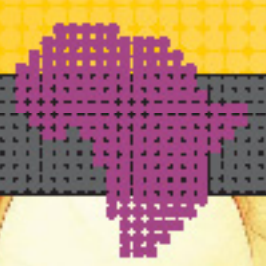




National Legislation, Policies, Strategies and Programmes to ensure appropriate Protection and Benefit-Sharing of Traditional Herbal Medicinal Knowledge with and by Traditional Herbalists in Uganda

African Technology Policy Studies Network

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Influencing National Legislation, Policies, Strategies and Programmes to ensure appropriate Protection and Benefit-Sharing of Traditional Herbal Medicinal Knowledge with and by Traditional Herbalists in Uganda

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Abstract

Today, the importance of Traditional Knowledge (TK) in Uganda cannot be overemphasized given the country's widespread cultural wealth in knowledge, creativity and innovation. To-date, however, there is a limited number of established laws, policies, strategies or programmes in Uganda, to give a firm and clear guidance in the utilization, appropriate protection, promotion and access to benefit-sharing, of Traditional knowledge pertaining to the work of traditional herbal medicine in the country. The current and modern regimes on intellectual property rights are inadequate to sufficiently protect traditional knowledge and assure benefits sharing to the communities from which such knowledge comes. This study sought to establish the extent of usage of traditional herbal medicine in Uganda and how traditional knowledge can be protected to assure benefits sharing. The study was conducted in four districts; Mukono (Central), Lira (Northern), Jinja (Eastern) and Hoima (Western) regions of Uganda. The methods employed in data collection were: FGDs, semi structured in depth questionnaires, key informant interviews, observations, field surveys, literature review and photography. The data collected was analyzed and processed by using the SPSS 12 software application. Content analysis and descriptive statistics were used. The findings indicated that more than 50% of the respondents agreed that traditional herbal medicine is used more than the western medicine in the sampled districts. Regarding support to promote THM practice, almost half (41%) of the respondents mentioned that they do not receive any form of support from Government or any other institutions. More than three quarters (80%) of the respondents lacked knowledge on policies, laws, conservation of biodiversity as far as THM promotion is concerned. The findings also indicated varied sources of THM in the sampled districts. More than 50% of the respondents mentioned that the THM sources are degraded and this makes the herbal medicine materials scarce and the practice not sustainable. It is generally accepted that traditional knowledge can best be protected through a sui generis approach. To this end, it is concluded that the proposed bills and policies on traditional medicine can be modeled along the lines of the Swakopmund Protocol to produce an appropriate legal and institutional framework for the protection of indigenous knowledge for the benefit of the communities.

1. Introduction

1.1 Background

Traditional knowledge refers to tradition-based literary, artistic or scientific works; performances, inventions, scientific discoveries, designs, marks, names and symbols, undisclosed information and all other tradition-based innovations and creations resulting from intellectual activity in the industrial, Scientific, literary or artistic fields (Carlos M Corre: 2001).

Sometimes it is also referred to as indigenous knowledge. Indigenous can be defined as native; born or growing or produced naturally in an area (Gilpin 1976: 78). It, therefore, implies that it originates from and is naturally produced, in an area. It is not introduced from outside the particular region, country or environment. In this context, traditional societies can be referred to as indigenous; as explained by Wamalwa (1991; 37). Traditional knowledge (TK) is the information that people in a given community, based on experience and adapted to local culture and environment, have developed over time and that continues to develop.

The term traditional used in describing this knowledge does not imply that it is old or un-technical in nature, but that it is tradition-based. It is traditional because it is created in a manner that reflects the traditions of the originating communities, therefore, not relating to the nature of the knowledge itself, but to the way in which that knowledge is created, preserved, and disseminated.

TK is collective in nature and it is often considered the property of the entire community, not belonging to any single individual within the community. The knowledge is used to sustain the community and its culture and to maintain the genetic resources necessary for the community's continued survival. TK is transmitted through specific cultural and traditional information-exchange mechanisms—for example, orally through elders or specialists (breeders, healers) and often to only a select few people within a community. There are many indigenous people in the world whose lifestyles are still determined by traditions. It is estimated that there are 200 million indigenous people, close to 4% of global human population. Nearly all these traditional or indigenous communities live in rural settings. With particular reference to Africa, many local communities are unaffected by technological advancement and still depend to a greater extent, on their indigenous technologies and local resources (Growing Up: Outreach, No. 90/1993: 38)

The knowledge and uses of specific plants for medicinal purposes (often referred to as traditional medicine) is an important component of TK. Traditional Medicine (TM) refers to the sum total of all the knowledge and practices, whether explicable or not, used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observation handed down from generation to generation, whether verbally or in writing” (WHO Traditional Medicine Programme Zhang, 1998) TM encompasses a great variety of methods of diagnosis and treatment, including physical, mental and spiritual therapies. The application of such methods is strongly influenced by the culture and beliefs dominant in a particular community, to the extent that they may be ineffective when applied in a different context.

TM includes, thus, knowledge concerning medicines and their use (appropriate dosage,

particular forms of administration, etc.), as well as the procedures and rituals applied by healers as part of their traditional healing methods. In some cases therapies are primarily applied without the use of medication, such as acupuncture, chiropractic, Qigong, T'ai Chi, yoga, naturopathy, thermal therapy, and other physical, mental, spiritual and mind-body therapies.

In some cases, TRM knowledge is produced by individuals without any interface with the community or outsiders. It may, hence, be held by individuals ("individual knowledge"). For instance, healers use rituals as part of their traditional healing methods, often allowing them to monopolize their knowledge, despite disclosure of the phyto-chemical products or techniques used (Bhatti, 2000). In addition, individuals continuously improve or innovate existing knowledge.

In other cases, different TM systems coexist within the same country. In India, for instance, the orally transmitted "folk" system practiced by village physicians/folk healers and tribal communities, coexists with "scientific" (Sasthreeya) systems such as Ayurveda, Sidha, Unani and Amchi that are based on organized, codified and synthesized medical wisdom with strong theoretical and conceptual foundations and philosophical explanations (Pushpangadan 2002).

TM serves the health needs of the vast majority of people in developing countries, where access to "modern" health care services and medicine is limited by economic and cultural factors. TM is broadly used in such countries, often being the only affordable treatment available to poor people and those in remote communities. In a context of persisting poverty and marginalization and, in particular, in view of the high prices generally charged for patented medicines, the relevance of TM in developing countries may, in the future, increase.

For instance, the per capita consumption of TM products in Malaysia is more than double the consumption of modern pharmaceuticals. TM is even significant in relatively advanced developing countries such as South Korea, where the per capita consumption of TM products is about 36% more than modern drugs (Balasubramanian, 1997).

