Most of their HTM products come in the form of powder and syrup. The harvesting of raw materials, packaging, extraction and storage follow instructions passed onto generations by ancestors. However, NIRDA and Rwanda FDA have established procedures/guidelines that can be followed for standardization of production and processing practices.

South Sudan

TM practitioners in SSD depend on the knowledge passed to them by their ancestors. The herbalists received no training on GMP, (GWP), (GAP); as a result, there was no formulated herbal medicine found during the study. They administer the TM in its raw crude form, either powdered or liquid.

Tanzania

According to WHO Report 2019, The United Republic of Tanzania has a regulation exclusively for herbal medicines, titled Materia Medica. Regulations, under which herbal medicines are categorized as prescription medicines, non-prescription medicines and herbal medicines. Herbal medicines are sold with medical claims. WHO monographs on selected medicinal plants, vol. 4 (2007) is used. Manufacturers of herbal medicines are required to submit samples of their medicines to the Tanzania Food and Drugs Authority (TFDA), to ensure compliance with manufacturing requirements. The same safety requirements apply to herbal medicines as for conventional pharmaceuticals; traditional use without demonstrated harmful effects and reference to safety data in documented scientific research on similar products is sufficient. As of 2012, nine herbal medicines were registered, all of which, unfortunately, are imported. The NEML and the market surveillance system for safety of medicines do not include herbal medicines.

Uganda

Consumers and regulatory authorities all around the globe, are concerned about the quality of herbal medications. Herbal medicine quality is mostly determined by the regulatory requirements of individual nations

(Mandal & Mandal, 2011). According to Calixto (2000), when compared with well-defined synthetic drugs, herbal medicines exhibit some noticeable differences, namely: 1) the active principles are often unknown; 2) standardization, stability and quality control are feasible, but not easy; 3) the availability and quality of raw materials are often problematic; 4) well-controlled double-blind clinical and toxicological studies to prove their efficacy and safety are rare; 5) they have a wide range of therapeutic uses and are suitable for chronic treatments; 6) the occurrence of undesirable side effects seems to be less frequent with herbal medicines, but may still exist. The legal process of herbal medicine legislation and regulation varies from country to country, this is due to a combination of cultural factors as well as the fact that herbal medications are rarely investigated scientifically. As a result, only a few herbal formulations have been evaluated for their safety and efficacy. Nonetheless, the World Health Organisation proposed guidelines for the assessment of quality, safety and efficacy of traditional medicines. Depending on the particular country and existing legislation, herbal products used for diagnosis, cure, mitigation, treatment, or prevention of diseases are, in most cases, regulated as drugs. However, in some countries such as the USA, herbal products are marketed as dietary supplements (Calixto, 2000). In Uganda, herbal medicines are treated as drugs, and therefore, need to be registered or at minimum notified by the National Drug Authority (NDA). To be notified or registered, these products need to be tested to prove their quality, safety and efficacy following NDA guidelines. However, the lack of trust between the traditional medicine practitioners and NDA, largely because the registration process requires clear a detailed documentation about the herbal medicine, causes fear and suspicion among the traditional medicine practitioners since there is no assurance that their knowledge will be safeguarded, this therefore becomes a bottleneck to the process product registration.

It has also been reported that some products are not of desired quality, due to failure to conform to regulatory standards. As a result, the quality, safety, and efficacy of herbal products have become an important concern for both consumers and health authorities:

"Herbal medicines are generally safe as they are consumed in their natural form with no modifications, however, information on the toxicity profiles need to be well studied to protect the consumers, Toxicity in terms of dose and duration of use needs more clear understanding" Said a Pharmacist, Stakeholder engagements.

"Some herbal medications have no dosages and limit; therefore, people end up using these products for a long time which I think may be harmful and unsafe" said Shabiba

"Concurrent use of herbal medicines and conventional drugs may affect the deserved health outcome due to drug interactions" Said Ronald at an HTM workshop, 2021.

Available reports on the toxicity of some medicinal plants suggests that, although it is widely perceived that "natural" products are safe evidence confirms that herbal product use is not without risk (Lutoti et al., 2013). Herbal medicinal product users often have unrealistic expectations regarding the safety and efficacy. Nevertheless, herbal medicines, just like the conventional medicines, can produce undesired effects in patients using them, hence precautions should be exercised when using these products. There is, therefore, an increased need for continuous safety and quality monitoring, as well as evidence based use. However, the difficulties associated with lack of Good Agricultural Practices (GAP), including poor harvesting and postharvest practices and Good Manufacturing practices (GMP), lack of trained personnel and right and lack of funds to conduct clinical trials, are still a constraint to achieving quality herbal products in Uganda.

There are currently approximately 5 HTM products notified by the National Drug Authority for emergency use against COVID-19, these include: COVIDEX, VIDICINE and UB01, among others.

6.6 MARKET TRENDS OF HTM IN PREVENTION AND THERAPY OF COVID-19

Scope 6: Described current market trends of herbal and traditional medicines in disease prevention and therapy of COVID-19, at national, regional, international level.

Kenya

In Kenya, more than 1200 species of medicinal plants are used from a flora of approximately 10,000 members. It has been reported that between 2009 and 2012, over 120 herbalists from across Kenya had reported using at least 3 herbs in their practice with good success rates in therapeutic claims against various diseases including malaria, typhoid, pneumonia, diarrhoea, arthritis, sexually transmitted infections, toothaches and helminthiasis among others. In addition, more people have turned to HTMs to mitigate and control non-communicable and lifestyle diseases, due to their affordability. It is for this reason that Kenya has experienced an increase in the use of HTMs and more people are venturing into growing, processing, manufacturing and distribution, as more people are also opting to also use HTMs as an alternative way to cure ailments. More Herbal clinics have arisen and more Herbal Doctors have also established themselves, compared to a year and a half ago, where most users and practitioners would indulge in HTMs rather quietly, particularly in the city. They even have adverts on the local TV stations, in comparison to how rare they were earlier on.

Rwanda

The current market trends of HTM in disease prevention and therapy of COVID-19, at national and regional levels are increasing. Herbal and traditional medicine practitioners are aware of the financial benefits of their practices.

The current market of HTM medicine is local because there is no regulation for trading HTM products. However, the following are key challenges: 1. The demand is not well documented, 2. No data of the consumers, 3. No data on demand and supply of Herbal and traditional medicine, 4. The supply chain is not well documented (The stakeholders, especially traders, producers and processors, and consumers have indicated the following as the supply/distribution channels of HTM:

1. Producers to clients/patients/users,
2. Producers to Store to HTM practitioners to Clients/patients,
3. Producers to Hawkers to Consumers,
4. Producers to Wholesale to HTM practitioners to Clients/patients,
5. Herbal collectors/harvesters to Producers to Wholesale to HTM practitioners.

However, it has also been noted that currently, there is no adequate procedure while processing HTM. This compromises the market accessibility of HTM products from Rwanda.

South Sudan

The findings show that, before the COVID pandemic, the herbalist's vendors received few customers, but now, they do receive many clients. However, they do not have a specific formulation of the products, and the clients buy the available raw materials for their use. The existing formulated herbal medicines in the country were all illegally imported.

Tanzania

Tanzania adopted use of traditional medicine to complement COVID-19 prevention and case management efforts. Over 50 Traditional Health Practitioners (THPs) were involved in this undertaking countrywide, and more than 17 traditional remedies were used both orally and by inhalation; including, NIMRCAF, COVIDOL, COVOTANXA, PLANET+ +, BINGWA, BUPIJI, UZIMA Herbal Drops, etc. Two critical institutions: The Institute of Traditional Medicines (ITM) founded in 1991, and the Traditional Medicines Research and Development Center (NIMR-Mabibo), under the Ministry of Health championing the development of traditional medicine. Currently, the government is funding major projects to identify and research potential herbal medicines and nutraceuticals for COVID-19.

Growing public preference for herbal based products. COVID-19 has fuelled such interest, partly because there was no specific antiviral to cure the condition. Public shifted their attention to herbal medicine, for example,

we have now seen herbal medicine shops opened inside the hospital in Dar Es Salaam. COVID -19 patients admitted to the isolation wards with bottles of herbal medicines by the bedside. This clearly indicates the exponential growth of the market for herbal medicine in the country.



Photo 6: Stakeholders during the consultation workshop 12th October 2021, Dar es Salaam

Uganda

In Uganda, Traditional herbal medicine is used by a large percentage of the population and provides a potential source of household income. According to various stakeholders in the herbal industry, the demand for herbal and traditional medicine products is on the rise in Uganda:

"There is an upward trend in the usage of herbal medicine. Many people are using herbal medicines in the treatment of different ailments and it is working" Said a trader and distributor at TM workshop, 2021.

"The trend in the use of herbal medicine is on the rise as people are getting more exposed to the indigenous knowledge through the various communication platforms available and conventional therapies are tending to be more expensive, rare in hard to reach areas of the country, increased pathogen resistance, more perceived side effect" Said Immaculate.

The COVID-19 Pandemic is one of the reasons for the increase in the demand of herbal medicine products:

"The COVID-19 pandemic brought realization that remedies to some of the new and emerging diseases can be found within our environment as long as we have a positive context of what has been provided by Nature" Said Thomas at TM workshop, 2021.

"As a trader of herbal medicine, I am very happy that COVID-19 brought us money, I used to sell herbal medicine of fever, cough and flu at a very low price, but ever since the pandemic began the demand for herbal products has skyrocketed and thus this has improved our profits and Income as traders said Matia at an HTM workshop, 2021".

"The money I made from selling COVIDEX (herbal remedy used in the management of COVID-19) has sustained me throughout the pandemic" Said a trader and Distributor of herbal products.

6.7 POLICY RECOMMENDATIONS ON PROMOTING HTM

Scope 7: Suggest policy recommendations for the EAC Secretariat on how to promote and better utilize indigenous resources/knowledge, especially in the context of formalizing and commercializing these applications at national and regional level.

Burundi

Policy recommendations for Burundi are the development of the regulatory framework for HTM, strengthening Associations of traditional health practitioners. The whole sector from policy development, human resources development and institution building needs to be strengthened.

Kenya

According to Kibet, Muthee and Kiemo 2020, in “The governance of traditional medicine and herbal remedies in the selected local markets of Western Kenya”, the use and demand for HTMs can create disagreement, due to bad practises such as poor harvesting methods.

Functional local institutional policies play a vital role in the transfer of indigenous knowledge on traditional medicine. Nagoya Protocol advocates for fair and equitable sharing of these locally available natural and genetic resources with respect to indigenous knowledge, institutions and practices held by communities. The present laws and regulatory policies are seen as less effective when applied to the currently existing practises. There is a need for clear, robust, unambiguous and definitive legislation, Kenya has several acts that support the use of HTMs such as Development plan, 1989–1993.

The Kenya Development Plan of 1989, which recognized traditional medicine and set the agenda for the promotion of HTMs Practitioners’ social welfare and work environment. The Ministry of Health and the Provincial Administration was tasked with the responsibility of ensuring that all practising HTMs Practitioners have been registered.

Convention on biological diversity, United Nations, 1992

The 1992 Convention on Biological Diversity (CBD), advocated for the use of indigenous and traditional knowledge in the conservation of biodiversity, equitable sharing of benefits and sustainable use of natural resources. Annex I of the convention, highlighted the importance of medicinal plants identification and more so the key indicator species that may be useful in research, conservation or consumption.

Kenya National Drug Policy, 1994

The Kenya National Drug Policy of 1994, acknowledged traditional medicine as a key component of Kenya’s culture and thus the need to mainstream it into the primary health care system.

Sessional paper on traditional medicine in Kenya (2009)

The Sessional Paper of 2009 on traditional medicine in Kenya, anchored five key objectives that promoted traditional medicine namely: regulation, setting up of relevant institutions, contribution of traditional medicine in health care delivery, safety and efficacy and. Finally, the ex-situ and in-situ conservation of medicinal plants. The paper also highlighted the information gap on the trade of medicinal plants, good manufacturing practices for herbal remedies/products and standardization procedures.

The Sessional Paper highlighted the enforcement of ethical principles in traditional medicine practice, which includes equity, fairness and rights to access of medical care. It further recognized the contribution of communities and stakeholders in the use of medicinal plants and the critical aspect of benefit sharing. Finally, the paper proposed commercialization of traditional medicine, management of information disclosure and the establishment of robust institutions, laws and policies to govern traditional medicine in Kenya.

Registration of herbal and complementary products by Pharmacy and poisons board (2010)

The traditional medicine and medicinal plants bill 2010: This laid out proper definitions for traditional medicine and medicinal plants. It also proposed the creation of a Traditional Medicine Management Council (TMMC), that was to oversee the practice of traditional medicine in Kenya. The bill underscored the importance of domestication of wild medicinal plants, protection of intellectual property rights (IPR) and Indigenous Knowledge (IK). It also set out the eligibility criteria for recognition and certification of traditional medicine practitioners.

The health bill 2012, which recognized the role of traditional and complementary medicines in the health care sector, also defined health care professionals as individuals with professional training or adequate qualifications for provision of medical services.

Traditional and alternative medicine policy draft, 2018

The Traditional and Alternative Medicine Policy draft, proposed provisions for mainstreaming Traditional and Alternative Medicine into the National Health Care System, to boost access to health care for all. The policy draft highlighted strategies that emphasise the need and importance of biodiversity conservation, sustainable harvesting and cultivation; safety, efficacy and quality; education and training; proper use and quality assurance; standardization of traditional medicine; good manufacturing practices; ethical principles; equity; protection of intellectual property rights; access and benefit sharing; commercialization of TM; and, lastly, issues of disclosure and secrecy. The policy draft encouraged documentation and recording of traditional medicine knowledge and establishment of digital traditional medicine libraries.

The policy draft made provisions for the creation of legal and institutional frameworks of traditional and alternative medicine, and National Traditional and Alternative Practitioners Council (NTAPC) tasked with the responsibility of registration, regulation and development of standards.

The above policies and drafts are just a few of the efforts being made by the Kenyan Government to safeguard HTMs, Practitioners and the existing indigenous knowledge. The challenge comes in when one needs to enforce the regulations and policies and who is included during these processes.

Inclusion of HTMs practitioners as part of the Medical association and registered as medical practitioners under the Ministries of health in the EAC. Standardization of the HTMS as well as protecting the HTMs in their actual habitats.

Viewing the HTMs Knowledge as a whole region and not as per countries, this is because knowledge within a region is similar, for example, Maasais in Kenya have similar knowledge regarding HTMs to those in Tanzania. A similar notion is seen in the Bantu in Uganda and Kenya Busia and Malaba borders.

Protection of the indigenous knowledge through IP and agreements between the communities that have it and the researchers and industries to protect heritage as well as learn from it.

Policies that will ensure funding is provided to carry out research on the efficacy, storage and safety of the HTMs (This will also include distribution and processing).

Despite all the controversies when it comes to HTMs practitioners, there should be policies safeguarding their profession, such as one that supports Registration of Traditional Medicine Practitioners by the Ministry of Health, rather than the Ministry of Culture. When it comes to discussions that affect issues to do with HTMs, all stakeholders should be included at the table, especially for policy making and regulations. This should also be accompanied with capacity building and training, that will enable each stakeholder to appreciate the role that the regulatory bodies and professional associations play in the bigger picture and also the role of other stakeholders.

Policies that also observe gender balance in HTMs use in the society. This is usually because the gender that mostly uses HTMs is mostly women, girls and mothers.