TM also plays an important role in developed countries. Many pharmaceutical products produced and used there are based on, or consist of, biological materials sourced through reference to traditional medicine. These include compounds extracted from plants and algae, as well as from microbial sources and animals. Plants, in particular, are an indispensable source of pharmaceuticals. The demand for "herbal medicines" has grown dramatically in recent years. The world market for such medicines has reached, according to one estimate, US\$60 billion, with annual growth rates of between 5 and 15 per cent.

WHO (1996), defines herbal medicine as "finished, labeled medicinal products that contain as active ingredients aerial or underground parts of plants or other plant material, or combinations thereof, whether in the crude state or as plant preparations. Plant material includes juices, gums, fatty oils, essential oils, and any other substances of this nature. Herbal medicines may contain excipients in addition to the active ingredients. Medicines containing plant material combined with chemically defined active substances, including chemically defined, isolated constituents of plants, are not considered to be herbal medicines. Exceptionally, in some countries herbal medicines may also contain, by tradition, natural organic or inorganic active ingredients which are not of plant origin".

Downes, (1997) understands "protection" in the context of IPRs, where it essentially means to exclude the unauthorized use by third parties of protected knowledge. Under this approach, IPRs may constitute either an offensive mechanism to support the commercialization of TK and to ensure benefit sharing, or a defensive tool to prevent the misappropriation of traditional knowledge.

Others (e.g., Simpson, 1997) regard “protection” as a means to preserve traditional knowledge from uses that may erode it or negatively affect the life or culture of the communities that have developed and applied it. Protection here has a direct positive role in supporting TK based communities’ livelihoods and cultures, and requires the application of mechanisms - such as conservation projects - where IPRs have little or no part to play.

“Benefit sharing” refers here to the fair and equitable participation of TK holders in the benefits arising from the commercial and other utilization of TK (article 15 (7) of the Convention on Biological Diversity).

1.2 Policy and legal frame work for traditional knowledge in herbal medicine

1.2.1 International policy and legal framework for traditional knowledge in herbal medicine

Convention on Biological Diversity

The Convention on Biological Diversity (CBD) adopted and opened for signature at the 1992 United Nations Conference on Environment and Development (UNCED), commits parties to three objectives namely, conservation of biological diversity; sustainable use of its components; and fair and equitable sharing of benefits arising out of utilization of genetic resources. Article 13 of the CBD requires parties to promote and encourage understanding of the importance and the measures required to conserve biological diversity.

NB: Parties to the CBD are obliged to create conditions to facilitate access to genetic resources for environmentally sound uses by other parties and should not impose restrictions that run counter to the CBD objectives.

The CBD also provides the platform for recognition of the country of origin of genetic resources, and the right of the country and local communities from whom those resources are obtained to meaningfully share the benefits that arise from access of those resources.

Under Article 15.7 of the CBD parties are required to take legislative, administrative or policy measures in order to share “in a fair and equitable way” the results of research and development and the benefits arising out from the commercial and other utilization of genetic resources with the party which provided those resources. Such sharing must be upon “mutually agreed terms.” Benefit sharing must also take the form of access to and transfer of technology using those resources, participation in biotechnological research based on those resources, and priority access to the results and benefits arising from the biotechnological use of those resources.

Article 8(j) in particular recognizes the importance of ‘knowledge, innovations, and practices of indigenous and local communities’ for the conservation and sustainable use of biodiversity. It requires parties to ‘respect’, preserve and maintain’ them, ‘promote their wider application with the approval and involvement’ of communities and ‘encourage equitable sharing of benefits from their use’. It is therefore necessary, inter alia, to ensure that benefit sharing mechanisms give legal recognition to customary systems for protection and control of traditional knowledge, practices, technology and biological resources.

The Convention on Biological Diversity Article 10(c) requires parties to ‘protect and encourage customary use’ of natural resources. This depends on continued use of traditional knowledge by communities and hence on protecting their rights over the resources. The Convention requires parties to adopt incentives for biodiversity conservation. The 2002 World summit on sustainable development plan of implementation stressed the need for local benefits and

incentives. Secure rights over traditional knowledge and related resources are needed to enable communities to generate benefits and can themselves act as incentives for sustainable management.

The 2002 Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization

The Bonn guidelines were formulated as voluntary guidelines with the intention to assist parties to the CBD to develop and draft legislative, administrative, or policy measures on access and benefit sharing and in the elaboration of contracts or other arrangements for access to genetic resources and benefit sharing, especially in reference to provisions given under Articles 8(j), 10(c), 15, 16 and 19 of the CBD.

The objectives of the Bonn Guidelines include, among others: contribution to the conservation and sustainable use of biological diversity; providing a transparent framework that facilitates access to genetic resources and ensures fair and equitable sharing of benefits; and promotion of adequate and effective transfer of appropriate technology especially to developing countries.

The Bonn guidelines cover all genetic resources and associated traditional knowledge, innovations and practices covered under the CBD and benefits arising from utilization of such resources (Article 9 of the guidelines). They provide for resources for roles and responsibilities in ABS, participation of stakeholders, steps in the access and benefit sharing process, and general provisions.

Article 16 (d) of the Bonn Guidelines urges the contracting parties to consider providing, in appropriate legal, administrative, or policy measures, measures to encourage the disclosure of the country of origin of genetic resources and of indigenous and local communities in the applications for intellectual property rights; and measures aimed at preventing the use of genetic resources obtained without the prior informed consent of the contracting party providing such resources. The said article 16(d) is therefore very important in the face of bio-piracy and should be used together with the regime of intellectual property rights (IPRs), by the user countries or countries where users are located, to check the continued appropriation of genetic resources and associated traditional knowledge, practices and innovations.

The 1971 Convention on Wetlands of International Importance Especially as Waterfowl Habitat aims at halting the worldwide loss of wetlands and conserving those that remain through wise use and management. It calls for international cooperation for sustainable development and targets activities with negative effect on wetlands, ensuring that they do not lead to loss of biodiversity or diminish the many ecological, hydrological, cultural or social values of wetlands

The 1972 Convention Concerning the protection of World Cultural and Natural Heritage

The 1972 Convention Concerning the protection of World Cultural and Natural Heritage was aimed at establishing an effective system of collective protection of the cultural and natural heritage of outstanding universal value, organized on a permanent basis and in accordance with modern scientific methods. Habitats of threatened plants or animal species and areas of value on scientific or aesthetic grounds or from a conservation perspective are included for protection.

The 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) brings together biodiversity conservation and wildlife trade. It recognizes the need to regulate access to wildlife resources aimed at economic benefit through trade; the ever increasing value of wildlife fauna and flora; and highlights the need to protect them; and the importance of having international cooperation for this to happen. It also points at the need for instituting appropriate measures.

The World Charter for Nature

The World Charter for Nature declares that essential ecological processes and life support systems shall not be impaired and the genetic viability on the earth shall not be compromised. The 1992 United Nations Framework Convention on Climate Change (UNFCCC) aims at reducing emissions of greenhouse gases. Its main objective is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a low enough level to prevent dangerous anthropogenic interference with the climate system. It can be argued that regulation of climate change would, among others, impact on availability and nature of genetic resources.

The 1994 United Nations Convention to Combat Desertification

The 1994 United Nations Convention to Combat Desertification in those countries experiencing serious drought and or desertification particularly in Africa seeks to achieve sustainable development through better land and water resources management. It is primarily concerned with management of ecosystems and habitats. This provides a platform for conservation of genetic resources.

The World Trade Organisation (WTO) Agreement

The World Trade Organisation (WTO) Agreement on aspects of Intellectual Property Rights (TRIPS) provides, in Article 8, for the right to adopt appropriate measures consistent with the provisions of the TRIPS Agreement to prevent the abuse of intellectual property rights or practices which adversely affect international technology transfer. Article 30 is on the right to provide limited exceptions to patent rights; article 39 is on the obligation to protect undisclosed information and Article 40 is on the right to adopt appropriate measures to protect or control restrictive practices associated with intellectual property rights which impede the transfer and dissemination of technology.

Article 27.3(b) of the TRIPS Agreement allows members to exclude from patentability plants and animals other than microorganisms, and essential biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof.

The World Intellectual Property Organisation (WIPO) in the context of its committees on intellectual Property and Genetic Resources, Traditional Knowledge and Folklore and the Standing Committee on the Law of Patents as well as its working Group on the Reform of the Patent Cooperation Treaty (PCT) regulates the patenting of genetic resources.

In respect to genetic resources, the work of the WIPO Intergovernmental Committee (IGC) has covered three main areas, namely: defensive protection of genetic resources through measures which prevent the grant of patents over genetic resources that do not fulfill the requirements of novelty and non-obviousness; IP aspects of access to genetic resources and equitable benefit –sharing arrangements that govern use of genetic resources; and disclosure requirements in patent applications that relate to genetic resources and associated traditional knowledge used in a claimed invention.

1.2.2 Regional (Africa) policies and laws that promote THM

The 1968 African Convention on the Conservation of Nature and Natural Resources was the first post-colonial regional instrument that marked a new era of natural resources regulation, control and joint conservation and management in Africa. It focuses on ecosystem conservation, floral and faunal conservation. It also regulates trade and transport of specimens and trophies.

The 1994 Lusaka Agreement on Cooperative Enforcement operations Directed at illegal

Trade in Wild Fauna and Flora focuses on conservation of wild species. Its objective is to reduce and eventually eliminate illegal trade in wild fauna and flora and to set up a permanent task force for this purpose.

African model legislation for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources, 2000

The main aim of the legislation is to ensure the conservation, evaluation and sustainable use of biological resources, including agricultural genetic resources, and knowledge and technologies in order to maintain and improve their diversity as a means of sustaining all life support systems. The specific objectives are to:

- Recognize, protect and support the inalienable rights of local communities including farming communities over their biological resources, knowledge and technologies;
- Recognize and protect the rights of breeders;
- Provide an appropriate system of access to biological resources, community knowledge and technologies subject to the prior informed consent of the State and the concerned local communities;
- Promote appropriate mechanisms for a fair and equitable sharing of benefits arising from the use of biological resources, knowledge and technologies;
- Ensure the effective participation of concerned communities, with a particular focus on women, in making decisions as regards the distribution of benefits which may derive from the use of their biological resources, knowledge and technologies;
- Promote and encourage the building of national and grassroots scientific and technological capacity relevant to the conservation and sustainable use of biological resources;
- Provide appropriate institutional mechanisms for the effective implementation and enforcement of the rights of local communities, including farming communities and breeders, and the conditions of access to biological resources, community knowledge and technologies;
- Promote the conservation, evaluation and sustainable utilization of biological resources with a particular focus on the major role women play;
- Promote improvements in the productivity, profitability, stability and sustainability of major production systems through yield enhancement and maintenance of biological diversity;
- Promote the supply of good quality seed/planting material to farmers; and
- Ensure that biological resources are utilized in an effective and equitable manner in order to strengthen the food security of the nation.

The legislation applies to biological resources in both in situ and ex situ conditions, the derivatives of the biological resources, community knowledge and technologies, local and indigenous communities and plant breeders.

The following are the requirements for accessing biological resources under the legislation:

1. Any access to any biological resources and knowledge or technologies of local communities in any part of the country shall be subject to an application for the necessary prior informed consent and written permit.
2. Any access to any biological resource in a protected area shall be subject to an application for the necessary prior informed consent and written permit.
3. All applications for the necessary consent and written permit to access any biological resource, community knowledge or technology, shall be directed to the National Competent Authority unless otherwise explicitly provided for by law.

Under the legislation consultation and Prior Informed Consent (PIC) are required as indicated below:

1. Any access to biological resources, knowledge and or technologies of local communities shall be subject to the written prior informed consent of:
 - The National Competent Authority; as well as that of
 - The concerned local communities, ensuring that women are also involved in decision making.

2. Any access carried out without the prior informed consent of the State and the concerned local community or communities shall be deemed to be invalid and shall be subject to the penalties provided in this legislation or any other legislation that deals with access to biological resources.
3. The National Competent Authority shall consult with the local community or communities in order to ascertain that its/their consent is sought and granted. Any access granted without consultation with the concerned community or communities shall be deemed to be invalid and in violation of the principle and requirement for prior informed consent as required under this Article.

Part II Section 9 of the legislation regarding Patents over Life Forms and Biological Processes is detailed as below:

1. Patents over life forms and biological processes are not recognized and cannot be applied for.
2. The collector shall, therefore, not apply for patents over life forms and biological processes under this legislation or under any other legislation relevant to the regulation of access and use of a biological resource, community innovation, practice, knowledge and technology, and the protection of rights therein.

Section 12 focuses on Benefit Sharing and Sub section 1 states that the access permit should be subject to the payment, made before commencement of collection, of a fee the sum of which will depend on whether or not the collection is to be used for commercial purposes, and the number of samples, the area of collecting, the duration of collection and whether or not the collector is granted exclusive rights. Sub section 2 states that the State and the community or communities shall be entitled to a share of the earning derived from when any biological resource and/or knowledge collected generates, directly or indirectly, a product used in a production process.

Part IV, Section 16 regarding recognition of the rights of local and indigenous communities indicates that the State recognizes the rights of communities over the following:

- Their biological resources;
- The right to collectively benefit from the use of their biological resources;
- Their innovations, practices, knowledge and technologies acquired through generations;
- The right to collectively benefit from the utilisation of their innovations, practices, knowledge and technologies; Their rights to use their innovations, practices, knowledge and technologies in the conservation and sustainable use of biological diversity;
- The exercise of collective rights as legitimate custodians and users of their biological resources;

Section 17 regarding application of the law on community rights states that the State recognizes and protects the community rights that are specified in Article 16 as they are enshrined and protected under the norms, practices and customary law found in, and recognized by, the concerned local and indigenous communities, whether such law is written or not.