Rwanda

The following recommendations have been proposed by different stakeholders:

1. Identify gaps and harmonize the policies, regulations, and laws in herbal and traditional medicine,
2. Advance research and development (on efficacy, safety, and standards, and best practices) on herbal and traditional medicine in general and COVID-19 in particular,
3. Establish Legal Frameworks for Herbal and Traditional Medicine,

4. Awareness campaign on Herbal and Traditional Medicine,
5. Mobilize funds for research and development on HTM,
6. Share knowledge and practical skills on HTM,
7. Collaboration of state partners in the promotion of HTM.

South Sudan

SSD recommends capacity building for TM practitioners on GMP, (GWP), (GAP), encouraging and supporting researchers to do more scientific research to obtain evidence based findings on the documentation of the indigenous knowledge and laboratory base analysis.

SSD recommends each partner state should come up with clear policies on regulation of HTM and the EAC secretariat should develop policy that would harmonize and integrate the use of the HTM in the region.

The HTM sector must be established at the EAC MOH and the EAHRC, to ensure that this field is strengthened from the regional level up to the partner state level.

Tanzania

The following recommendations have been proposed by different stakeholders:

Create Awareness of regulations and procedure for HTM practitioners.

Strengthening the HTM regulatory framework and facilitate a HTM desk at the regulatory authority.

Increase financial resources for the development of the HTM sector (regulatory, research, product development, innovation incubation and outreach).

Firster collaboration among existing research centres e.g. Mabibo Traditional Medicine Centre at National Institute for Medical Research (NIMR) and the Institute of Traditional Medicine located in Muhimbili University of Health and Allied Sciences.

Create a dedicated HTM council or similar body for professional oversight

Uganda

Traditional and Complementary Medicine Act 2019

The goal of Traditional and Complementary Medicine (TCM) Act 2019, is to define Traditional and Complementary Medicine in relation to modern medicine and to establish a council for the control and regulation of the practice of traditional and complementary medicine, to register and licence practitioners and to provide for related matters. The specific objectives of the act are to: 1) define and standardise the concept of traditional and complementary medicine practice; 2) provide for registration and categorization of traditional and complementary medicine practitioners; 3) define the acceptable scope and standard of traditional and complementary medicine practice as well as unacceptable malpractices; 4) institute appropriate rewards for good practice and sanctions against malpractices in traditional and complementary medicine practice; 5) protect and promote the profession of traditional and complementary medicine practice; 6) promote the sustainable production of agri-business medicinal plants; 7) promote the use of authentic and quality traditional and complementary medicine products; 8) promote rational use of traditional and complementary medicine through provision of scientific evidence; 9) promote collaboration and integration of traditional and complementary medicine with conventional medicine; 10) provide for the regulation of herbal medicine and herbal practice; 11) provide for quality assurance in the delivery of traditional and complementary medicine services; 12) create Council responsible the regulation of traditional and complementary medicine practitioners and define their roles; and, 13) ensure professional discipline and good conduct of traditional and complementary medicine practitioners.

Having the TCM act 2019, is the first step in streamlining and regulating the traditional medicine sector in Uganda.

"Since the TCM act is already in place, the council which will have a representative for TCM, this will create an association of all herbalists, so everyone will know what he or she does, who needs to be regulated or not, who makes herbal products or not" Says a representative from the MoH at an HTM workshop, 2021.

Nevertheless, there are a number of aspects in the act that are not very clear, which may require improvement in future:

1. Integration of herbal medicines in the health care system isn't clear, yet a number of local herbal medicine products are being notified at the National Drug Authority.
2. According to the act, only TCM practitioners with a formal training will be recognized, neglecting practitioners who have obtained Knowledge and skills through indigenous knowledge transfer systems. *"I don't think my grandmother who just boils some plants, leaves for treating measles etc needs to be regulated, I think there is need to develop different qualification criteria which suits everyone not only having one criteria for all."* Said Apio at an HTM workshop, 2021.
3. It would be better if the intellectual property rights were clearly stated in the TCM Act, as is, this component is still vague.

National Drug Policy & Authority Act Cap 206

The goal of the Act is to establish a national drug policy and a national drug authority, to ensure the availability, at all times, of essential, efficacious and cost-effective drugs to the entire population of Uganda, as a means of providing satisfactory health care and safeguarding the appropriate use of drugs. The objectives of the policy are to: 1) ensure that essential, safe, efficacious and cost-effective drugs are made available to the entire population of Uganda to provide satisfactory health care; 2) make a continuous review of the needs, knowledge and resources of essential drugs; 3) to promote the rational use of drugs both in the public and private sector; 4) improve Government regulation and control on manufacture, production, importation, exportation, marketing and use of drugs; 5) provide systematic public information and professional training and retraining of health workers; 6) improve the registration of drugs and licensing of pharmaceutical premises; 7) intensify research in all types of drugs, including traditional medicines; 8) comply with the international regulations on drugs, including the conventions on narcotic drugs and psychotropic substances under international control; and 9) fight against drug and substance abuse.

The act defines a "drug" as any substance or preparation used or intended to be used for Internal or external application to the human or animal body, either in the treatment or prevention of disease or for improving physiological functions, or for agricultural or industrial purposes; thus traditional medicine products used as such, qualify for regulation under this law. Furthermore, the act mandates National Drug authority to regulate all drugs in the country including herbal medicines, as such the National Drug Authority regulates all herbal medicinal products in Uganda through notification: "the authority requires everyone manufacturing or producing herbal medicines to at least notify them, this helps in establishing safety mechanisms in the use of these herbal medicines" said an NDA representative at the HTM workshop. Additionally, the act clearly stipulates that "the National Drug Authority shall encourage research by persons carrying on research and development in herbal and other medicines and where appropriate take such medicines into production as a component of the drug supply".

Industrial Property Act 2014

The Industrial Property Act 2014, is an act of parliament of Uganda that: 1) provides for the promotion of inventive and innovative activities; 2) facilitates the acquisition of technology through the grant and regulation of patents, utility models, industrial designs and technovations and to provide for the designation of a registrar; 3) provides for the functions of the registrar, and the establishment of a register of industrial property rights

and for related matters. According to the act, “an invention shall be considered industrially applicable if, according to its nature, it can be made or used in any kind of industry, including agriculture, medicine, fishery and other services” therefore, going by this statement, herbal medicine is also captured under the “medicine” component and as such is governed by laws stipulated by this act. However, it should be noted that according to the act, the rights under the patent extend only to acts which are done for industrial or commercial purposes but do not extend to acts which are done for scientific research.

National Intellectual Property (IP) Policy

According to the policy “Intellectual Property Rights” refers to the assignment of monopoly rights on the use of intellectual content for a specified period of time; through patents, copyright, trademarks, industrial designs, geographic indicators, utility models and trade secrets. The goal of the National Intellectual Property (IP) Policy is to provide guidance on short, medium, and long-term activities and interventions that will enable IP stakeholders to collaborate effectively in order to create, protect, and commercialize research results, innovations, new technologies, and creative works. It is important to note that one of the objectives of National IP policy is to promote IP-driven indigenous technology development and commercialization. The key action is to support the development of a framework to protect Traditional Knowledge (TK) and Traditional Cultural Expressions (TCEs). Given the fact that traditional medicine is anchored on traditional knowledge systems it can therefore be argued that this is covered under this framework.

Uganda National Culture Policy

As stipulated in the Policy, Indigenous knowledge (IK) is the traditional local knowledge, existing within and developed around, the specific conditions of a community indigenous to a particular geographical area. The policy further acknowledges that IT provides the basis for problem solving strategies for local communities, especially the poor and commonly used in agriculture, **traditional medicine**, health care, food preparation, education, natural resource management and a host of other activities in rural communities. Overall, the Uganda National Culture Policy recognizes that Indigenous Knowledge (IK) is a vital sub-system of culture and is a key factor in social and economic development, as well as cultural transformation. The policy stresses that interventions must emphasize the protection, integration, utilization, and promotion of indigenous knowledge, according to the policy. Since IK is the backbone of traditional medicine, it can be reasoned that it is covered under these interventions.

6.8 THE ECONOMIC POTENTIAL OF HTM IN DISEASE PREVENTION AND THERAPY OF COVID-19

Scope 8: *Analysed the economic potential of herbal and traditional medicines in disease prevention and therapy of COVID-19.*

Kenya

There is potential in the research, development and use of HTMs. Since it is viewed as an alternative means of mitigation or management of diseases and conditions. Not only will it provide a means of earning of income to the various stakeholders in the field, but also a less costly means for the general population to access healthcare. If more research is included and policies put into effect to support both the producers and consumers of HTMs then East Africa, just like the Asian countries, will have a huge market for HTMs let alone in the growing, processing, distribution and use sections. All this will provide employment opportunities for the community in the various roles played by the stakeholders.

Rwanda

In Rwanda, HTM practitioners have reported that HTM is a profession that generates income for themselves, families, the community, and the country. They consider HTM as Beneficial, Generation of living income, Paying other needs such as school fees, clothing, house rents. But, HTM is not regulated to benefit like other health

systems. For researchers and scientists, there is a potential in HTM research studies that can promote their careers.

South Sudan

In South Sudan, the study reported the use of the HTM among communities. Medicines are obtained either from the surrounding area or from the local markets. This is clear evidence that HTM is the source of income to the practitioners and the local communities. If attention is given to the HTM area, it would boost and diversify the socio economic status of the country and the region.

Tanzania

It could be recommended that traditional medical practitioners be empowered through provision of short course training and licensing of their practices.

Government funding in traditional medicine research will likely improve the quality of the traditional medicine practices and trust among the public users.

Tanzania has a great potential to harness HTM as an economic opportunity, as various institutions and businesses are already operating on commercial scale e.g. Wild Plains Foods. Food & Beverages – an international brand with local manufacturing facilities processing fruits and herbs through Elven Agri Co. Ltd. The photo on the right showing a dedicated shelf with herbal product in a supermarket in Dar es Salam, <https://dhownaturefoods.com/>



Photo 7: A supermarket shelf dedicated to herbal products in Dar es Salaam

Uganda

The Global Analytics report estimates the current global herbal medicine market size was estimated to a tune of 110.2 billion in the year 2020 and is expected to exhibit profitable growth over the years, projected to reach 178.4 billion USD by the year 2026. Despite the rich medicinal plant diversity in Africa, medicinal plant products from African countries contribute meagrely to this global market. Unlike China and India, African countries such as Uganda, have not fully exploited the wealth potential of herbal products by promoting their use in other parts of the world, despite their renewed interest in research. Therefore, to ably benefit from this wealth that mother nature has bestowed onto Africa, these countries should begin with incorporating herbal medicine systems in their national primary health care systems, together with ensuring quality standards in their safety and efficacy. Value addition industrialization, Innovation and commercialization of herbal medicine products in Uganda, have the paramount potential to fast-track Uganda into a middle-income status. However, Uganda still falls behind in herbal medicine product development and commercialization, when compared to countries like India and China. Nonetheless, Uganda has great potential for a positive trade balance if industrialization and commercialization can target both local and regional opportunities like the East African Community Common Market, African Continental Free Trade Agreement (AfCFTA).

6.9 THE PUBLIC HEALTH DIMENSION OF HTM

Scope 9: *Analysed the public health dimension of herbal and traditional medicines in disease prevention and therapy of COVID-19.*

Burundi

Traditional medicine is provided parallel from formal health system and the HTM sector is currently un-regulated. HTM practice in various locations e.g. at the market, open sales points, clinics as well as home visits. The need for strengthening the HTM sector is paramount for the integration in the formal health care system.

Kenya

Most health practitioners advise taking HTMs with conventional medication, as long as they do not interfere with the pharmacology of the conventional medicine. At other times, they completely disagree with the use of HTMs, due to non-existent scientific evidence on what they treat and their efficacy. They prefer that most HTMs are properly researched and their chemical makeup is well known, in order to know proper dosages and such to prevent poisoning users. In this case, a lot of COVID-19 HTMs did arise, but it was best used with the Conventional medicines to treat the ailment rather than use HTMs alone in most instances.

Rwanda

According to practitioners and consumers, HTM remains popular. The use of HTM has been shown to treat different diseases, including, but not limited to skin diseases, pregnancy, hepatitis, and infertility. The main reasons for using HTM have been highlighted (accessibility, affordability, and trust.). This shows that HTM is an important community-based healthcare resource, that needs to be integrated into existing public health systems. Although HTM is not regulated in Rwanda, some cases of poisoning, snake bites, hepatitis are referred to HTM practitioners.

South Sudan

Whilst herbal/traditional medicine is widely used in SSD, there is no regulatory body for it, despite its prevalence and use increasing during these time of pandemic.

There is a need to lobby the government and create awareness on how important it is to have this body established at the Ministry of Health.

Tanzania

Traditional medical practitioners in Tanzania are the first point of contact among the majority of individuals. This means the practice stands in a unique position to safeguard public health. With limited manufacturing capacity of conventional medicines, limited human resources for health, Improved traditional medical practices and the use of herbal medicines in particular, is likely to offset these present challenges and improve public health.

Uganda

Disease prevention and health promotion are becoming more essential components of public health as the global burden of chronic disease continues to grow (Hawk et al., 2015). It has been observed that there is a continued growth of public interest in, and use of, traditional medicine and complementary medicine in Uganda. More than half of the population in Uganda now regularly use some form of traditional medicine and complementary medicine in their primary health care. Although most policies and research have been dominated by consumer demand and clinically restrictive issues, while generally disregarding the wider public health dimension. It is only recently, when Uganda as a country has considered regulation of traditional medicine practitioners and provision of guidelines for licensing and establishment of standards of practice through commencement of the traditional and complementary medicine act on 1st October 2021. It is worth noting that the traditional health practitioners in Uganda are reported to be hundreds of times more abundant than conventional medical practitioners. This therefore poses an important question, can this informal sector be brought into a partnership to address the national health care agenda in an improved model of health care in Uganda? If traditional medicine practitioners are integrated into mainstream public health practice, they can serve as a public health resource to expand the population's access to specific clinical preventative interventions. However, it is critical to explore strategies of effective inter-professional collaboration between both traditional and complementary medicine practitioners and the conventional health professionals as part of this integration. It is also essential to identify pertinent issues that might be challenging to the integration, from the perspective of both conventional and traditional medicine providers, for instance professional biases that

may exist on both sides, differences in perception of health and disease, common language, and adherence to evidence-based principles (Hawk et al., 2015).

In Uganda, traditional and complementary medicine is being used by the public in the management of diseases and chronic conditions such as chronic pain, arthritis, diabetes, heart disease, cancer, malaria, skin disease, HIV-related infections and recently COVID-19. However, as a country we do not have sufficient and accurate information on the current patterns of traditional medicine use and the effectiveness of the various treatments being used alone, and or in combination with, modern medicine. Increasingly, patients are expecting modern health professionals to guide them, on the basis of either formal evidence or clinical experience, in making decisions about whether traditional medicine or conventional approaches work better, or whether they might best be used together (Bodeker & Kronenberg, 2002). Therefore, a collective effort by public health professionals, scientists and researchers to develop an all-inclusive view of the health care, that can generate a targeted public health research program, and set policies is still needed to address the public health dimensions of the use of traditional and complementary medicine in this country.