Section 18 regarding the Prior Informed Consent (PIC) of local communities states that any access to a biological resource, innovation, practice, knowledge or technology, shall be subject to the Prior Informed Consent (PIC) of the concerned community or communities ensuring that women fully and equally participate in decision making.

Section 19 on the right to refuse consent and access stipulates that local communities have the right to refuse access to their biological resources, innovations, practices, knowledge and technologies where such access will be detrimental to the integrity of their natural or cultural heritage.

Section 20 on the right to withdraw or place restrictions on consent and access stipulates

that local communities shall have the right to withdraw consent or place restrictions on the activities relating to access where such activities are likely to be detrimental to their socio-economic life, or their natural or cultural heritage.

Regarding the right to traditional access, use and exchange, section 21 highlights the following:

1. Local communities shall exercise their inalienable right to access, use, and exchange or share their biological resources in sustaining their livelihood systems as regulated by their customary practices and laws.
2. No legal barriers shall be placed on the traditional exchange system of the local communities in the exercise of their rights as provided for in paragraph (1) above and in other rights that may be provided by the customary practices and laws of the concerned local communities.

On the right to benefit, Section 22 of the legislation states that:

1. The State shall ensure that at least fifty per cent of benefits provided for in Article 12.2 shall be channeled to the concerned local community or communities in a manner which treats men and women equitably.
2. The sharing the benefits in paragraph 1) above shall involve the full participation and approval of the concerned local community or communities.

Regarding recognition of community intellectual rights Section 23 states that:

1. The Community Intellectual Rights of the local communities, including traditional professional groups, particularly traditional practitioners, shall at all times remain inalienable, and shall be further protected under the mechanism established by this legislation.
2. An item of community innovation, practice, knowledge or technology, or a particular use of a biological or any other natural resource shall be identified, interpreted and ascertained by the local communities concerned, themselves, under their customary practice and law, whether such law is written or not.
3. Non-registration of any community innovations, practices, knowledge or technologies, is not to mean that these are not protected by Community Intellectual Rights.
4. The publication of a written or oral description of a biological resource and its associated knowledge and information, or the presence of these resources in a gene bank or any other collection, or its local use, shall not preclude the local community from exercising its community intellectual rights in relation to those resources.

Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore within the Framework of the African Regional Intellectual Property Organization (ARIPO), 2010

The protocol was adopted by the Diplomatic Conference of African Regional Intellectual Property Organization (ARIPO) at Swakopmund (Namibia) on August 9, 2010. The purpose of this Protocol is:

- To protect traditional knowledge holders against any infringement of their rights as recognized by this Protocol; and
- To protect expressions of folklore against misappropriation, misuse and unlawful exploitation beyond their traditional context.

Part II of the protocol focuses on protection of traditional knowledge and Section 4 highlights protection criteria for traditional knowledge. It states that Protection shall be extended to traditional knowledge that is:

- Generated, preserved and transmitted in a traditional and intergenerational context;
- Distinctively associated with a local or traditional community; and
- Integral to the cultural identity of a local or traditional community that is recognized as holding the knowledge through a form of custodianship, guardianship or collective and cultural ownership or responsibility. Such a relationship may be established formally or informally by customary practices, laws or protocols.

Section 6 of the protocol highlights the beneficiaries of traditional knowledge. It states that the owners of the rights shall be the holders of traditional knowledge, namely the local and traditional communities, and recognized individuals within such communities, who create, preserve and transmit knowledge in a traditional and intergenerational context in accordance with the provisions of section 4.

Section 9 of the protocol focuses on equitable benefit-sharing. Sub-section 9.1 states that the protection to be extended to traditional knowledge holders shall include the fair and equitable sharing of benefits arising from the commercial or industrial use of their knowledge, to be determined by mutual agreement between the parties.

Sub-section 9.2, indicates that the national competent authority shall, in the absence of such mutual agreement, mediate between the concerned parties with a view to arriving at an agreement on the fair and equitable sharing of benefits. While Sub-section 9.3 state that the right to equitable remuneration might extend to non-monetary benefits, such as contributions to community development, depending on the material needs and cultural preferences expressed by the traditional or local communities themselves.

Section 10 of the protocol states that any person using traditional knowledge beyond its traditional context shall acknowledge its holders, indicate its source and, where possible, its origin, and use such knowledge in a manner that respects the cultural values of its holders.

Section 13 indicates the duration for which traditional knowledge can be protected. It states that traditional knowledge shall be protected for so long as the knowledge fulfills the protection criteria referred to under section 4, except that where traditional knowledge belongs exclusively to an individual, protection shall last for 25 years following the exploitation of knowledge beyond its traditional context by the individual.

Section 14 subsection 1 states that to ensure the effectiveness of the protection of traditional knowledge, the national competent authority and ARIPO Office acting on behalf of the Contracting States shall be entrusted with the tasks of awareness-raising, education, guidance, monitoring, registration, dispute resolution, enforcement and other activities related to the protection of traditional knowledge. Section 14 Sub-section 2 indicates that the National competent authorities shall be entrusted, in particular, with the task of advising and assisting holders of protected traditional knowledge in defending their rights and instituting civil and criminal proceedings, where appropriate and when requested by them; while Section 14 Sub-section 3 states that where two or more communities in different countries share the same traditional knowledge, the ARIPO Office shall be responsible for raising awareness, education, guidance, monitoring, dispute resolution and other activities relating to the protection of the traditional knowledge of those communities.

This protocol represents the best form of sui generis protection for traditional knowledge encompassing aspects of benefit sharing.

1.2.3 Policy and legal framework in Uganda

There are a number of policies and laws regulating traditional herbal medicine. These include;

The National Science and Technology Policy, 2001

The National Science and Technology Policy of 2001 provides for the formulation of a policy to guide the prudent use of biotechnology for sustainable development. It envisages the development of a national institutional frame work for regulatory, administration and research and development. It caters for the promotion of an enabling environment for the creation of partnerships between the private and the public sectors for the development of products of biotechnological applications. The National Science and Technology Policy provides for the formation of a policy on IPR. However, the specific policy on Intellectual Property Rights

(IPR) is not yet in place. What could be referred to as the national policy may only be taken from various pieces of legislation as well as from various government policy statements. Part of the policy pertaining to IP rights may be, by implication, also read in international conventions and treaties to which Uganda is a signatory, like the TRIPS agreement.

Draft National Biotechnology and Biosafety Policy

This policy framework aims at promoting the safe use of biotechnology to address economic, social and environmental problems. It contains provisions for assessment and management of risks arising from modern biotechnology applications that are likely to have adverse effects on conservation and sustainable use of biodiversity taking into account risks to human health. The draft Biosafety Regulations 1999, so far is the only comprehensive legislation governing biotechnology issues and specifically biosafety in Uganda. The regulations contain provisions on Risk Assessment, Risk Management, Unintentional release and emergency measures, identification and labeling, exports of GMOs or products of GMOs, among others; while the regulations make provision for biotechnology products, this is made within the context of liability and redress regimes.

National Forest Policy, 2001

The policy provides for the conservation of biodiversity and the need to involve communities and private owners in the management of forest resources within protected areas. The policy has a bearing on the collection of medicinal plants within forest reserves.

The draft National Policy on Indigenous Knowledge (IK)

The draft National Policy on Indigenous Knowledge (IK) seeks to guide the process of integrating IK in the national development process. The draft policy calls for recognition of the value of Indigenous Knowledge (IK) in empowering local communities and urges government to adopt and support national IK efforts and to incorporate IK in its comprehensive National Development Framework. It provides for the sensitization and advocacy for IK, documentation, Research, Validation and Dissemination of IK, commercialization and industrialization of IK, capacity building for IK and resource mobilization for IK.

The Patents Act 1991 provides for the grant, registration, and protection of patents and for other purposes incidental thereto. It also provides for the registration and protection of IPR in patents and utility models. The Patents (Amendment) Act, 2002 amends the Patents Act to provide for international applications and connected matters by giving effect in Uganda to the provisions of the Patents Co-operation Treaty signed at Washington on 19th June 1970. The amendment introduces provisions for processing by the patents Registry in Uganda, of international applications in accordance with an international system under the Treaty whereby a single application made and filled in a country that is party to the treaty, has effect as an application in any other country that is party to the Treaty.

The Constitution of the Republic of Uganda, 1995

The constitution of the Republic of Uganda, promulgated in 1995, sets the platform on which issues of biodiversity conservation could be expounded upon. In its National Objectives and Directive principles of state policy, the Constitution provides in paragraph 13 on protection of natural resources that “the State shall protect important natural resources including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda.” The natural resources mentioned are very important sources of traditional herbal medicine. In paragraph 27 on the environment, it provides for the principle of sustainable development, conservation of natural resources and protection of the biodiversity of Uganda.

These constitutional provisions provide the basis for legal and policy action on biodiversity conservation and in particular access to benefit sharing.

The National Environment Act Cap. 153

The National Environment Act Cap. 153 among others provide for conservation of biological resources in- situ and ex-situ and access to genetic resources and benefit sharing. Section 44 enables the National Environment Management Authority (NEMA) in consultation with the lead agency to prescribe measures for the sustainable utilization of the genetic resources of Uganda for the benefit of the people of Uganda.

The National Environment (Access to Genetic Resources and Benefit Sharing) Regulations, 2005

The National Environment (Access to Genetic Resources and Benefit Sharing) Regulations, 2005 whose main objectives are: to prescribe the procedure for access to genetic resources for scientific research, commercial purposes, bio-prospecting, conservation or industrial applications; to provide for the sharing of benefits derived from genetic resources and to promote the sustainable management and utilization of genetic resources, thereby, contributing to the conservation of the biological resources of Uganda.

Regulation 9 is concerned with management of genetic resources and it states that the right to determine, control and regulate access to genetic resources found in Uganda is vested in the Government for the benefit of the people of Uganda and shall be exercised in accordance with the Regulations.

Regulation 10 states that no person shall access genetic resources from any part of Uganda, unless that person has obtained a written prior informed consent form, and entered into an accessory agreement with the lead agency, local community or owner; carried out an environment impact assessment, in accordance with regulation 16, where required; entered into a materials transfer agreement in accordance with the regulations and obtained an access permit from the UNCST in accordance with the regulations.

Regulation 20 (1) states that the benefits accruing from the collection, modification and use of genetic resources shall be shared in accordance with the principle of fairness and equity, and on mutually agreed terms.

Regulation 20 (2) states that the benefits accruing from access to genetic resources under a materials transfer agreement or accessory agreement shall vary on a case basis and shall include among other things participation by Ugandan citizens and institutions in scientific research and other activities involving access to genetic resources; sharing of access fees and royalties, research funds, license fees, and other special fees that support conservation of biodiversity; payment of salaries, where mutually agreed; collaboration in education and training related to genetic resources; transfer of knowledge and technology under favorable terms and, in particular, knowledge that makes use of genetic resources, including biotechnology, or knowledge that is relevant to the conservation and sustainable use of biological diversity; access to scientific information such as biological inventories and taxonomic studies; contributions to the development of the local community; benefits relating to food security and joint ownership of patents and other relevant forms of intellectual property rights.

The Uganda National Council for Science and Technology Act Cap, 209 established the Uganda National Council for Science and Technology (UNCST) as a corporate body to oversee scientific research and technology developments. The council is charged with rationalizing the integration of science and technology in socio-economic development and advice the Government on all matters relating to scientific and technological activities.

The Uganda Wildlife Act, 2000

The Uganda Wildlife Act, 2000 promotes sustainable management of wildlife, which is defined to include any wild plant or wild animal of a species native to Uganda and wild

animals which migrate through Uganda. The law is intended to promote the conservation of wildlife in Uganda in order to maintain the biological diversity that exists for the benefit of the people of Uganda. This includes the protection of rare, endangered and endemic species of wild animals and plants. It introduces community based management of wildlife resources and puts in place some mechanisms to allow regulated access to and utilization of wildlife and sharing of benefits from wildlife management.

The National Forestry and Tree Planting Act, 2003

The National Forestry and Tree Planting Act, 2003 provides the legal framework for conservation and sustainable management of Uganda's forest resources for the benefit of the people and promotes sharing of benefits derived there from. It provides that forests shall be managed so as to conserve biological diversity, ecosystems and habitants among others.

The land Act, Cap 227

The land Act, Cap 227 of laws of Uganda provides for tenure, ownership and management of land in Uganda. It imposes a duty, under section 43, on land owners or managers to manage the land in accordance with the National Environment Act, the National Forestry and Tree planting Act, The Uganda Wildlife Act and any other law. The said laws promote conservation and sustainable use of natural resources.

The Local Government Act Cap 243

The Local Government Act Cap 243 Laws of Uganda, 2000, among other things, gives effect to the devolution of functions, powers and services from the Central Government to Local Governments; and provides for decentralization at all levels of local government. Sections 30 and 31 of the act stipulate the functions of local government councils. Under Schedule II of the Act, local government councils are responsible for environment management under their jurisdiction.

The National Agricultural Research Organization statute, 1992

The NARO was established as a corporate body under MAAIF by NARO Statute to undertake, promote and coordinate research for crops, livestock, fisheries and forestry and to ensure dissemination and application of research results. The national botanical gardens are entrusted to NARO and one of their functions is to maintain specimen's collections, to assess species of potential medicinal interest and also to prescribe conditions and responsibilities of collectors before, during and after collection.

The Industrial Property Bill, 2001

The Industrial Property Bill (2001) provides for the promotion of inventive and innovative activities to facilitate the acquisition of technology through the grant and regulation of patents, utility models, technovations and industrial designs. The bill, if enacted into law, would modernize an important part of Uganda's regime of intellectual property law. It covers all industrial property (patents, industrial designs, utility models and technovations) except trademarks.