7 CONCLUSIONS AND RECOMMENDATIONS

Burundi

Burundi's THM sector is in an early stage of development and would benefit from building human resources in research and innovation capacity and building a regulatory framework for HTP products and practice, this can be done through scholarship to key personnel of the Burundi National Medicines Regulatory Authority (ABREMA), facilitating benchmarking existing Regulatory Bodies with HTM section. Other technical support might be beneficial including, developing country strategy on HTM (WHO) guidelines, HTM curriculum development and reviewing the research agenda of the National Commission for Science, Technology and Innovation. Universities will benefit from establishing a department of departments: a) research funding, b) exchanges within the region, c) curriculum development for course modules, d) upgrading research laboratory facilities to cover specific analytic and production aspects of HTM. As a large portion of the HTM practitioners come from the indigenous Batwa community, strengthening their organisations and integrating capacity building on GMP, (GWP), (GAP) for example, the Unite for the Promotion of Batwa (UNIPROBA). Key members of the Burundi Association of Traditional Practitioners (ATRADIBU) will benefit from product formulation development Training of Trainers capacity building interventions.

Kenya

There are recommendations from several authors concerning HTMs in Kenya generally, and they do summarise quite comprehensively, what the expected result of enforcing laws and good policies in terms of HTMs use and Practise would be.

According to Okumu et al 2017, in "The legislative and regulatory framework governing herbal medicine use and practice in Kenya: a review" The safeguarding of intellectual property rights of traditional knowledge holders should be a principle concern to the government. The existing policies are not adequate and are inappropriate for the protection of herbal medicine and related resources, as are the mechanisms for the protection, access to and benefit sharing arising from traditional knowledge and related resources. HTMs Practitioners should be trained on quality control, ethics and basic medical education. Forums that convene research scientists and herbal medicine practitioners should be promoted, with the aim of creating collaborations between the scientists and practitioners of herbal medicine.

According to Willy Kibet Chebii, John Kaunga Muthee & Karatu Kiemo 2020, in "The governance of traditional medicine and herbal remedies in the selected local markets of Western Kenya" They proposed that traditional medicine practitioners be included in the process of making laws and policies governing the traditional medicine, Strict regulatory procedures and monitoring should be observed to ensure the safety and efficacy of

traditional medicine. HTMs Practise should be incorporated into primary health care. HTMs Practitioners should undergo thorough vetting to prevent incompetent and unethical practitioners. There is a need for laws and policies that govern traditional medicine markets and trade and allow for harmonization of both formal and informal practices of traditional medicine.

Rwanda

Herbal and traditional medicines remain common, despite the availability and affordability of conventional medicine. This results from the fact that HTM is more accessible and affordable. It is believed that it can help treat some diseases such as poisoning, that conventional medicine has failed to treat. The sector is not well documented in Rwanda. Poor processing practices, hiding information specific to HTM by practitioners, have compromised the legislation and regulation. Ongoing procedures initiated by competent authorities are trying to standardize HTM practices through the organization of training on good practices of HTM. Different stakeholders are called upon to collaborate, to ensure the quality and sustainability of HTM. This will help the smooth integration of HTM into existing public health systems. Opportunities, challenges, and risks of HTM have been documented. There is a need for regional, and international harmonization of existing policies and regulations to promote this sector. The followings recommendations have been proposed: i) Identify gaps and harmonize the policies, regulations, and the laws in herbal and traditional medicine in the region, ii) Advance research and development (on efficacy, safety, and standards and best practices) on herbal and traditional medicine in general and COVID-19, iii) Mobilize funds for research and development on HTM, iv) Establish a comprehensive framework of collaboration of states partners in the promotion of HTM.

South Sudan

In conclusion, South Sudan reported extensive use of HTM, but the documentation of indigenous knowledge is still a challenge. There was no collaboration between medical doctors and traditional medicine practitioners, concerning the handling of health issues in the country. Despite the drug and food control authority (DFCA) department at the Ministry of Health, no regulatory body was established to govern HTM in the country. This has created a massive gap in the harmonization of Conventional and HTM in the health system. To bridge the gap, more support must be geared towards HTM research, to provide concrete scientific evidence based findings on their efficacy and safety to protect consumers' health. Communities' enlightenment on HTM use be conducted. Introduction of HTM curriculum at all the medical schools, wildfire prevention, encouragement of planting and domesticating wild medicinal plants. We need to have a policy framework to protect TM and the practitioner and ensure sustainable use. Furthermore, the establishment of HTM centre and creation of a Department/unit in the Ministry of Health, due to its high demand in the community. Training local communities and herbalists on herbal medicine formulation and GMP. This will be the source of biochemicals and will diversify the economy of the SSD and the region at large.

Tanzania

In Tanzania, HTM has a great potential in socio economic development, while utilising natural resources and locally available human resources. To tap into this opportunity, the following areas of strengthening was identified (1) research, innovation and development, (2) awareness creation on the existence of several regulatory frameworks for traditional medicines in the country, (3) regulation of Herbal and Traditional Medicine Practitioners through registering their practices in their association, and (4) Production: Capacity building of small scale manufacturers of herbal medicines to adhere to national and global manufacturing standards for herbal medicines.

Uganda

It is clear that traditional medicine continues to play a significant role in the healthcare of many Ugandans. In this regard, the passing of the traditional and complementary medicine act, provides opportunities to legiti-

mise and monitor the practice of traditional medicine in Uganda and, most importantly, a step towards integrating traditional and complementary medicine in the primary healthcare system of Uganda. Nevertheless, a number of challenges still exist in the traditional and complementary medicine sector, which when addressed, will streamline and improve the traditional and complementary medicine sector to provide quality, safe and effective products on the market. In this way, the Ugandan economy will benefit from exports of high quality herbal medicines and also from gainful employment from both small and large scale enterprises dealing in herbal products.

Recommendations

1. The fact that regulation and mainstreaming the traditional medicine sector is hinged on the establishment of the National Council of Traditional and Complementary Medicine Practitioners. The process leading to the formation of this council should be expedited. This will facilitate regulation, monitoring and development of the traditional and complementary medicine sector of Uganda.
2. Traditional medicine practitioners need to be educated and informed about the existing policies and legal frameworks that deal with benefit sharing and intellectual property (IP) rights and patenting. This may help in making them feel confident and free to share their knowledge about the practice.
3. Establishment of herbal gardens is a very key and lasting solution to having a sustainable and reliable source and supply of raw materials for herbal medicine, thus conserving the environment but also creating employment opportunities for traditional medicine small scale farmers. Important to note is that there is a need to emphasize domestication and genetic improvement of medicinal plants; this will help in provision of uniform and high quality raw materials through processes such as biotechnology.
4. There is a need to recognize and invest in traditional medicine by allocating financial resources to the traditional medicine sector through public-private partnerships. This will facilitate the implementation of plans by the sector players to improve the quality, safety, efficacy, volume and sustainability of herbal medicinal production and use.
5. There is a need to invest in capacity building of traditional medicine practitioners in Good agricultural practices (GAP), Good manufacturing practices (GMP), regulation of practice, biodiversity conservation and entrepreneurship skills such as marketing, branding and packaging. This will facilitate value addition and production of high quality traditional and complementary medicine products in Uganda.
6. There is a need to engage the traditional medicine practitioners with the view of making them appreciate the good and bad practices in their context so that they can help in instituting a standard and regulatory environment for enforcing best practices and punishing bad practices. Additionally, there is need to Build confidence in the herbalists that their knowledge will be preserved and they will perpetually benefit from it
7. There is need to streamline the herbal medicine sector by establishing proper channels right from farmers to the traditional medicine herbalists /TMPs, Scientists/ researchers, to medical doctors for clinical trials to regulators to production and then finally consumers
8. Research is very key in advancing and improving the traditional medicine sector especially in addressing the issues relating to quality safety and efficacy of traditional medicines. In this regard the government and private sector need to prioritize provision of funding and support to relevant research on herbal medicine and practices.
9. One of the challenges regarding the traditional medicine in Uganda is limited documentation about traditional medicines. There is a need to set up information centres and documentation on various herbal remedies and how effective they are in treating the diseases/ conditions. *"We need to have all the evidence, testimonies for all those who have used these herbal medicines documented, not necessarily clinical trials, which takes billions of money, for example China, and India, have documented their traditional medicines well"* Said Francis at an HTM workshop, 2021.
10. There is need to promote GMP manufactured HTM products by ensuring that only notified/registered products manufactured under NDA inspected and approved premises are sold to the public. Products

made by traditional medicine practitioners in their practice premises may only be sold by them directly to their clients known to them.

8 STUDY DATA MANAGEMENT PLAN

Data Security: The consultant will ensure that during all phases of the diagnostic study, data will be secured through daily backup on internal (laptop) and external (hard disk) devices.

Personal Security: persons interviewed will be briefed before the interview and informed that they can exit the interview at any time, without penalty or negative effect afterwards. If anonymity is requested, it will be ensured that the data in the final report cannot be traced back to an individual.

Raw Data (Questionnaire, field notes, data sets): This data will be available to the client on request and/or kept at PHARMBIOTRAC records for a period of 5 years.

9 INFECTION CONTROL – COVID-19

Vaccination: The lead consultants were fully vaccinated against COVID-19 and hold a government of Uganda issued certificate of vaccination.

Personal Protective Equipment: The team provided an adequate amount of disposable surgical masks to the workshop participants and used a Uganda National Bureau Certified (UNBS) certified alcohol based hand sanitizer for themselves and the respondents during face to face key informant interviews and focus group discussions.

Meeting arrangements: The venues were selected in hotels with adequate space for social distancing and The participants had free access to disposable surgical facemasks and hand sanitisers, which were utilised by participants at their will.

Local Standard Operating procedure (SOP) Guidelines: During the Face to face interaction, the local guidelines for each country will be studied upfront and strictly observed by our team during travel and during face to face engagements with stakeholders and the client's team.

Travel Health regulations: The team will observe the country specific travel regulations, including PCR Testing, prior travel where needed, acquiring travel permits. During the face to face interaction in October 2021, no lockdowns were in place in all 6 countries.

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ANNEX 1 ACTION CATALOGUE

Short and Long-term Interventions to strengthening the HTM in East Africa.

BURUNDI

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Regulatory Body	<ul style="list-style-type: none"> Establish a regulatory framework for HTM Provide scholarships for training Benchmarking existing Regulatory Bodies with HTM Developing country strategy on HTM (WHO) guidelines 	<ul style="list-style-type: none"> Staff members Regulatory body Leadership 	<p>Universities offering relevant courses</p> <p>National Commission for Science, Technology and Innovation, Burundi www.cnsti.bi</p> <p>Burundi National Medicines Regulatory Authority (ABREMA)</p>
University	<ul style="list-style-type: none"> Establishing a department of departments a) research funding, b) exchanges within the region, c) curriculum development for course modules, d) upgrading research laboratory facilities to cover specific analytic and production aspects of HTM 	<ul style="list-style-type: none"> Academic staff Researchers Undergraduates Postgraduates Laboratory personnel Interested members of the Batwa community 	<p>Experts from Burundi and the EAC partner States Universities offering relevant courses and technical support in programme development</p>
HTM Practitioners	<ul style="list-style-type: none"> Identify HTP practitioners Capacity building on GMP, (GWP), (GAP) and product formulation development. Facilitating forming associations and networks among HTM practitioners 	<ul style="list-style-type: none"> Local community HTM Practitioners Leadership of indigenous peoples organisations 	<p>Universities offering relevant courses</p> <p>Local NGOs/development partners</p> <p>Burundi Association of Traditional Practitioners (ATRADIBU)</p> <p>Unite for the Promotion of Batwa (UNIPROBA)</p>

KENYA

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Cultural attitudes	<ul style="list-style-type: none"> Create awareness on the importance of Herbal medicines and how they were used in the past. Create a positive change in attitude among the youth and young people towards cultural knowledge and HTMs. It should be made clear that the indigenous knowledge is what made Africans survive till the time of colonialism before it was outlawed. HTMs practitioners should also be appreciated as alternative medical practitioners. As people who took time to learn and practise to hone their knowledge. 	<ul style="list-style-type: none"> Youth Political leaders Health care professionals Students in institutions of higher learning 	<p>HTMs practitioners</p> <p>Institutions of Higher learning</p> <p>Ministry of Health</p> <p>Ministry of Culture and Sports</p>
Legislative	<ul style="list-style-type: none"> Despite laws and regulations and existing policies being available little or no attention is paid to them. There should be a way or a board that follows up these policies and regulations to assist the beneficiaries. There should be legislation safeguarding knowledge in a community and even individuals ensuring that any benefits are enjoyed by the respective contributors legislation that will protect HTMs Practitioners from unethical researchers and companies 	<ul style="list-style-type: none"> HTMs Practitioners Communities that are the custodians of indigenous knowledge Research institutions 	<p>The Executive arm of the Government</p> <p>The legislative arm of the Government</p> <p>Ministry of Health</p>
Environment	<ul style="list-style-type: none"> Protection of indigenous plant species especially the medicinal ones protection of the environment thus preventing original habitats of certain plants from being altered which if this happens may permanently prevent the growth of the plant Encourage alternative methods of obtaining the medicinal plants. That is instead of foraging from forests people should be able to domesticate the plants and grow them in their farms. 	<ul style="list-style-type: none"> Environmentalists Farmers HTMs Practitioners Farmers Researchers 	<p>Environmentalists</p> <p>Kenya Forestry Research Institute</p> <p>National environmental management agency</p> <p>Ministry of environment</p>
IP and Patenting	<ul style="list-style-type: none"> Despite there being laws concerning IP, very little has been done to safeguard indigenous knowledge and the communities that possess it. Creation of laws on patenting 	<ul style="list-style-type: none"> Researchers HTMs practitioners Indigenous Communities 	<p>Local politicians</p> <p>Ministry of sports and culture</p> <p>Historians</p>

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
			HTMs practitioners Ministry of Health
Research and Development	<ul style="list-style-type: none"> More input to be made in terms of funding for research and development of research findings Proper dissemination forums that are inclusive of all stakeholders More incentives to do research in HTMs. A database of all existing knowledge in terms of medicinal plants and what they cure or manage should be created. It should also contain the scientific and local names of the species in all languages per the region 	<ul style="list-style-type: none"> Researchers Pharmaceuticals HTMs practitioners 	Ministry of Health National Research Fund Pharmaceuticals Research institutions Higher learning institutions
Registration and regulatory bodies	<ul style="list-style-type: none"> Registration of HTMs Practitioners should be done under ministry of Health A regulatory body concerned with HTMs should be formed so as to regulate the practice and create a curriculum that will assist in passing on skills to the upcoming practitioners Registration of HTMs that are scientifically proven to be effective should be carried out so that further research could be done and at the same time the plant will be protected from unethical researchers that most times are not from the region. 	<ul style="list-style-type: none"> HTMs Practitioners Community 	Ministry of Sports and culture HTMs Practitioners Pharmacy and Poisons board Kenya Industrial Property Institute
Professional associations	<ul style="list-style-type: none"> HTMs Practitioners should be encouraged to start their own professional associations so that their voice can also be heard when it comes to policy making especially in the Medical field. This may also prevent illegal or unskilled practitioners from giving out illegal concoctions as medication 	<ul style="list-style-type: none"> HTMs Practitioners Consumers 	Ministry of health HTMs Practitioners Politicians
Herbal medicine production	<ul style="list-style-type: none"> This stems from growth to production and distribution and consumption. There should be standards set to ensure safety, efficacy formulations and doses taken are well within the safe levels. The products being produced should be well packaged and in a form that is stable in that their potency is still valid for a given period of time 	<ul style="list-style-type: none"> Farmers Pharmaceuticals HTMs practitioners 	Kenya Pharmacy and Poisons Board Ministry of health Traditional medicine department Research institutes such as KEMRI, IPR

RWANDA

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Legislation	<ul style="list-style-type: none"> Law and regulations of Herbal and Traditional Medicines 	<ul style="list-style-type: none"> Rwanda Association of HTM practitioners (AGA Rwanda Network) 	Policy makers (Ministry of Health and affiliated Institutions), Regulatory Authorities (Rwanda Food and Drug Authority, Rwanda Biomedical Center) Parliament
Registration and Regulation of HTMs	<ul style="list-style-type: none"> Train staff and HTM practitioners of good practices Setting laboratory facilities for HTMs analysis Sensitization 	<ul style="list-style-type: none"> Staff Members HTM practitioners Biomedical Practitioners Academics 	Rwanda RDA, NIRDA, RBC, Universities, Rwanda Association of HTM practitioners (AGA Rwanda Network)
IP and Treaties	<ul style="list-style-type: none"> Register HTM products and Knowledge Train HTM about IP and treaties 	<ul style="list-style-type: none"> HTM practitioners 	Rwanda Association of HTM practitioners (AGA Rwanda Network)
Research and development	<ul style="list-style-type: none"> Identify and publish best practices of HTMs Advise on laws and Regulation of HTM 	<ul style="list-style-type: none"> Academicians and researchers Students 	University of Rwanda (UR), Rwanda RDA, RBC

SOUTH SUDAN

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Regulatory Body	<ul style="list-style-type: none"> Train staff in aspects of THM (Pharmacognosy, Ethnobotany, Medicinal plant cultivation, Toxicology) Provide scholarships for training Benchmarking existing Regulatory Bodies with HTM Developing country strategy on HTM (WHO) guidelines 	<ul style="list-style-type: none"> Staff members Interested graduate (with bonding) Leadership 	Universities offering relevant courses NDA Uganda

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
University	<ul style="list-style-type: none"> Strengthening existing departments at Juba University, University of Bahr el Ghazal and University of Upper Nile, a) research funding, b) exchanges within the region, c) curriculum development for course modules, d) upgrading research laboratory facilities to cover specific analytic and production aspects of HTM 	<ul style="list-style-type: none"> Academic staff Researchers Undergraduates Postgraduates Laboratory personnel 	Experts from SSD and the EAC partner States Universities offering relevant courses and technical support in programme development
TM Practitioners	<ul style="list-style-type: none"> Identify HTP practitioners Capacity building on GMP, (GWP), (GAP) and product formulation development. Facilitating forming associations and networks among HTM practitioners 	<ul style="list-style-type: none"> Local community 	<p>Universities offering relevant courses</p> <p>Local NGOs/development partners</p>
Establishment of HTM Centre	<ul style="list-style-type: none"> Train staff in aspects of THM (Pharmacognosy, Ethnobotany, Medicinal plant cultivation, Toxicology) Provide scholarships for training in HTM cadre for academia, regulatory, production Train Local community on the GMP, GWP, GAP and value addition training on traditional medicine. Identify all the medicinal plants Conservation of TM 	<ul style="list-style-type: none"> Local community Staff members Interested graduate (with bonding) 	<p>Universities offering relevant courses</p> <p>University willing to host HTM centre of excellence</p>

TANZANIA

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Manufacturing	<ul style="list-style-type: none"> Training on cGMP adherence Capital mobilization 	<ul style="list-style-type: none"> Herbal medicine manufacturers 	Government Financial institutions
Domestication of herbal species	<ul style="list-style-type: none"> Promote cultivation of commonly used herbal plants Demonstrate the economic benefit of herbal medicine cultivation 	<ul style="list-style-type: none"> Farmers 	Manufacturers of herbal medicines Ministry of Agriculture Sokoine University of Agriculture
Benefit sharing	<ul style="list-style-type: none"> Capacity building of innovators to claim their rights of benefit sharing 	<ul style="list-style-type: none"> Innovators 	IP institutions such as BRELA
Research and Development	<ul style="list-style-type: none"> Increase domestic funding for traditional medicine research 	<ul style="list-style-type: none"> Scientists Farmers Manufacturers 	Government developmental partners.

UGANDA

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Policy	<ul style="list-style-type: none"> Expedite formation of the T&CM council 	<ul style="list-style-type: none"> Traditional medicine practitioners public 	Ministry of Health
IP	<ul style="list-style-type: none"> educate THPs on legal frameworks for protection of their knowledge and innovations 	<ul style="list-style-type: none"> THPs 	URSB, NDA, MoH
Raw material Supply	<ul style="list-style-type: none"> Establish commercial gardens for medicinal plants 	<ul style="list-style-type: none"> farmers 	Ministry of Agriculture, National Forest Authority
Private-public partnership	<ul style="list-style-type: none"> financial support private sector-University/Research Institution Collaboration 	<ul style="list-style-type: none"> Manufacturers Researchers innovators 	Ministry of Finance Ministry of Trade
Education and Training	<ul style="list-style-type: none"> Introduce formal training and certification programs for practitioners 	<ul style="list-style-type: none"> Existing practitioners High school leavers Health workers 	Ministry of Education Ministry of Health

Area of intervention	Actions	Targeted groups / direct beneficiaries	Suggested stakeholder/s
Value chain	<ul style="list-style-type: none"> Organise the value chain from farm to shelf and clinics 	<ul style="list-style-type: none"> Farmers Manufacturers Suppliers Prescribers Dispensers etc. 	National Drug Authority Council of T &CM
Documentation and approvals	<ul style="list-style-type: none"> improve documentation of safety, quality and efficacy 	<ul style="list-style-type: none"> Reacher Manufacturers Practitioners 	NDA Councils

ANNEX 2 CASE STUDIES / BEST PRACTICE PROJECTS

MULTI COUNTRY

Name	Bioinnovate Project: Plant extracts to prevent malaria in Eastern Africa
Contact person / owner/ leader	Prof. Tatien Masharabu - University of Burundi, Burundi
Contact	Biology Department, University of Burundi, P.O. Box 1550 Bujumbura, Tel: +257-799-87605, masharabin@yahoo.fr
Brief about the practice/ project/institution	<ul style="list-style-type: none"> This project harnesses locally available resources to produce value-added malaria repellent products that are environmentally friendly thereby contributing to malaria prevention in the eastern Africa region. In so doing, various opportunities to build a locally based value chain will be created.
Product / Innovation	<ul style="list-style-type: none"> Using essential oils extracted from catnip and other plant-based species to come up with mosquito repellents in the form of soaps, sprays and lotions
Benefit to HTM development	<ul style="list-style-type: none"> Is a natural product based on scientific research and can play a valuable role in the society gaining competence in the value of HTM Creating income sources utilizing locally available materials
Partners involved	University of Burundi, Burundi, Karire Products Ltd, Burundi, Gudie Leisure Farm, Uganda, Jicho Communicative Ltd, Tanzania
Unique value proposition	University - Private sector partnership across 3 countries in East Africa

ANNEX 3 STAKEHOLDERS MATRIX/PARTICIPANTS

The list provides key stakeholders in the 6 east African countries and selected other key stakeholders.

BURUNDI

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policymakers				
1	Ms. Joselyne Miburo	Head of the department in charge of the promotion of traditional medicine, Burundian Ministry of Public Health	Mob: +257-79-430236 josemiburo@yahoo.fr	Promotion of traditional medicine	in Burundi 10 associations of Burundi Tradi-Practitioners
2	Dr. Nicolas Nihunga	Ministry of Public Health Director de Promotion de la Medicine Traditionnelle de l' Alimentation equilibree et del' Alimentation Naturelle a Visee Therapeutique	Mob: +257-79-566808 nicolas-nihunga@gmail.com		
3	Dr. Novat Twungumwe Ag. Executive Secretary	East African Health Research Commission (EAHRC)	Mob: +257 79 902 244 Off: +257 22 27 99 80/81 ntwungumwe@eahealth.org	Regional Health sector development	Integrating HTM in regional Health initiatives
B	Regulatory Authorities				
1	Mr. Vénant Kavuyimbo	Environmental and Community Health Expert/IDA Projects/MOH BUJUMBURA BURUNDI	Mob: +257-79-921631 +257-77-736147 kavuyimbo58@gmail.com	Public health	Facilitate the work on a national level.
2	Prof. Tatien Masharabu	Executive Permanent Secretary National Commission for Science, Technology and Innovation, Burundi www.cnsti.bi and Professor Biology Department University of Burundi P.O. Box 1550 Bujumbura	Off: +257-222-24873 tatien.masharabu@ub.edu.bi Alternative email: masharabin@yahoo.fr skype: tatien.masharabu	Manages a Bio-innovate Project for developing an herbal anti malaria medicine Governance of Science, Technology & Innovation	Provisions and gaps of existing Legal framework in line with this work

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
3	Mr. Ildephonse Nduwayo Director of quality control laboratory services Burundi Food and Medicines Regulatory Authority	Autorité Burundaise de Régulation des Médicaments et des Aliments (ABREMA) Burundi National Medicines Regulatory Authority (ABREMA)	Mob: +257-69-543167 dedithmbo@gmail.com Mob.: +257-79-479 229 nduwayo35@yahoo.fr Skype: nduwayo.b		Development of the THM regulatory framework
C	Biomedical Health Practitioners (Pharmacists, doctors, Nurses)				
1	Ms. Sœur Miburo Pélagie	IVURIRO RY'IMITI KAMA	Mob: +257-79-109123	Role of traditional medicine in treating diseases and prevention of covid 19	Facilitate to explain how they help patients.
1	Dr. Zacharie Ndizeye	Department of Community Medicine University of Burundi, Bujumbura Burundi	Mob: +257-79-947612 zndizeye@gmail.com	Researchers and Professor at University of Burundi department of medicine.	Cooperation in the study as Professor.
	Ms. Verena M. Stamm Founder	Fondation Stamm	Mob: +257-79 930346 Off:+257 22 22 61 38 communication@fondation-stamm.org verenast@fondation-stamm.org http://en.fondation-stamm.org/	Nurse, Producing herbal products made from Moringa Training pharmacy students in herbal medicine making	Community training centre
D	Scientists & researchers				
1	Dr. Jean Berchmans Haberisoni	OIM Bujumbura Burundi	Mob: +257-799-17710 Email?	Working with the international organization working with Migrating peoples	Giving information on how herbal medicine can help to migrate people.
2	Dr. Jérémie Ngezahayo, Mr. Léonard Hari	Centre de Recherche Universitaire en Pharmacopée et Médecine traditionnelle (CRUPHAMED),	jeremie.ngezahayo@ub.edu.bj ngezahayo@ulb.ac.be lhari@yahoo.fr	Research on medicinal plants, Natural Product Chemistry	Research collaboration in the development of herbal medicines

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		Université du Burundi, Faculté des Sciences, BP. 2700 Bujumbura,		Structure Elucidation Anti-microbials Natural Product Isolation Phytochemicals Medicinal and Pharmaceutical Chemistry Ethnopharmacology	
3	Dr. Ir. Denis Bandushubwenge	Liaison: The International Centre for Genetic Engineering and Biotechnology (ICGEB) The University of Burundi, Faculty of Agronomy and Bioengineering, P.O. Box 2940 Bujumbura, Burundi	Mob: +257-79-974274 bandushubwengedenis@yahoo.com	Conservation, Policy development	Stakeholder identification, joint project implementation
	Prof. Marie Josée Bigendako,	Faculty of Sciences at the University of Burundi (UB)	Mob: +257-79-922350 jbigendako@yahoo.fr	expert in pharmacopoeia and environment	Research and herbal medicine development
	Prof. Jacques Nkengurutse	Biology Department, Faculty of Sciences, University of Burundi	Mob: +257-61-010114 Mob: +257-79-936 875 jacques.nkengurutse@ub.edu.bi	Ethnobotany and conservation of plants (domestication)	Medicinal plant domestication, propagation and ex-situ conservation
E	Traditional medicine practitioners (Key individuals)				
1	Mr. Samusure Samsoon Baranyizigiye Jean Baptiste	Individual/Bujumbura Burundi	Mob: +257-69-720442	Traditional medicine practitioner	Bring his experience in how he can help patients by using traditional medicine.
2	Etienne Ndayishimiye	Individual/BUJUMBURA BURUNDI	Mob: +257-79-40914	Traditional medicine practitioner	Bring his experience in how he can help patients by using traditional medicine.

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
3	Mr. Abbé Léopold Mvukiye	Centre de Médecine Traditionnelle de Buta, Petit Séminaire Saint-Paul de Buta. Diocèse de Bururi. D / S 140, Bujumbura, Burundi	Mob: +257-71-556331 Mob: +257-73-82-93 abbe-mvukiye@gmail.com	Priest and HTM practitioner Co leading capacity development projects	Long experience in supplying and taking care of patients using indigenous knowledge et traditional medicine Mobilizing and organising HTM practitioners
4	Ms. Rose Nabucucu	Individual Herbalist	Mob: +257-69-540167	THM Practitioner	Participate in trainings, demonstrations
F	Producers/ processors				
2	Ms. Ginette Kari-rekinyana	Vice-Présidente/Vice-Chair Chambre fédérale de Commerce et Industrie du Burundi- CFCIB Fondatrice et directrice de l'ACECI Karire Products, SA	Mob: +257-71-174380 Mob: +257-69-348662 ginettekarire@gmail.com	Role of traditional medicine in treating diseases and prevention of COVID-19 (1) Processors (2) Policy Makers	Facilitate to explain how they help patients
I	Professional association leaders (including traditional healers Associations)				
1	Mr. Jonathan Nikora Chairperson	Reseau National des Associations des Tradipraticiens au Burundi (RNATB) Bijumbura, Burundi	Mob: +257-69-121180 nikora-jothan@gmail.com	Leadership and community mobilisation of HTM practitioners	Mobilise THM practitioners
2	Mr. Ramadhan Nyandwi	Pharmacist, Ramadhan Nyandwi Assistant Lecturer, Faculty of Medicine, University of Burundi, National coordinator, Young East African Research Scientists. East African Health Research Commission	Mob: +257-76-490427 ramadhannyandwi@yahoo.com ramadhani.nyandwi@ub.edu.bi	Pharmacology and Toxicology, Natural, Life and Bio-engineering Sciences	Safety research of HTM and Linking to Young Pharmacists and health professionals
K	Forest /Conservation Agencies/ environmentalists				

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
1	Ir Berchimas Hatungimana	Office Burundais de Protection de l'Environnement/BUJUMBURA Burundi	Mob: +257-79-812477 Obpe_burundi@obpe.bi	The role of OBPE in protection of herbal medicine	To facilitate contacts with forest dwellers
3	Mr. Gaëlle Ndayizeye	Club Environnement / University of Burundi	Mob: +257-79-534187 gael-lendayi@gmail.com	Local perceptions of forest ecosystem services	-Information on local perception -Seedling production

L	IP and Treaties				
1	Hon Emmanuel Nengo	Unissons nous pour la Promotion des Batwa UNIPROBA/ BUJUMBURA Burundi	Mob: +257-222-51351 Mob: +257-799-46578 Mob: +257-79-946578/75 946578 emmanengo@yahoo.fr	Indigenous peoples	To associate IPs as holders of traditional knowledge
2	Hon Liberate Nicayenzi	Leader des Femmes Batwa (Femmes Batwa)	Off: +257-222-51351, Mob: +257-799-25648 liberateni@yahoo.fr	Indigenous peoples	To associate IPs as holders of traditional knowledge
M	Pharmaceutical companies				
1	Ms. Mamta Singh, Managing Director	Shamchem Pharmaceuticals Ltd Airport Road, P.O. Box 2024, Bujumbura, Burundi	Off: +257 2224-5806 contact@siphar.bi		Burundi has only 1 Pharmaceutical Producer (allopathic)
N	Others (please specify)				
1	Mr. Michel Comlan Ogou +257-79-950200, michel.ogou@undp.org	Dr Xavier Crespin, +257 79 98 10 00, cxa- vier@who.int Alternate: Dr. Simeon Bigirimana, simeon.bigirimana@undp.org	Delegated: Dr. Benoit Ndabashika benoit.ndabashika@undp.org		COVID-19 COORDINATOR (United Nations) Could be interviewed as
2	Dr. Ph. Benjamin Ndayiragije	Directeur Général de la CAMEBU Ministère de la Santé Publique et de la Lutte contre le sida Chef de délégation	Mob: +257-222-87301 camebu.prequal@gmail.com prequal@camebu.net	Pharmacologie	
3	Pr. Joseph Nyandwi	Directeur Général de l'INSP Ministère de la Santé Publique et de la Lutte contre le sida Director General of National health of Public Health. Faculty of Medicine, University of Burundi, Burundi	nyandwi.joseph@insp.bi		