The National Drug Statute Policy and Authority Act, 2000

The National Drug Statute Policy and Authority Act, 2000 provides a regulatory framework for the importation, administration, handling, sale and other matters pertaining to drugs including herbal drugs. The functions of the National Drug Authority include encouraging research and development of herbal medicines.

The Plant Protection Act, 1964

The law regulates the introduction of exotic plants and micro-organisms into the country.

The draft National Regulation for Plant Germplasm Collection and Transfer

The objective of the regulations among others is to promote the conservation, collection and use of plant genetic resources. This is done through promotion of the safe exchange of plant

genetic resources, information and technologies. It provides for ensuring that collection of germplasm is undertaken in full respect of national laws, local customs, rules and regulations. It also provides appropriate standards of conduct and defines obligations of collectors and promotes sharing of benefits derived from plant genetic resources.

Traditional Medicine Bill

Traditional Medicine Bill seeks to establish a Council to regulate the practice of traditional medicine, to register practitioners and license practices and to provide for related matters. Practice in herbal medicine in Uganda has been under the National Drug Policy and Authority Act but it was felt that there was need to regulate traditional medicine independently and bring it to nationally and internationally acceptable standards.

The National Biodiversity Strategy and Action Plan for Uganda

The National Biodiversity Strategy and Action Plan for Uganda that was prepared in accordance with Article 6a of the Conservation of Biological Diversity on general measures for conservation and sustainable use of Biodiversity. The strategy seeks to promote the sustainable use and fair sharing of costs and benefits of biodiversity.

1.3 Institutions responsible for promotion of THM and benefit sharing in Uganda

The following are the institutions responsible for promoting THM and benefit sharing in Uganda:

National Drug Authority (NDA)

NDA carries out registration, information dissemination, inspections and quality control, of various drugs in Uganda (THM), among others.

Ministry of Justice and Constitutional Affairs

Among other roles, the ministry facilitates the development and enactment of appropriate laws and legislation for the different development sectors in Uganda (including that of THM).

Natural Chemotherapeutics Research Laboratory/ Institute (NCRL/I)

The Natural Chemotherapeutics Research Laboratory is a government research and development centre under the Ministry of Health (MoH). It was created in 1964 with the mandate to carry out applied research on natural products (plants, animal parts and minerals) with the view of justifying therapeutic claims from traditional medicine practitioners in Uganda. The centre undertakes the development of quality natural products and services for improved health care delivery by applying both indigenous and modern technologies.

Ministry of Water and Environment (MWE)

The Ministry is composed of directorates, a number of departments and divisions, with some of them dealing with biodiversity conservation.

National Environment Management authority (NEMA)

NEMA is the coordinating, monitoring and supervisory body for environment management. This covers both green and brown issues of environmental management. NEMA oversees the implementation of all environmental conservation programmes and activities of the relevant lead agencies both at national and local government levels. NEMA initiates, in collaboration with lead agencies, the formulation of a national policy on access to genetic resources; collaborate with lead agencies in carrying out public awareness campaigns, designing capacity building programmes, and ensuring compliance with and enforcement of the regulations; to develop, in collaborations with UNCST and lead agencies, guidelines for access to, and export genetic resources and advise on access to genetic resources outside protected areas.

The National Forest Authority (NFA)

NFA has the major mandate of sustainable management of Central Forest Reserves (CFRs) to optimize their economic, environment and social functions and contribute towards poverty

reduction. The NFA also targets supply of high quality forest products and services on a contractual basis. The NFA mission addresses in situ forest conservation wholly, providing for harnessing of the benefits from forest products for local communities and other interested parties.

The Local and community Forest Reserves are under the jurisdiction of the Locals Councils at district levels. This means that both the NFA and local governments are directly responsible for genetic resources in forests depending on where the resources are.

The Wetlands Management Department (WMD)

WMD is a department under the Ministry of Water and Environment and is the lead agency for wetlands management in the country.

The Ministry of Local Government (MoLG)

MoLG is charged with overall co-ordination of local government policy and supervision of local authorities. The decentralized functions related to natural resources management are the preserve of local councils.

The Ministry of Tourism, Trade and Industry (MTTI)

MTTI is the government ministry responsible for the development of trade, tourism and wildlife related enterprises. The MTTI is also responsible for CITES and management of world heritage sites. Within this ministry is the Uganda Tourist Board (UTB), charged with the promotion of tourism; the Uganda Wildlife Authority (UWA) for wildlife conservation and the department of antiquities charged with preservation of Uganda's cultural heritage.

The Ministry of Finance, Planning and Economic Development (MoFPED)

MoFPED is the institution responsible for development and implanting financial and economic development policies. Under the supervision of this ministry, is the Uganda Investment Authority (UIA) which endeavors to promote investment opportunities including but not limited to, agriculture, forestry and mineral resources.

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

MAAIF is the ministry responsible for the development of agriculture, animal industry and fisheries. Within the ministry is the phytosanitary division which is responsible the monitoring and controlling the movement of plant genetic resources and, the control of alien and invasive species.

Uganda National Council for Science and Technology (UNCST)

UNCST is the government agency charged with co-ordination and monitoring of all research within the country. This includes bio-prospecting and research related to biodiversity conservation, which includes access to genetic resources. The council is linked to sectors through its specialized, technical committees (STCs) on agriculture and allied sciences, health sciences, physical sciences, natural sciences, industrial and engineering sciences and, social sciences and humanities. STCs are policy organs of the council whose function is to report to, recommend and advise the council on all science and technology policy makers in their respective sectors. UNCST is specifically responsible for receiving and facilitating the expeditious processing of all applications for access to genetic resources; coordinate all activities of lead agencies relating to access to genetic resources in accordance with the National Environment (Access to Genetic Resources and Benefit Sharing) Regulations, 2005; ensure the people of Uganda benefit from the genetic resources accessed; facilitate negotiation and conclusion of all accessory and materials transfer agreements, including the terms and conditions upon which access is to be granted among other functions.

Ministry of Gender Labour and Social Development (MGLSD)

The Ministry is the leading and coordinating agency for the Social Development Sector. In collaboration with other stakeholders, the ministry is responsible for Community empowerment,

protection and promotion of the rights and obligations of the specified vulnerable groups for social protection and gender responsive development.

The Ministry's mandate is to empower communities to harness their potential through cultural growth, skills development and labour productivity for sustainable and gender responsive development.

The Convention on International Trade in Endangered Species of Fauna and Flora (CITES)

The CITES is the Science and Management Authority, for purposes of ABS Regulations, issues CITES export, import permits or certificates; recommends species that may be traded in or offered for sale nationally and internationally; monitors the population of wild fauna and flora in trade or offered for trade and, communicates with CITES secretariat, Parties to the Convention or other legal agencies or person performing similar or related functions.