KENYA

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policy makers				
1	Dr. Tom Menge	Ministry of Health	Mob: +254-722-713544 tbmenge@gmail.com	HEAD OF health products and Technologies DIVISION MINISTRY OF HEALTH	
2	Dr. Pauline Duya	Traditional Medicine Division Ministry of Health	Mob: +254-713-878974 atienoduya@gmail.com		
3	Prof. Anakalo Shitandi	Kisii University P.O. Box 408- 40200 Kisii	Mob: +254-722-153494 ashitandi@kisiuniversity.ac.ke	Microbiology, administration	Policy reviews, Bioassays, Ethnobotanical surveys.
B	Regulatory Authorities				
1	Dr. Fred Siyoi	Chief Executive Officer Pharmacy and Poisons Board Kenya	Mob: +254-717-768661 fmsiyoi@pharmacy-boardke.org		
2	Dr. Jacinta Wasike	Deputy Director General Pharmacy and Poisons Board	Mob: +254-721-604440 Mob: +254-722-842153 visanju@yahoo.com		
3	Dr. Ronald Inyangala	Director Product Registration. Pharmacy and Poisons Board Kenya	Mob: +254-721-780118 inyangala-ronald@gmail.com		
4	Prof. Walter O. Oyawa PhD	Director General/CEO National Commission for Science, Technology	Off: +254-20-2630518, 4007000, 2673550 walter.oyawa@nacosti.go.ke, dg@nacosti.go.ke, oyawaw@yahoo.com		

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		and Innovation (NACOSTI) and The International Centre for Genetic Engineering and Biotechnology (ICGEB) ICGEB Appointed Governor and ICGEB Liaison Officer			
C	Biomedical Health Practitioners (Pharmacists, doctors, Nurses)				
1	Dr Atebe Rogers	Kisii University P.O. Box 408 - 40200 Kisii	Mob: +254_722-729605 rogers.atebe@kisiuniversity.ac.ke	Pharmacognosy, TM, Pharmacology	Ethnobotanical surveys, Pharmacological assays, Lead compounds elucidation
2	Dr. Jennifer Akinyi Orwa	Chief Research Officer and Ag. Director CTMDR Kenya Medical Research Institute Center for Traditional Medicine and Drug Research P.O. Box 54840-00200 Nairobi, Kenya	Off.: +254-20-2722541 Mob: +254-722-700864 jorwa@kemri.org jenorwa@yahoo.co.uk	Pharmacognosy, TM, Pharmacology Medicinal and Biomolecular Chemistry	R&D in HTM drug discovery, safety and drug development
D	Scientists & researchers				
1	Dr. James Kimotho	Kenya Medical Research	Mob: +254-722-243365 jhkimotho@kemri.org		R&D in drug discovery,

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		Institute Product Unit			safety and drug development
2	Dr. Eric O. Omwenga	Kisii University P.O. Box 408- 40200 Kisii	Mob: +254-725-806 875 omorieric@gmail.com	Microbiology, ethnopharmacology, TM, Nanobiotechnology	Bioassays, ethnobotanical surveys, possible means of improving lead compounds delivery to microbes and mammalian cells
3	Dr. Atunga Nyachio	Institute of primate research	Mob: +254-724-306688 anyachio@yahoo.com	Microbiology, Molecular biology,	Policy reviews, Bioassays, ethnobotanical surveys
4	Beth Khayeli Nyamanga	University of Kabianga	Mob: +254-725-635159 bkhayeli@gmail.com	Microbiology (Virology)	
E	Traditional medicine practitioners (Key individuals)				
1	HDr. Henry Matonya Manwa	Bogeche Herbal Society of Kenya	Mob: +254-725-200294 Mob: +254-738-802193 bogeche-herbal@gmail.com		
F	Producers/ processors				
1	Dr. Musa Gati Magige	Makini Herbal Clinic	Mob: +254-734-510112 Mob: +254-722-510112 matokolez6@gmail.com makiniherbalclinic@gmail.com		
2	Ms. Monica Opole	Consultant Community Indigenous Knowledge Systems, Products and by products. And By Products P.O Box 66344 Nairobi, Kenya	Mob: +254-724-268484 monipole419@icloud.com		Research in the area of Community Indigenous Knowledge Systems, Products and by products.

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
G	Traders/distributors				
1	Dr. Musa Gati Magige	Makini Herbal Clinic	Mob: +254-734-510112 Mob: +254-722-510112 matokolez6@gmail.com makiniherb-alclinic@gmail.com		Collaboration with HTM practitioners
I	Professional association leaders (including traditional healers Associations)				
1	Dr. Loise Machogu	President Pharmaceutical society of Kenya	Mob: +254-734-415201 Mob: +254-705-015501 louismachogu@gmail.com		Linking to pharmaceutical actors in the country
2	Dr. Daniella Munene	CEO Pharmaceutical Society of Kenya	Mob: +254-722-333686 Mob: +254-722-817264 daniellamunene@gmail.com ceo@psk.or.ke		Linking to pharmaceutical actors in the country
K	Forest /Conservation Agencies/ environmentalists				
1	Dr. Najma Dharani	Department of Plant Sciences, Kenyatta University, P.O.BOX 43844-00100, Nairobi – Kenya	Mob: +254-722-472012 dharani.najma@ku.ac.ke ndbonsai@gmail.com	Research Scientist in Agroforestry, EthnoBotany, Ethno veterinary	Research and collaboration in Gene bank establishment, ex-situ conservation, plant identification and ethnobotanical surveys
N	Others (please specify)				
1	Dr. Stella Anyega	Kisii University P.O. Box 408- 40200 Kisii	Mob: +254-722-942919 Mob: +254-777-942919	Social Scientist, Human resource	Engagement with the communities, farmers and traditional healers
2	Dr. Holly A Ritchie	Founder, THRIVE (Kenya)	Email: hollyaritchie@yahoo.co.uk, ritchie@iss.nl; info@thriveforchange.org Mob: +254-701-778971 (Kenya), +44-790-99 6965	Research on communities, including traditional medicine	Research and community engagement with traditional medicine

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
			(UK) www.thriveforchange.org		
3	Ms. Medhin Tsehaiu, COVID-19 COORDINATOR	Dr Joshua Anino (deputy medical chief- MEDEVAC coordinator) unon-jms-medical evacuation@un.org	+254719216244, tsehaium@unaids.org	COVID-19 COORDINATOR - United Nations	Interventions related to COVID-19

RWANDA

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policy makers				
1	Dr. Daniel Ngamije	Minister of Health	dngamije@gov.rw	Emergency Medical Services Pharmaceutical services Health Facilities COVID-19 Medical Support	
2	Dr. Corneille NTIHABOSE	Head of Clinical and Public Health Services Department at Ministry of Health	Mob: +250-788-600997 cornelle.ntihabose@moh.gov.rw	The General Responsible for coordinating the overall strategic management, policy development, coordination, oversight, and evaluation of health services. Further, the Directorate is accountable for the regulation and oversight of quality health services delivered at all levels, from the community to the tertiary levels.	
3	Dr. Nathalie Umutoni	Director of Health Policies and Regulation Unit Health, MoH	Mob: +250-788-636028 nathalie.umutoni@gmail.com		

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
			nathalie.umuto nie@moh.gov. rw		
B	Regulatory Authorities				
1	Dr. Sabin Nsanzi manA/ DG	Rwanda Bio- medical Centre (RBC)	Sa- bin.nsanzi man a@rbc.gov.rw	Blood Services, Emergency, Ebola Virus Disease, Hepati- tis, HIV, AIDS and other STIs, Laboratory Services, Malaria, Maternal, Child, and Com- munity Health, Medical Dis- tribution, Medical Equipment & Technology, Medical Re- search, Mental Health, Non Communicable Diseases, Tu- berculosis, Vaccinations, Oral Care, Cancer, Disability and Injuries, Waterborne Dis- eases, Eye Care	
2	Dr. Emile Bien- venu	Rwanda Food and Drugs Au- thority	Mob: +250- 789-193529; info@rwanda fda.gov.rw	To regulate medical prod- ucts, processed foods, household products, and to- bacco and tobacco products to ensure their quality and safety so as to protect the population of Rwanda from defective, falsified and sub- standard products.	
3	Dr. Jean Baptiste Mazarati/ Chair- man Rwanda Na- tional Ethics Committee	Rwanda Na- tional Ethics Committee	Mob:: +250- 788-592004; Email: info@rne rwanda.org jma- zarati@gmail.c om +250-788- 309807	The mission of the commit- tee is to examine all the re- search projects on human body that are to be carried out in any part of Rwanda and all modifications to be affected whatever the na- tionality of the promoters, and to approve these pro- jects in the first degree.	
4	Prof Manasse Mbonye Executive Secre- tary,	National Council for Science and Technology (NCST) 13th Floor, Grand Pension Plaza	Mob: +250- 781-030798 info@ncst.gov. rw http://www.ncs t.gov.rw		

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		KN 2 Avenue, Nyarugenge - Kigali P.O. Box 2285 Kigali, Rwanda	Mob: +250-788-304263 mmbonye@gmail.com		
C	Biomedical Health Practitioners (Pharmacists, doctors, Nurses)				
1	Dr. Sada Uwase	Doctor, Kigali Dermatology Center	Mob: +250-788-641224 uwasa-dah@gmail.com		
2	Dr. Petronille MUHAWENIMANA	Internal medicine & Allergology specialist, BAHO INTERNATIONAL HOSPITAL Limited	Mob: +250-788-302172 Petronille.m@bahointernationalhospital.com		
D	Scientists & researchers				
1	Dr. Celestin Musabyimana	RBC	Mob: +250-788-597190 cemusab@gmail.com	Researcher	
2	Dr Raymond Muganga	Senior Lecturer and Researcher in biomedical and pharmaceutical sciences, particularly on medicinal plants.	+250-784-614601 mugangaray@gmail.com		
3	Prof Elias Bizuru	Director of Research and Innovation, College of Science and Technology, University of Rwanda	Mob: +250-788-576052 ebizuru@gmail.com		
4	Colores Uwamariya	Lecturer and Researcher, College of Science and Technology,	ucolores@gmail.com +250-783-811297		

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		University of Rwanda (UR)			
E	Traditional medicine practitioners (Key individuals)				
1	Jean Damascene Habineza	Ituze Herbal Medicine Clinic	Mob: +250-788-452533 habinezajeado@gmail.com		
2	Renzaho Thar-cisse	Ikizere Life Center	Mob: +250-788-329873 habinezajeado@gmail.com		
3	Abdoul HAMAN Barutwanayo		Mob: +250-786-932429 nyiramu@gmail.com		
F	Producers/ processors				
1	Mr. Bernard Rukundo	Ineza Herbal Medicine	Mob: +250-787-791461 habinezajeado@gmail.com		
2	Mr. Candidate Uwamahoro	Umwimerere Herbal Medicine	Mob: +250-786-702302 habinezajeado@gmail.com		
3	Mr. Samuel Semahame Nyakarundi	Zirumuze Cooperative	Mob: +250-788-886221 nyiramu@gmail.com	expert in general health Herbal remedies for amoeba in humans	
G	Traders/distributors				
1	Mr. Dative Maniriho	Umwimerere	Mob: +250-785-208726 habinezajeado@gmail.com		HTM value chain research and development
2	Mr. Jean Nepomuscene Bucyensenge	Ramirubuzima	Mob: +250-786-054156 habinezajeado@gmail.com		HTM value chain research and development
3	Mr. Madeleine Mukamuseri		Mob: +250-782-530772		HTM value chain research

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
			nyiramu@gmail.com		and development
4	Mr. Innocent Munyankindi		Mob: +250-788-673610 nyiramu@gmail.com		HTM value chain research and development
H	Farmers/ Growers				
1	Mr. Jean Bosco Rucyahana		Mob: +250-786-043315 habinezajeado@gmail.com		HTM value chain research and development (primary production)
2	Mr. Moussa Kayiranga		Mob: +250-785-4444777 nyiramu@gmail.com		
3	Ms. Fautine Ntampaka		Mob: +250-788-620999 nyiramu@gmail.com		
I	Professional association leaders (including traditional healers Associations)				
1	Ms. Gertrude Nyirahabineza	President, Aso-siyasiyo y'abavuzi ba gakondo mu Rwanda (Rwanda Association of Traditional Practitioners)	Mob: +250-785-094779 nyiramu@gmail.com		communicate with traditional practitioners, producers, farmers...
2	Mr. Jean Damascene Habineza	Tuzamurane	Mob: +250-786-054156 habinezajeado@gmail.com		

J	Service users (patients/ parents) / consumer associations				
1	Ms. Janviere Umutesi	Consumer	Mob: +250-783-043243 habinezajeado@gmail.com		Providing testimonials about the use of HTM
2	Mr. Jean Paul Nkurikyumukiza	Consumer	Mob: +250-789-106444 habinezajeado@gmail.com		Providing testimonials about the use of HTM
3	Mr. Willfreid Kubwayezu	Consumer	Mob: +250-785-299434 nyiramu@gmail.com		Providing testimonials about the use of HTM
K	Forest /Conservation Agencies/ environmentalists				
1	Mr. Eugene Mutangana	Conservation Management expert, Rwanda development board (RDB)	Mob: +250-788-623113 eugene.mu-tangana@rdb.rw	Conservation management	R&D in medicinal plant conservation
2	The national fund for Environment (FONERWA)	The national fund for Environment (FONERWA)	info@fonerwa.org t.mugabo@fonerwa.org		R&D in medicinal plant conservation and financing
3	Ms. Marie Claire Ndayiragije	Rwanda Environment Management Authority (REMA)	info@rema.gov.rw mndayiragije@rema.gov.rw Mob: +250-784-354151 Dalie Dukuze (Green climate fund) Mob: +250-788-888311 mdukuze@rema.gov.rw	To promote and ensure the protection of the environment and sustainable management of natural resources	R&D in medicinal plant conservation
4	Ms. Marie Laetitia Musokeye	Director of Research and Environmental Planning · REMA	Mob: +250-788-530999 lbusokeye@rema.gov.rw mlbusokeye@gmail.com		R&D in medicinal plant conservation
L	IP and Treaties				
1	Mr. Blaise Ruhima, Division Manager	Rwanda Development Board	Blaise.ruhima@rdb.rw	IP registration	Supporting implementers in filing IP
M	Pharmaceutical companies				

1	Abacus Pharma Limited	Abacus Pharma Limited	rakesh.prabhakar@abacuspharma.com Off:: +250-252-502973 Mob: +250-788-864074 Mob: +250-788-864074		R&D and industry placement
2	Phillips Pharmaceuticals (Rwanda) Limited	Phillips Pharmaceuticals (Rwanda) Limited	Mob: +250-788-743193 Mob: +250-252-503842		
N	Others (please specify)				
1	Dr. Christian Sekomo Birame	Director, National Industrial Research and Development Agency (NIRDA) Rwanda	info@nirda.gov.rw Mob: +250-780-444077 Mob: +250-782-086953	Environmental Resources	Project interventions supporting SMEs in HTM product development
2	Mr. Hubert Kageruka	HoD of laboratory services, National Industrial Research and Development Agency (NIRDA)	Mob: +250-789-152906 hubertk2@gmail.com		Works closely with traditional practitioners
3	Rwanda, Kigali Dr. Betru Tekle Woldesemayat (COVID Coordinator), Woldesemayatb@unaids.org	Alternate: Dr. Theopista Kabuteni, Kabutenit@who.int Additional: Dr. Rodrigue Kenmogne, Rodriguekenmogne83@gmail.com Additional: Josephine Uliwengu, Ulimwengu@un.org			WHO COVID Coordinator,

SOUTH SUDAN

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policy makers				
1	Dr. Samson Paul Baba	Ministry of Health, Juba, SSD	Samson_baba@yahoo.com (Bounced)	Advisor for community medicine and special programs	Research and development collaboration & community integration
2	Dr. Keidende Chong	Ministry of Health, Juba, SSD	Mob: +211-928-884621 Keidende.ma-pour@gmail.com	D/G International health coordination and Acting D/G Policy, Planning, Budget and Research	Research and development collaboration, research financing and policy development
3	Dr John Rumunu	Ministry of Health, Juba, SSD	Mob: +211-924-767490 jrumunu@yahoo.com	D/G Preventive Health Service	Research and development collaboration
4	Prof. Peter Adwok	University of Upper Nile	ottoadwok@yahoo.co.uk	Physician	Research and development collaboration
4	Dr. Simon Deng	University of Upper Nile	nyicar6@gmail.com	Dean, College of Medicine	Research and development collaboration
5	Ms. Suzy Ambrose	Ministry of Higher Education	Mob: +211-920-555052 unduwasimon@gmail.com		Research and development collaboration
17.	Mr. Jacob Amany	Ministry of Health	Mob: +211 amanyajacobmph@hotmail.com	Director For Research Ministry of health	Advancement of HTM human resources
16	Dr. Badys Joseph Amozay	Asst. Professor /Microbiology and Molecular Genetics, Juba University	Mob: +211-928-519966 jbadys@yahoo.com	Dean School of Laboratory Science	Research and development collaboration
17	Mr. Moses Mila Peter Wani	Director, Monitoring and Evaluation, Ministry of Health	Mob: +211-929-814629 mmilapwani@gmail.com	Public Health Specialist	Advancement of HTM integration in health policy
B	Regulatory Authorities				

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
1	Dr. Mawien Atem Mawien Arik	Secretary General Drug & Food Control Authority (DFCA) Juba, South Sudan	Mob: +211-923-099209 mmawienarik@gmail.com	Drug and Food Control, Quality assurance and enforcement	Collaboration in the development of HTM regulatory framework and establishing an institute
C	Biomedical Health Practitioners (Pharmacists, doctors, Nurses)				
6	Dr. Moses Tiel	University of Juba	Mob: +211-917-526666 mosestiel@gmail.com	Dean School of Pharmacy	Herbal Medicine Research and Development collaboration
7	Dr. Kenneth Lado Lino	University of Juba.	ladolojuan@gmail.com	D/Dean School of Medicine	Herbal Medicine Research and Development collaboration
8	Dr. Rose Ajak Costa	University of Juba	Mob: +211-923-095220 mapuorrore@gmail.com	Dean School of Medicine	Research and Development collaboration
9	Dr. Francis Oromao	University of Juba	Mob: +211-925-671294 oromofran-cis19@gmail.com	Lecturer	Herbal Medicine Research and Development
10	Dr. Ambrose Jubara	Bahr El Ghazal University	Mob: +211-921-778998 asjubara@gmail.com wpitia1@gmail.com	Lecturer	Herbal Medicine Research and Development
D	Scientists & researchers				
1	Mr. Alex Imba	Uganda Christian University	imbaalex1@gmail.com	MSc student	
2	Mr. Bill Gueth Kuel	Nairobi University	goanyal2009@gmail.com	PhD student	
3	Dr. Emmanuel Agwella	Wau	emmagwella@gmail.com	Ophthalmologist	
11	Mr. John Chol Ajak	Juba University	Mob: +211-911-739823 olew2001@yahoo.com	Surgeon	
5	Dr. John Suraj Ayol Deng	University of Upper Nile	john72ayol@gmail.com	PhD	R&D
G	Traders/distributors				
1	Dr. Moses Deng Malual	Director General Pharmaceutical &	Mob: +211-928-666777 mosesmalual@gmail.com	Distribution of Medicine and	Negotiating distribution of registered HTM

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		Medical Supplies, Ministry of Health Juba, South Sudan		Medical supplies	products once available
K	Forest /Conservation Agencies/ environmentalists				
1	Dr Benjamin Gabriel Apai	Sudd Institute for Research	Mob: +211-912-171635 benjaminapai@gmail.com	An environmentalist	Research on In-situ and ex-situ conservation of medicinal plants
12	Mr. Nicholas Gift Ezikiya	Ministry of Higher Education	nicholasgift157@gmail.com	An environmentalist	Research on In-situ and ex-situ conservation of medicinal plants
N	Others				
1	Mr. Paul Ekeya, ekeyap@who.int	Special Assistant: Dr. Sandra Banks, WHO, South Sudan	bankss@who.int	Operations Support & Logistics, Supply Coordinator, South Sudan	COVID-19 COORDINATOR - United Nations
2	Mr. Ghulam Farooq	United Nations Mission in South Sudan (UNMISS)	farooq2@un.org	Medical Officer	Integration of HTM in UN Health interventions
3	Mr Edward Ugo	Official from Ministry of East African Community (EAC) affairs	Edwardrienzi@gmail.com		Integration of HTM in EAC Health interventions

TANZANIA

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policymakers				
1	Dr. Paul Mhame	Acting assistant director, traditional and alternative medicine Unit. Ministry of Health, Dodoma	Mob: +255-745-882078 pmhame@yahoo.com	Research and development of THM	Strengthening government support for HTM / government engagement entry point

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
3	Dr. Ruth Suza (registrar)	Registrar for Traditional and Alternative Health Practice Council, MoH-Dodoma	Mob: +256-784-331991 ruthsuza@yahoo.com	Regulation of HTM	Strengthening regulatory framework, support in compliance of HTM practitioners to register
	Dr. Walter Macha	Medical Director Dar es Salaam City Council	Mob: +255-754-660098 w.macha@yahoo.com	Allopathic medical practice	Sensitizing medical practitioners in the role of HTM
4	Hon. Job Yustino Ndugai	Parliament, P.O. Box 9133, DAR ES SALAAM, P.O. Box 941, Dodoma. 41105	Mob: +255 762 605951/ Mob : +255 655 605951 sp@bunge.go.tz	Speaker of the National Assembly	High level lobbying for HTM integration
B	Regulatory Authorities				
1	Dr. Yonah Hebron Mwalwis Acting Director of Medical Products Control (DMC).	Tanzania Medicines and Medical Devices Authority (TMDA), Dar Es Salaam	Mob: +255-620-602653 yohah.hebron@tmda.co.tz	Medicine regulation	Facilitating integration of HTM in national regulatory framework for medicines
2	Dennis T. Mwangomo Drug Registration Officer	Tanzania Medicines and Medical Devices Authority (TMDA)	Mob: +255-782-660704 ngomodt@gmail.com denis.mwan-gomo@tmda.co.tz	Drug regulation	Formulating guideline for herbal medicine regulation
3	Nyakwesi In charge of herbal product Elias Magero Zubeda	Tanzania Bureau of Standards (TBS), Dar Es Salaam	Mob: +255-769-266317 nyakwesi.2006@yahoo.com zubedamagero@gmail.com	Quality control	Developing herbal products standards -Capacity building of small scale herbal product manufacturers
4	Mr. Paul Sonda	Local innovation registration. TMDA DSM	Mob: +255-757-402920 sondapaul@gmail.com	Local Innovation Registrar	Intellectual Property issues on NTM

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
5	Dr. Amos Muhunda Nungu, Director General,		General: +255 22 2771358 DG's Off: +255 22 277 4023 dg@costech.or.tz amos.nungu@costech.or.tz AMN: +255-222-927543		Future engagement on highest level and lobbying for more integration of traditional medicine in research
6	Dr. Bugwesa Zablun Katale Director of Research Coordination and Promotion	Tanzania Commission for Science and Technology (COSTECH) P.O. Box 4302, Ali Hassan Mwinyi Road, Kijitonyama (Sayanasi) COSTECH Building, Dar es Salaam, Tanzania	Mob: +255-784-687178 bugwesa.katale@costech.or.tz Mob: +255-624-718 014 bugwesa2002@yahoo.co.uk	Research and Development	Integrating HTM in the research agenda
C	Biomedical Health Practitioners (Pharmacists, doctors, Nurses)				
1	Dr. Faith Mdee	Mwananyamala regional referral hospital, Dar es Salaam	Mob: +255-682-924902 mdeefait@gmail.com	Patient care-diagnosing diseases	Facilitating Dialog between Allopathic and HTM practitioners
3	Mary Joseph Masingwa Nurse	Mwananyamala Regional Referral Hospital	Mob: +255-765-500552 maryjoseph01@gmail.com	General Nursing	Facilitating Dialog between Allopathic and HTM practitioners
D	Scientists & researchers				
1	Prof. Hamisi Masanja Malebo	Executive Secretary, UNESCO National Commission of the United Republic of Tanzania,	Mob: +255 762377307, hmalebo@gmail.com, hamisi.malebo@natcom.go.tz http://natcom.go.tz/	Research and Development of commercially viable herbal products	COVID-19 Medicine manufacturer Research collaboration, HTM development Human resources development

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
3	Dr. Joseph Nicolao Otieno	Institute of Traditional Medicine (ITM), Muhimbili University of Health and Allied Sciences (ITM-MUHAS) Dar Es Salaam	Mob: +255-784-412625 onicolao@haoo.co.ug	Research and Development of commercially viable herbal products	Research collaboration, HTM development Human resources development
5	Dr. Vitus Nyigo, Acting Director	National Institute for Medical Research (NIMR) NIMR-Mabibo Dar Es Salaam	Mob: +255-715-873558 nyigoo@yahoo.com	Act. Director	Traditional medicine development
6	Dr. Gabriel Michael Njau	Plant Phytologist University of Dar es Salaam at Tanzania Agriculture Research Institute	mimigabu@gmail.com	plant scientist and entomologist, ecologist, biologist, Integrated pest management	Traditional Medicine (organic pesticide development)
7	Prof. Mainen J. Moshi	Professor eremites Muhimbili University of Health and Allied Sciences (ITM-MUHAS)	Mob: +255-713-622244 gynura1955@yahoo.com	Research and development of herbal medicine Systems development	Research collaboration
8	Dr. Paul Erasto Kazyoba	Chief Research Scientist and Director of Research Coordination and Promotion National Institute for Medical Research (NIMR) Dar es Salaam	Off. +255-222121400; Mob.: +255-782320871 Mob: +255-753373520 paulkazyoba@yahoo.co.uk	Natural Products Development and Formulations	Research collaboration, coordination of large research projects
9	Samson Hilonga	Institute of Traditional Medicine (ITM)-MUHAS Dar Es Salaam	Mob: +255-765-267400 hilogas@yahoo.com	Ethnobotany and Molecular Plant Systematics	Potential Incubatee, Small Scale Producer

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
E	Traditional medicine practitioners (Key individuals)				
1	Mr. Masha	Dar es Salaam	Mob: +255-713-547210	Dar es Salaam	Contact point for other HTM practitioners
2	Mr. yahaya Kondo	Dar es Salaam	Mob: +255-714-673612	Dar es Salaam	Contact point for other HTM practitioners
3	Mr. Dula Msigala	Dar es Salaam	Mob: +255-713-407451	Dar es Salaam	Contact point for other HTM practitioners
4	Mr. Mohamed Uhondo	Dar es Salaam	Mob: +255-746-382080	Dar es Salaam	Contact point for other HTM practitioners
5	Mr. Seif Nalamba	Dar es Salaam	Mob: +255-621-001393	Dar es Salaam	Contact point for other HTM practitioners
	Othman Eliay Shem	Shirikisho la Vyama vya Waganga wa Tiba Asili na Tiba Mbadala (SHIVYATIATA) DSM, Buguruni street	Mob: +255-655-067090 pasekot@gmail.com	Dar es Salaam and producer	Contact point for other HTM practitioners
F	Producers/ processors				
1	Othman Eliay Shem	Pasekot Natural Medicine, P.O. Box 6799, Dar Es Salaam	Mob: +255-755-067090 pasekot@gmail.com	Herbal Clinic and medicine production	Potential Incubatee, Small Scale Producer
2	Judith Yombo Jackson	Dar Es Salaam	judithyombo94@gmail.com	HTM production	Potential Incubatee, Small Scale Producer
3	Rajabu Hamisi	Dar Es Salaam	Mob: +255-713-547210	HTM production	Potential Incubatee, Small Scale Producer
4	Mfuta Kamba	Dar Es Salaam	Mob: +255-748-167027	HTM production	Potential Incubatee, Small Scale Producer
5	Dr. Daniel Kamala	Director TanziFarm	Mob: +255-756-69869 Mob: +255-744-669 869	Cultivation of medicinal plants and HTM	Benchmarking large scale producer, SME support expertise

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		Dar Es Salaam, Tanzania	dkamala@yahoo.com https://www.tanzifarm.com/	product manufacturer	
G	Traders/distributors				
1	Mr. Rajabu	K/koo Shimoni-Herbal shop	Mob: +255-713-547210	herbal vendor)Vendor	Possible linkage to herbal medicine harvester/suppliers
2	Selemani Abdulrahman Haji	Herbalist, trader/producer Mnoga Herbs	Mob: +255-656-039310 Mob: +255-773-549921 finchy403@gmail.com	Asthma/Basili/Reproductive/Stomach Ulcers	Potential Incubatee, Small Scale Producer
H	Farmers/ Growers				
1	Ms. Nobuko Tsu-bak Nzulunge	Dodoma	Mob: +255-752-363943	Entrepreneur in Babab Products	Contact points to farmers
2	Lyidya Tadayo Isack	Dodoma	Mob: +255-685-849220 dungark10@gmail.com		Contact points to farmers
3	Abdallah Imamu	Tanga	Mob: +255-717-460313		Contact points to farmers
4	Salim Rajabu	Arusha-DSM	Mob: +255-766-496398		Contact points to farmers
5	David K. Dunga	DAR Mlonge Africa	Mob: +255-685-849220 dungark10@gmail.com	Moringa Farmer, Traditional Healer association leader as well	Contact points to farmers
I	Professional association leaders (including traditional healers Associations)				
1	Elifuraha Isaya Ole-Laltaika	Director Association For Law And Advocacy For Pastoralists (ALAPA)	Mob: +255-685-345704 elifuraha.laltaika@gmail.com	Indigenous Peoples rights, including traditional knowledge	Intellectual Property indigenous knowledge expert
3	Nuru Damson, Chairperson Chama Cha Waganga /	P. O. Box 61090, Dar es-Salaam, Tanzania	Mob: +255-754-3772987 damsonnuru@gmail.com		Community outreach