The National Biosafety Committee

The committee is the national administrative arm of the UNCST on matters concerning biotechnology and biosafety. Its main functions is to provide technical advice on biosafety issues to government especially with regard to the continued assessment of risk and benefits associated with the production and/or application of biological materials produced in laboratories and those occurring in nature. The committee also maintains links with biotechnology institutions through institutional biosafety committees.

The Uganda Wildlife Authority (UWA)

UWA is responsible for managing, on behalf of the people of Uganda, all wildlife resources in and outside protected areas. The protected areas include national parks, game reserves and sanctuaries. Uganda has a total of ten national parks, twelve game reserves and over fifteen sanctuaries. These protected areas are major sources of genetic resources in animals and plants, some of which are currently being used and others unknown. The law which set up this authority clearly highlights the significance of general resources and allows the local communities living near those resources to access and benefit from them. The law also stipulates the need to develop relevant regulations and guidelines for the access and use of these resources.

The National Agricultural Research Organization (NARO)

NARO is an amalgamation of several research institutions that existed within several government ministries. This umbrella organization is the largest research body in Uganda, comprising nine research institutes and eleven agricultural research and development centers (seven of which have operationalised to-date).

1.4 Problem Statement

Traditional Herbal Medicinal Knowledge systems in situ are fast disappearing as degradation of natural resources like forests, wetlands, grasslands is taking place at an alarming rate especially in developing countries (Uganda inclusive) as well as losing cultural values and customary laws. This calls for protection of community rights over their bio-cultural heritage as a whole; that is, traditional knowledge, bio-resources, culture and land.

To-date, intellectual property (IP) rights are not adequately extended to the holders of Traditional Knowledge (TK). The requirements for IP rights protection under current IP regimes remain largely inconsistent with the nature of TK. As a result, it is neglected and considered part of the public domain with no protections or benefits for the knowledge

holders, or expropriated for the financial gains of others, often referred to as biopiracy. There is a need to establish modalities, mechanisms and strategies to protect the herbal medicine knowledge holders and also enable them benefit from their knowledge.

Clearly, the use of many institutions to manage traditional knowledge can only be a recipe for disorganization and unnecessary competition amongst the various government agencies. The need for a one-stop house is clearly apparent.

1.5 Research questions

1. What are the levels of traditional herbal knowledge among traditional herbalists, herbal users and policy makers in Uganda?
2. What is the capacity of service provision by traditional herbalists?
3. What are the consumption levels of herbal users in Uganda?
4. To what extent and level are appropriate protection and benefit sharing policies, strategies and programmes supportive to herbal medicine in Uganda.

1.6 Objectives

Overall objective

The research aimed at influencing policy makers to enhance and develop policies, legal frameworks, strategies and programmes, to protect Traditional Knowledge (TK) in herbal medicine in Uganda.

Specific objectives

The specific objectives of the study were to:

- Assess the levels of traditional herbal knowledge among traditional herbalists, herbal users and policy makers in Uganda.
- Determine the capacity of service provision by traditional herbalists and consumption levels of herbal users in Uganda?
- Ascertain the level of appropriate protection and benefit sharing policies, strategies and programmes in support to herbal medicine in Uganda.
- Come up with practical and feasible recommendations pertaining to appropriate protection and benefit sharing mechanisms for traditional herbal medicine in Uganda.

1.7 Justification

The research is contributing towards the ATPS Intellectual Property Program strategic objective of promoting stakeholder participation in policy and legal framework development for traditional knowledge, access and benefit-sharing and effective Intellectual Property systems.

A limited understanding of patenting and intellectual property rights also intensifies a reluctance to disclose knowledge, for fear of exploitation and that this may be 'stolen'. It is further reported that a number of traditional practitioners are still secretive about the contents of their medicine, resulting in indigenous medicinal knowledge remaining concealed, and some effective medicines not being validated or produced on a large scale.

Likewise, lack of entrepreneurship skills, including those in marketing, packaging and record keeping, also results in limited economic benefit for the traditional healers and may lead to reluctance to share information with whoever can commercialize their products. In addition, potential investors stay away from commercial traditional medicine production and distribution, because of the absence of the necessary policy framework, leaving traditional healers with limited avenues to access funds.

Research funding is limited in Uganda, and this poses particular challenges in the field of traditional medicine, given the high costs involved (estimated at up to Ushs 40 million per specimen). Validation requires time, specialized and costly testing equipment, with spares

that cannot be obtained locally (www.crossculturalfoundation.or.ug.)

Given these challenges, it is hoped that the findings and recommendations of this research become instructive so as to inform the establishment of the current status of traditional herbalists in Uganda and then go ahead to develop mechanisms for appropriate interventions. Such interventions would seek to ensure that the targeted traditional herbalists improve their capacity to roll out more competitive products for a better income while at the same time improving the health and wealth of their clients; likewise, more empowered traditional herbalists are likely to establish herbal gardens, farms and forests, a move that promises to enhance protection of the environment and hence, mitigate the currently pressing hazards of climate change that face Uganda and the world today.

2.0 Literature Review

2.1 Promotion of Traditional Herbal Medicine Practices

WHO, (2004) observed that 80% of the people living in the African region use traditional medicine for their health care needs. Nelson-Harrison et al, (2002), noted that up to 80% of Africans or more than a half billion people visit traditional healers for some or all of their medical care. In Africa and in many developing nations, medical services are limited or unobtainable for the majority of the population. It is the traditional healers and birth attendants in rural and urban areas that have historically provided and continue to provide primary healthcare. They are the vital link to supplying the needed services in their communities, and yet their efforts must continue to expand as populations grow, and health concerns continue to increase in complexity and case numbers (Nelson-Harrison et al, 2002).

In Uganda, there is at least one traditional healer for nearly 290 people compared to one Western-trained medical practitioner for every 10,000 people in the urban areas and 50,000 people in the rural areas respectively (World Bank, 2003). The majority of the population in Uganda have greater access to traditional than to western health care. Traditional healers are an integral part of the local culture and are appreciated as key and sustainable sources of care and knowledge on disease and illness. About 80% of the population of Uganda relies on traditional medicine because western-trained medical personnel are limited, and traditional healers are easily consulted, living in the same community (Bannerman, et al., 1993). That points to the demand for traditional medicine for medicinal plants and the fact that the majority of the people, rural and urban alike, depend largely on herbal medicines for treating a variety of diseases (Esegu, 2002).

Of the 252 essential medicines selected by the World Health Organization, 11.1% come from plants (Neto, 1999). In India, for instance, the codified systems of medicine utilize about 2,000 plant species for medicinal purpose, while the tribal communities, who live in and around the forests, utilize over 8,000 species of plants, most of which are otherwise not known to the outside world (Pushpangadan 2002, Shankar, 1996).