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
	Wakunga wa Tiba Asili wanawake Tanzania (CHAWAWAAT) Issa Ally Njoka Lungo		Mob: +255-767-364256 issaallynjoka@gmail.com		
4	Simba A. Simba Chawatiata Chama Cha Waganga Na Wakunga Wa Tiba Asilia (CHAWATIATA)	Traditional Medicine and Environmental Protection Organization (TRAMEPRO)	asekot@gmail.com	Conservation of medicinal plants, community organisation	Collaboration in the area of conservation of HTM plants, community outreach
J	Service users (patients/ parents) / consumer associations				
1	Meta Msafiri	COVID patient used herbal	+255-653-842234 metamsafiri@gmail.com	Used herbal medicine for COVID-19 treatment	Can support researchers in community outreach
K	Forest /Conservation Agencies/ environmentalists				
1	Dr. Edwin Shunda	Forester and Herbalist Ngulwi Community Development Initiative (NGUCODI), Dar es Salaam, Tanzania	Tel: +255-754 318638 WA Mob: +255-715-318638 Mob: +255-787-318638 eshunda_2000@yahoo.com	Conservation and Sustainable Utilization of Medicinal and Aromatic Plants	Research and development cooperation, sustainable production, and harvesting of HTM plants
2	Leah Haule	Institut für Traditionelle Medizin, P.O. Box 65001, Dar es Salaam, Tanzania	Mob: +255-779-828428	Forester and Herbalist	Joint Research in medicinal plant conservation
3	Dr. Ester F. Mvungi	Department of Botany, College of Natural and Applied Sciences of the University of Dar es Salaam, Tanzania	Mob: +255-754-7737664 emvungi@udsm.ac.tz estnacky@gmail.com	Botanist	Identification of medicinal plants and conservation
L	IP and Treaties				

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
1	Dr. Kijakazi O. Mashoto	National Institute for Medical Research (NIMR)	Mob: +255-784-601074 mashoto42@gmail.com mashoto@yahoo.com	Public Health, Epidemiology, Dentistry	Research collaboration
M	Pharmaceutical companies				
1	Ms. Saswati Roy	Production Manager Saswati Masoodaya, Mansoor Daya Chemicals Limited, Dar es Salaam	Mob: +255-684-455489 saswatiroy700052@gmail.com	R&D cum Production Manager - Ayurvedic & Herbal Medicine at a Leading	Expertise for entrepreneurs training and mentoring,
2	Nitin Menon CEO	Elven Agri Company Ltd P.O. Box 19716 Mikocheni B, Light Industry Area	Mob: +255-746-941961 Off: +255-22-2771075 n.menon@elvenagri.com, https://elvenagri.co.tz/	Herbal Farming, Processing final products and exporter	Expertise for entrepreneurs training and mentoring, Benchmarking large producer Benchmarking export level HTM production
N	Others (please specify)				
2	Dr. Tigest Ketsela,	Zlatan Milisic, zlatan.milisic@un.org	ketselat@who.int ketselat@afro.who.int	Potential of integrating HTM in COVID response	COVID-19 COORDINATOR - United Nations

UGANDA

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policy makers				
1	Mr. Julius Kabusere	Ministry of Health	Mob: +256-779-109426 serejulius@yahoo.com	Principal Policy Analyst	

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
2	Dr. Joseph Okware	Commissioner for Quality Assurance Ministry of Health	Mob: +256-772-405094 okwarej@yahoo.com	Directorate of Health Governance and Regulation	Regulatory framework,
3	Dr. George Upenyitho Dugumu	Commissioner of Community Health Ministry of Health	up-entho.george@gmail.com dgugum@yahoo.co.uk	Community Health Public Health	Community outreach, policy development
4	Mr. Ismail Barugahara	Uganda, Uganda National Council for Science and Technology (UNCST)	Off: +256-414-705500 Mob: +256-772-420468 ibarugahara@uncst.go.ug	Science, Technology and Policy Coordination Division	Research collaboration, Research ethics approval
5	Dr. Neville Okuna Oteba	Commissioner Department of Pharmaceuticals & Natural Medicines Ministry of Health	Mob: +256-772-619895 nokuna6@gmail.com	TM regulation, development of TM	Strengthening regulatory framework and enforcement
B	Regulatory Authorities				
1	Mr. Mutyaba Michael Romeo	National Drug Authority Plot 46-48 Lumumba Avenue, P.O Box 23096, Kampala - Uganda	Off: +256-417-788101 ndaug@nda.or.ug Mutyaba@hotmail.com , rmutyaba@nda.or.ug Mob: +256-712-615899 , Mob: +256-700-638414	Product Quality and Safety Product Assessment & registration Manager TCM and health products	Programs for registration of HTM and strengthening regulatory framework
2	Ms. Joselyn Biira Mwine	Uganda National Bureau of Standards (UNBS)	Mob: +256-417-333250 info@unbs.go.ug	Product Quality and Safety	Developing new standards, monographs
C	Biomedical Health Practitioners (Pharmacists, doctors, Nurses)				
1	Dr. Daniel Izimba	Ankole Hospital	Mob: +256-701-620125	Medical Doctor	Link to Allopathic practitioners

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
2	Mr. Bruhan Kagwa	Makerere University	Mob: +256-773-179240 kbmu-joona@gmail.com	Pharmaceutical Chemistry Pharmacognosy	Research in HTM product development
3	Mr. David Ekau	Springs Pharmacy Ltd.	Mob: +256-701-256473 ekauda-vid@gmail.com	Private pharmacy	Distribution of registered herbal medicine
4	Dr. Ivan Kambugu	Mubende Hospital	Mob: +256-781-492638	Government	Link to Allopathic practitioners
5	Ms. Beatrice Odongkara Mpora	Gulu University	Mob: +256-781-287754 beachristo2003@yahoo.com	Endocrinology & Diabetes	Research collaboration
6	Dr. Alice Veronica Lamwaka	Gulu University	Mob: +256-772-588078 lamalicev@yahoo.com	lead researcher and inventor of the Covilyce1 herbal medicine – COVID-19 herbal remedy	Research collaboration
D	Scientists & researchers				
1	Dr. Pakoyo Fadhiru Kamba	Dean of School of Health Sciences, Makerere University	Mob: +256-777-717481, kambaf2000@yahoo.com	Health Sciences	Research collaboration
2	Dr. Eunice Apio Olet	Mbarara University of Science and Technology	Mob: +256-774-550057 eolet@must.ac.ug	Conservation biology, ecological botany, landscape ecology, management of natural resources, ethnobotany and soil science	Research collaboration including ex-situ conservation, gene bank establishment, ethnobotanical surveys and identification
3	Dr. Francis Omujal	Natural Chemotherapeutics Research Institute (NCRI), Wandegaya, Uganda	Mob: +256-772-625055 fomujal@gmail.com	Natural Products Chemistry	R&D in HTM analysis and product development
4	Dr. Duncan Crispin Ssesazi	Mbarara University of Science and Technology	Mob: +256-706-215215	Pharmaceutical Science	R&D in HTM analysis and

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
			dsesaazi@ya-hoo.com		product development
5	Mr. Richard Komakech	Natural Chemotherapeutics Research Institute (NCRI), Wandegaya, Uganda	Mob: +256-772776729	Research	R&D in HTM Clinical Trials and product development
6	Dr. Moses Andama	Busitema University, Tororo	Mob: +256-777-058371	Natural Products Chemistry, Nano medicine, computer aided drug design	Research in nanoparticle drug delivery systems to enhance therapeutic efficacy of natural products
7	Godwin Anywar	Makerere University, Kampala	Mob: +256-782983410	University	
8	Prof. Dr. Charles Wambebe	Independent expert (Based in Uganda/USA)	Mob: +256-757-006969 tsados@gmail.com wambebes@ib-rinst.org	Developed a herbal remedies for Sickle cell disease, advisor for TM at WHO	
9	Prof. Patrick Engeu Ogwang	Jena Herbals (U) Limited Plot 11, Walnut Avenue, Akright City, Entebbe Road, Wakiso	Tel: +256 779 617612 Tel: +256 756 299255 Email: pogwang@must.ac.ug pe7321@gmail.com	Production, Product development,	Teaching, PPP, research collaboration. Student and practitioner internship
	Prof. Catherine Alum Hoppers Odora	Gulu University	cohop-pers@gmail.com	Traditional Knowledge and Community Intellectual Property Rights.	
	Prof. Paul Waako	Vice Chancellor and Member of the Natural Products and Drugs Discovery Research Group (BUNaPreG) Busitema University	Tel/WA: +256-772-468458 paulwaako@ya-hoo.com vc@adm.busitema.ac.ug	Pharmacognosy Natural Medicine Pharmaceuticals	Teaching, PPP, research collaboration. Student and practitioner internship

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
E	Traditional medicine practitioners (Key individuals)				
1	Dr. Sekagya Yahaya Hills	President Promoting of Traditional Medicine (PROMETRA-Uganda) Dr. Sekagya Institute of Traditional Medicine P.O. Box: 16465, Kampala, Uganda	Mob: +256-772-403900 ysekagya@gmail.com	Traditional Medicine, training and community outreach Traditional Medicine, production, training and community outreach	Hosting THM practitioner training Demonstration site for community outreach
2	Haji Lutakoma	Chair Uganda herbalist	Mob: +256-702538794	Traditional Medicine	
3	Prof Abdul Karim Musasizi	General secretary Nacotha	Mob: +256-705112425	Traditional medicine	
4	Dr Prince	Aloesha	Mob: +256-752626665	Traditional medicine	
5	Dr Mulidamu		Mob: +256-783258487		
11	Nuulu Nabagereka		Mob: +256-759933081		
12	Ann Pearl		Mob: +256-784278920		
13	Juliet Odoch	gulu	Mob: +256-772671160	Herbalist	
	Dr. Jjuuko Ndawula	International Institute of Alternative and Complementary Medicine (I.I.A.C.M) Wakiso District. P.O. Box 28587, Kampala, Uganda	Mob: +256-701-637735 Mob: +256-702-111110 Mob: +256-772-637735 iiacm@yahoo.com	Complementary medicine, including traditional medicine, Medical Practitioner	Hosting THM practitioner training Demonstration site for community outreach
F	Producers/ processors				
1	Ms. Biggi Hellen Nyilak	Kampala	Mob: +256-755293211	Herbal medicine	
2	Don Patrick Bugingo Managing Director	Aloesha Organic Natural Health Product	Mob: +256-700-796129 bugingopatrick33@gmail.com	Herbal medicine	

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
	Dr. Kawooya Francis, PharmD, MPS, Production manager		Mob: +256-704741942 ka-wooyafr26@gmail.com		
3	Mr. Stephen Lutoti	Director, Eloipharm (U) Ltd	Mob: +256-782-764180 lutoti82@gmail.com	Herbal medicine producer, owner of a Pharmacy	
4	Prof. Patrick Engeu Ogwang	Jena Herbals (U) Limited Plot 11, Walnut Avenue, Akright City, Entebbe Road, Wakiso	Mob: +256 779 617612 Mob: +256 756 299255 pogwang@must.ac.ug pe7321@gmail.com	Production, Product development,	Teaching, PPP, research collaboration. Student and practitioner internship
G	Traders/distributors				
1	Mr. Silivano Nuwagaba	Pharmacy	Mob: +256-781-090152	Trade of Pharmaceuticals	
2	Mr. Ivan Kawah	Herbal Medicine outlet	Mob: +256-785-458826	Trade of Herbal Products	
3	Mr. Patrick (Aisha Nakasujja)	Herbal medicine	Mob: +256-704-741942	Trade of Herbal Products	
4	Ms. Matia Lwanga Kalunda	Owino	Mob: +255-772-870883	Trade of Herbal Products	
H	Farmers/ Growers				
1	Mr. Ephraim Tumwujukye	Rukararwe	rukarakarwep-wrd@gmail.com Mob: +256701086722	Growing medicinal plants	
2	Mr. Frank Musika	Kabale	Mob: +256-782-962257	Growing medicinal plants	
3	Ms. Biggi Hellen Nyilak	Kampala	Mob: +256-755-293211	Growing medicinal plants	
4	Ms. Juliet Odoch	Gulu	Mob: +256-772-671160	Growing medicinal plants	
I	Professional association leaders (including traditional healers Associations)				
1	Dr. Opio Samuel	Secretary of Pharmaceutical Society of Uganda (PSU)	psupc@psu.or.ug	Quality and use of pharmaceuticals	Industry linkage and quality assurance

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
			Off: +256-414-348796		capacity building
2	Assoc. Prof. Robinson Ssebuufu	Uganda Medical and Dental Practitioners Council (UMDPC)	Off: +256-414-345844	Inspection, Quality Assurance and Research	Research collaboration, outreach among allopathic health practitioners
3	Dr. Sekagya Yahaya Hills	President Promoting of Traditional Medicine (PROMETRA-Uganda) Dr. Sekagya Institute of Traditional Medicine P.O. Box: 16465, Kampala, Uganda	Mob: +256-772-403900 prometrauganda@gmail.com ysekagya@gmail.com	Traditional Medicine, production, training and community outreach	R&D in HTM, community outreach, hosting researchers and interns
	Mr. Abdul-Kharim Musaasizi	Secretary General National Council of Traditional Healers and Herbalist Association (NACOTHA) P.O. Box 7527, Kampala, Uganda	Mob: +256-772-698761 Mob: +256-705-112425 Mob: +256-700-698761 dr.jbkm@gmail.com	Mobilizing members for project interventions, registering herbalists	Mobilizing members for project interventions, facilitating project-community engagement
K	Forest /Conservation Agencies/ environmentalists				
1	National Forestry Authority (NFA)	Plot 10/20, Spring Road, P.O. Box 70863, Kampala – Uganda	Off: +256-312-264035 Off: +256-312-264036 info@nfa.go.ug	Conservation	R&D collaboration HTM plant conservation and access to biological materials
2	Uganda Wildlife Authority (UWA)	Plot 7 Kira Road, P.O.Box 3530, Kampala.	Off: +256-414-355000, Off: +256-312-355000, info@wildlife.go.ug	Conservation	R&D collaboration HTM plant conservation and access to biological materials
3	National Environment Management Authority (NEMA)	Plot 17/19/21 Jinja Road, NEMA House, Kampala, Uganda	Off: +256-414 425 068 Off: +256-414-257521 info@nema.go.ug	Conservation	R&D collaboration HTM plant conservation and access to biological materials

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
4	Dr. Willy Ngaka	National Coordinator, Centre for Lifelong Learning, Makerere University	Mob: +256-772-411304 wngaka@gmail.com	Green skilling, literacies and sustainable development.	Capacity development and outreach
L	IP and Treaties				
1	Ms. Mercy Kyomugasho Kainobwiso	Registrar General, Uganda Registration Services Bureau Past Director, Intellectual Property Directorate	+256-414-233219 Call centre +256 417 338 100 WA: +256 712 448 448 Toll free: 0800 100 006 in Uganda mercykains@yahoo.com or mkyomugasho@ursb.go.ug Email: ursb@ursb.go.ug	Intellectual Property	Guidance in , Intellectual Property for commercialisation
2	Mr. Ronald Jjagwe	Uganda, Uganda National Council for Science and Technology (UNCST)	+256 414 705500 WA/Mob: +256-782-504661, Mob: +256-704 504661 r.jaggwe@uncst.go.ug jagweron@yahoo.com	Research & Innovation	Innovation Incubation, linking to various research and development actors
3	Dr. Data Santorino	Centre for Innovations and Technology Transfer-Mbarara University of Science and Technology	Tel: +256-752-214458 WA/Tel: +256-774-500571 sdata@must.ac.ug	Innovations and Technology Transfer	Innovation incubation
M	Pharmaceutical, Cosmetic and Nutraceutical companies				
1	Jena herbals Uganda limited	Jena herbals Uganda limited	jenaproducs@gmail.com	Manufacturing of Herbal products	SME support, HTM product development Industrial intern hosting,

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
					contract manufacturing
2	Mr. Stephen Lutoti	Eloipharm Uganda Ltd.	lutoti@yahoo.com	Manufacturing of Herbal products	SME support, HTM product development Industrial intern hosting, contract manufacturing
3	Mr. Edward Kazaire	Kazire Health Products Limited Mr. Edward Nahurira Kazaire CEO Kazire Health Products Limited Plot 178 Kabale road, Mbarara, Uganda	Mob: +256-702-934766 Tel (Direct): +256-753-228251 Mob (Sec): +256-755-422792 (Justine) kazaireedward08@gmail.com	Manufacturing of Herbal products	SME support, HTM product development Industrial intern hosting, contract manufacturing
4	Mr. Salongo Kasawuli Mukasa	Chairman and Managing Director Samona Products Ltd.	Mob: +256-772-401879 info@samona.co.ug	Manufacturing of Herbal products	Contract manufacturing, SME support, HTM product development Industrial intern hosting
N	Others (please specify)				
1	Dr. Tigest Ketsela, ketselat@who.int	Zlatan Milisic, zlatan.milisic@un.org			COVID-19 COORDINATOR - United Nations

NON EAC COUNTRIES

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
A	Policy makers				
1	Dr. Kroa Éhoulé	Directeur Coordonnateur du Programme National de Promotion de la Médecine Traditionnelle,	Off: +225-05-688623 Off: +225-20-332781	National Programme of Tradi-	R&D in HTM product development

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		Côte d'Ivoire, Chercheur à l'Institut National de Santé Publique (INSP), Côte d'Ivoire	ekroa2002@yahoo.fr Pnpmt_ci@yahoo.fr www.pnpmt-ci.org	tional Medicine Promotion	National project coordination
2	Mr. Mashood Lawal Oluku	Director- Traditional Medicine Development, Food and Drug Services Department, Federal Ministry of Health, Federal Secretariat Complex, Central Business District, Abuja, Nigeria	Mob: +234-803-5737900 molawal60@gmail.com	Clinical pharmacist with extensive experience in detailing of pharmaceutical products, processing of medicinal plants to herbal products,	R&D in HTM product development
	Prof. Kenneth Yongabi Anchang	Department of Public Health, Faculty of Health Sciences, College of Medicine, Imo State University, Owerri, Nigeria Founder, Phytobiotechnology Research Foundation	Mob: +234-903-6246482 yongabika@yahoo.com	Public health, infectiousology and phytobiotechnology	Research in HTM and product development
3	Ms. Fortunate Ntombi Fakudze	Senior Pharmacist, Ministry of Health, Kingdom of Swaziland	Off: +268 25184111 Off: +268-25184496 Fax: +268 25816279 Mob: +268 76871217 fortunate.fakudze@yahoo.com; cms@real-net.co.sz Skype: fakudze1	Senior Pharmacist	Linking to relevant government institutions, research collaboration
4	Mr. Abdoulie Essa Mballow	Coordinator, National Traditional Medicine Program, Ministry of Health, Banjul, The Gambia	am-ballow66@gmail.com Mob: +220-99-55802 Mob: +256-750-462932	Pharmacognosy	Medicinal plant research and product development, Linking to relevant national stakeholders
5	Dr. Edwin S. Quoibia	Director, Division of Complementary Medicine, Ministry of Health	Mob: 231-777-454058 Mob: +231-880-333460 edwinqoibia@yahoo.com	Policy development, usage of herbs	Integrating THM in national Health care / clinics

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
		and Social Welfare, Monrovia, Liberia		(traditional/country medicine) in all health centers	
6	Ms. Hindou Oumarou Ibrahim	Co-chair, International Indigenous Peoples' Forum on Climate Change, coordinator of the Indigenous Women and Peoples Association of Chad, Member of the Executive Committee of the Indigenous Peoples of Africa Coordinating Committee, Avenue Charles De Gaulle, N'Djamena, Tchad	Off: +235-66-292529 Mob.: +33-669-900169 Skype: hindououmar hindououmar@gmail.com https://www.linkedin.com/in/hindou-oumarou-ibrahim-2ba22410	Indigenous Peoples representative to the UN and other bodies	Research/projects in the area of the adaptation and mitigation of indigenous peoples to climate change
7	Prof. Dr. Célestin Shongo Pongombo	Head of Veterinary Clinics Faculty of Health Sciences, University of Lubumbashi, D.R. Congo	Mob: +243 997 012 529 pongoshon@gmail.com	Nutrition & Dietetics	HTM research
D	Scientists & researchers				
1	Dr. Joy I. Odimegwu (PhD)	Department of Pharmacognosy, Faculty of Pharmacy, PMB 12003, College of Medicine Campus Idi-Araba, University of Lagos, Nigeria	Skype: gaudium91 joyodimegwu@yahoo.com	Herbal medicine specialist, Natural products research, Anti-microbials Cancer drug discovery, Plants conservation	Research collaboration, HTM development
2	Prof. Hassan Omari Kaya	IKS Director, DST-NRF Centre in Indigenous Knowledge Systems, University of Kwazulu-Natal (UKZN), South Africa	Mob: +27-82-8579425 Off: +27-31 260 7237 kaya@ukzn.ac.za hkayatz@gmail.com	The African Institute in Indigenous Knowledge Systems (AIKS)	Indigenous Knowledge Systems integration in Higher Education, networking with other IKS related Institutions in Africa

SN	Name of Stakeholder	Institution & Address	Tel/ Email	Key areas of work	Possible engagement
3	Prof. Priscilla S. Dlamini	Director, Eswatini Institute for Research in Traditional Medicine, Medicinal and Indigenous Plants (EIRMIP), University of Eswatini (UNESWA) Swaziland	Mob: +268-251-70738 Off: +268-240-46241 psdlamini@uniswa.sz	Interdisciplinary team approach - modern wound management and collaboration between traditional healers and Allopathic health care workers	Institutional Collaboration HTM integration in research and health care
F	Producers/ processors				
1	Dr. Eric Bataung Maliehe	Team Lead Manager at ENHYDRO CONSULTANCY (PTY) Ltd Ethno Herbal Products P.O. BOX 15913 Maseru-100, Lesotho	Mob: +266-270-00638 Mob: +266-587-72051 ebmaliehe@yahoo.com	Alternative and Complementary Medicine and Medical Systems	Medicinal Plants, Value - Chain, Research and Development. 40 Years Practical Experience in Traditional Healing
K	Forest /Conservation Agencies/ environmentalists				
1	Mr. Dominique Bikaba	Executive Director, Strong Roots Conservation and Sustainable Development Kahuzi-Biega National Park , 31 Avenue Kasai, Ibanda, Bukavu, DR Congo	Mob: +243-997-731370 bikaba@gmail.com, bikaba@strong-rootscongo.org	Integrate the knowledge of local communities and indigenous peoples into effectively conserved areas	Integrating local communities and indigenous peoples in project / programs
2	Dr. Diaminatou Sanogo Diaite	Directrice du Centre Ecologie / Agroforesterie Chargée de Recherches ISRA/CNRF Route des Pères Maristes BP2312 Dakar, Senegal	Mob: +221 33 832 32 19 sdiami@yahoo.fr		

ANNEX 4 CONSULTANT DEPLOYMENT


No.	Country	Lead Consultant	National Contact Points
1	Burundi	Eng. Anke Weisheit	Mr. Vital Bambanze
2	Kenya	Dr. Casim Umba Tolo	Prof. Alfred Anakalo Shitandi
3	Rwanda	Dr. Casim Umba Tolo	Mr. Nasson Tuyiringire
4	South Sudan	Eng. Anke Weisheit	Ms. Lina Sara Mathew
5	Tanzania	Eng. Anke Weisheit	Mr. Emmanuel Peter Lyimo
6	Uganda	Prof. Patrick Engeu Ogwang	Mr. Rapheal Wangalwa

TEAM CONTACT

No.	Full name	Role	Key expertise	Contact
Consultant Team				
1	Prof. Patrick Engeu Ogwang (Mr.)	Team Leader	Principal Investigator, PHARMBIOTRAC, Pharmacy, Pharmacology Pharmacognosy, Traditional Medicine product development, Postgraduate teaching	WA: +256-779-617612 Mob: +256-756-299255 pogwang@must.ac.ug pe7321@gmail.com
2	Dr. Casim Umba Tolo (Mr.)	Co-Investigator	Director, PHARMBIOTRAC, Biology, community engagement, Natural resources management Postgraduate teaching	WA & Mob: +256-772-837055 tolocas@must.ac.ug tolocas2000@yahoo.co.uk
3	Eng. Anke Weisheit (Ms.)	Co-Investigator	Chair, Innovation & Business Management, Innovation Incubation, Indigenous knowledge integration, value chain development	WA: +256-772-788096 Mob: +256-702-888096 ankeweisheit@web.de
National Focal points				
4	Mr. Vital Bambanze	National Consultant (NC) Burundi	Indigenous People development, advocacy and leadership	WA +257-799-27914 Mob: +257-759-27915 vbambanze@hotmail.com
5	Prof. Alfred Anakalo Shitandi (Mr.)	NC, Kenya	Microbiology, environmental health, public health, and environmental science Postgraduate teaching	WA & Mobile: +254-722-153494 ashitandi@gmail.com
6	Mr. Nasson Tuyiringire	NC, Rwanda	PhD Fellow, Pharmacognosy, Traditional medicine research and development, youth engagement in health country young researcher representative of the East African Health Research Commission	WA & Mobile: +250-788-826070 ttijonason@gmail.com
7	Dr. Lina Sara Mathew Alonga (Ms.)	NC, South Sudan	Research Fellow, Pharmacognosy, Traditional medicine research and development, youth engagement in health country young researcher representative of the East African Health Research Commission	SS: +211-917-122102 UG: +256-777-668090 mathewlina@ymail.com

No.	Full name	Role	Key expertise	Contact
8	Dr. Emmanuel Peter Lyimo (Mr.P	NC, Tanzania	Research Fellow, Pharmacognosy, Traditional medicine research and development, youth engagement in health country young researcher representative of the East African Health Research Commission	Mob & WA: +255-764-932508 epeterlyimo@gmail.com
9	Dr. Rapheal Wangalwa (Mr.)	NC, Uganda	Research Fellow in the field of Conservation Biology at PHARMBIOTRAC, Theme: Conservation biology with a research project titled: Spatial variability, propagation and bioactivity of <i>Citropsis articulata</i> in Uganda: Implications for ex-situ conservation.	Mob: +256-703-541627 WA: +256 785 870724 wangerapha@must.ac.ug wangerapho@gmail.com

ANNEX 5 CONSULTATIVE MEETING AGENDA (SAMPLE)



Pharm-Biotechnology and Traditional Medicine Center (PHARMBIOTRAC)

PROGRAMME: Stakeholder Consultation

Date: 12th October 2021, Venue: Juba Grand Hotel, Juba, South Sudan


Study Title: "Diagnostic Study on the Application of Herbal and Traditional Medicine in the Prevention and Therapy of COVID and other Diseases in the East African Community"

Project: Regional Industrial Value Addition (RIVA) project under the GIZ/EAC-SEAMPEC Program


Time	Activity	Person Responsible
Tuesday, 12th October 2021		
08:00 - 08.30	Registration	Secretariat
08.30 - 09:00	Opening Prayer and self-introduction	Volunteer
09.00 - 10.00	Welcome remarks and presentation on Overview of the consultation, Discussion and clarification	Eng. Anke Weisheit
10.00 - 10.30	Health break and Group Photo	Hotel
10.30 - 11.30	Individual conceptualization of the presented topics	Individual assignment
11.30 - 12.15	VIPP Session 1: Application of herbal/ traditional medicines (HTM) for COVID-19 and other diseases	All participants
12.15 - 13.00	VIPP Session 2: HTM and sustainable use of natural resources and conservation	All participants
13.00-14.00	Lunch	Hotel
14.00 - 14.45	VIPP Session 3: Intellectual property, benefit sharing, treaties, agreements, laws	All participants
15.45 - 16.30	VIPP Session 4: HTM quality, safety and efficacy and integration in the existing health care system	All participants
16.30 - 17.15	VIPP Session 5: Stakeholder identification and their roles in Herbal and Traditional medicine development	All participants
17.15 - 17.30	What is the way forward, closing prayers and housekeeping	Eng. Anke Weisheit
17:00	Health Break & networking session (leave at leisure)	Hotel

VIPP (Visualization in Participatory Planning)






Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



CONSULTING GROUP



german cooperation
DEUTSCHE ZUSAMMENARBEIT



Pharm-Bio Technology and Traditional Medicine Centre (PHARMBIOTRAC)
Mbarara University of Science & Technology P.O.Box 1410, Mbarara, Uganda
E-mail: pharmbiotrac@must.ac.ug, Website: <http://pharmbiotrac.must.ac.ug>

ANNEX 6 INTRODUCTION LETTER ISSUED BY THE EAC

EAST AFRICAN COMMUNITY SECRETARIAT



EAC Close
P. O. Box 1096
ARUSHA, TANZANIA

Tel: +255-27-2162100/14
Fax: +255-27-2162102/2162191
E-mail: eac@eachq.org
Web: <http://www.eac.int>

Our Ref: PSS/1/4/7/923
Date: 20th September, 2021

TO WHOM IT MAY CONCERN **LETTER OF INTRODUCTION**

RE: INTRODUCTION OF CONSULTANTS CONDUCTING "STAKEHOLDERS' CONSULTATIONS OF APPLICATION OF HERBAL AND TRADITIONAL MEDICINE IN THE PREVENTION AND THERAPY OF COVID AND OTHER DISEASES IN THE EAST AFRICAN COMMUNITY (EAC)".

The EAC Secretariat is currently implementing the Regional Pharmaceutical Plan of Action 2012-2027 that aims to improve local production of pharmaceutical products. One of the strategic interventions identified in the plan is the development of production of herbal and traditional medicines. To support development of the sub sector, the EAC in partnership with the GIZ program "Support to the East African Market Driven and People Centered Integration (SEAMPEC)" have commissioned a team of experts to conduct, **"Stakeholders' Consultations of Application of Herbal and Traditional Medicine in the Prevention and Therapy of COVID and other Diseases in the East African Community (EAC)".** The purpose of this consultation is to understand the specifications of the application of herbal and traditional medicines in the prevention and therapy of COVID and other diseases in the region and to design and develop supportive interventions thereafter.

The team of experts will be led by **Prof. Patrick Engeu Ogwang**, Lead Consultant, **(Uganda Component)**, **Dr. Casim Umba Tolo**, Consultant **(Kenya and Rwanda Component)** and **Eng. (Ms.) Anke Weisheit**, Consultant **(Burundi, South Sudan and Tanzania Component)**. As part of the exercise the team will organize and conduct consultative engagements with selected key stakeholders including but not limited to policy makers, regulatory authorities, biomedical and traditional medicine practitioners, producers, processors, traders, farmers, consumers' associations, forest conservation agencies and pharmaceutical companies.

The purpose of this letter is to introduce the team to you and request you to accord them necessary support and cooperation to carry out this activity.

Please accept the assurances of my highest consideration.

Hon. Christophe Bazivamo
Deputy Secretary General
(Productive and Social Sectors)
For: **SECRETARY GENERAL**