The production and commercialization (including internationally) of products based on codified traditional medicine generates considerable value. For instance, the total Indian Ayurvedic market was estimated at Rs 1000 Crore in 1999 (Warrier, 1999). Traditional medicine was estimated to generate for China, the leading country in this field, an income of about US\$5 billion in 1999 from the international market and US\$1 billion from the domestic market. Europe's traditional medicine market in 1999 was calculated to be US\$11.9 billion (Germany contributing 38%, France 21% and United Kingdom 12%) (Pranoto, 2001)

In Uganda's case, promotion of traditional herbal practice is backed by the 1995 constitution which states, that "The state shall take all the practical measures to provide health care to all citizens" (Runumi, 2005). As a result, a large portion of Ugandans use herbal medicine to address a number of needs and challenges e.g. management of HIV/AIDS (treatment of opportunistic diseases using local medicine i.e. diabetes, diarrhea, high fever), primary health care (traditional healers, maternal health, traditional medicine – an outstanding example is the rescuer project at Iganga that has been adopted in some 15 or so other districts of Uganda), IK – being integrated in the childhood development programme financed by the

World Bank as part of IK mainstreaming policy and upscale of IK utilization for sustainable development and poverty eradication (www.worldbank.org/afr/ik/ikseminar/nyiira.doc)

In Busoga sub-region, Eastern Uganda, indigenous knowledge is instrumental in treating and managing Malaria hence, a variety of strategies are employed by respondents to stop mosquito bites. These included the burning of logs and plants such as *Albizia coriaria* or cow dung to generate smoke; filling up pits in the compound or removing material likely to promote the breeding of mosquitoes; and closing windows and doors before nightfall (Tabuti, 2006).

In Sri Lanka Conservation and Sustainable Use of Medicinal Plants Project has documented ancient medicinal knowledge in a community owned database; promoted the in situ conservation and cultivation of medicinal plants in local home gardens; mainstreamed IK through putting in place effective marketing techniques for herbal remedies derived from medicinal plants; transcribed ancient palm leaf manuscripts that contain information on diseases and their diagnosis, as well as prescriptions into Sinhalese; established a program to enable the bearers of traditional knowledge, community elders, to transfer their skills to selected acolytes; and created a legal and institutional framework for the protection of traditional knowledge, through the development of a National Biodiversity Strategy.

Likewise, the Kerala Forestry Project in India seeks to improve the quality of life and self-reliance of local communities through adopting a holistic approach that links local biodiversity, indigenous knowledge, Ayurveda, modern science and technology. Project activities focus on documentation through surveys and inventories to build databases on health profiles, socio-economic status, ethno-medico-botanical aspects, and plant based biodiversity register and indigenous technical knowledge (ITKs).

In the same respect, the Guinea Multi-Country AIDS Program (MAP) project seeks to organize and train traditional healers on HIV/AIDS practices, while supporting the treatment of opportunistic infections using traditional medicine. The IK program sponsored a consultant to help integrate IK into the MAP. During a supervision mission the consultant identified the activities related to traditional medicine undertaken to-date by the National AIDS committee and assessed their impact on the ground. The consultant also ensured that IK was included into the project's monitoring and evaluation system.

Furthermore, the Integrated Early Childhood Development Project in Eritrea, seeks to improve child health, child and maternal nutrition, early childhood education and care. The project includes a framework for the identification, validation, collection, storage and dissemination of IK related to early childhood development and the design of the database of such practices to facilitate their exchange among local communities and across the region. Linkages with a core IK group located in the Ministry of Local Government have been established and they are working to help them analyze and publish IK material gathered over the last 20 years by this group. They were helped to set up a "Generative Curriculum" for IK in Eritrea in a virtual university setting under the ECDVU initiative in collaboration with the University of British Columbia, Victoria which conducted a community exchange between different ethnic groups in different regions. The results of the C2C were reported at the International ECD Conference held in Asmara in October 2002 – where a separate session was arranged for IK which was well attended and received. (www.worldbank.org/afr/ik/achieve.htm)

In the case of South Africa, Multitudes of individuals and institutions involved in various capacities, in indigenous medicinal plant use research - The Indigenous Plant Use Forum Directory - (Hale et al. 1985) 60 herbaria that are used by participants for identifying and housing ethnobotany plant collections ; there are more than 71 academic departments doing ethnobotanical research; there are a total of 800 people on the network and at least 5 traditional healer organizations closely participating in the Indigenous Plant Use Programme (Hale et al. 1995) Amongst other inequalities, apartheid caused imbalance in health and

health care hence, resulting into the majority black population to resort to herbal medicine (Kale, 1995a)

Conservation of traditional Herbal Medicine Resources (biodiversity)

Uganda, though small, has a very rich and varied biodiversity resulting from its biogeographical setting, varied altitudinal range (600-5100m) creating diverse physical features. With an estimated 90 vegetational communities, Uganda has more than 18,000 species of fauna and flora (NBU, 1992) although the actual figure is unknown because some species are poorly known especially those in lower life forms. The rich biodiversity acts as a source of traditional herbal medicine.

It is also noted worldwide that the increase in the demand for medicinal plants may raise their cost for the local population, for whom TM is often the only affordable medical treatment. Moreover, many medicinal plants face extinction or severe genetic loss. Hence, governments should control trade in medicinal plants in the framework of broader policies for the conservation and sustainable use of such plants, with an understanding that the loss of biodiversity may also have implications for public health. Peru, for instance, passed a law in July 1999 which bans the non-value-added export of some botanical species with known healing properties, which had become the target of massive extraction by foreign laboratories. The law covers the two best-known medicinal plants in Peru's indigenous pharmacopoeia: 'cat's claw' and 'maca'.

Cultivation of medicinal plants is one increasingly important component of the Traditional medicine value added chain. Although cultivation from the wild continues to provide the majority of plant material consumed by the herbal medicine industry, in Asia the trend is towards agriculturally cultivated materials that often better guarantee supplies, consistency, species identification, and high levels of post-harvest handling (Kate and Laird, 1999; Chandra, 2002,).

In India it has been noted, however, that less than 30 of the medicinal plants utilized by the industry are under commercial cultivation. 80,000 metric tons a year of certain plant varieties are being collected from the wild. At this rate of collection, the TRM industry may crash because of lack of suppliers in the short term (Shankar, 1996). In contrast, in Africa, whose population relies greatly on Traditional medicine, virtually no investment in such cultivation of medicinal plants has been made.

In Uganda, there is a need for conservation, domestication and growing of medicinal plants for the purpose of promoting and sustaining TM. Propagation techniques are needed in some cases as propagation will lead to the conservation of rare medicinal plants and ensures that the wealth of the products remains in the country through using local knowledge, skills and materials. The health system thus becomes less dependent on external sources such as multinational companies. Developing conservation and propagation strategies of the currently-known medical plants is based on the communities' local knowledge of the environment, and shared experiences of institutions like the Entebbe Botanical Gardens, of the National Agriculture Research Organisation, and the National Chemotherapeutics Research Laboratory (World Bank, 2003).

Preservation and Protection of Traditional Herbal Medicinal Knowledge

A number of ways are used by countries and communities to protect their traditional herbal knowledge. For example non-codified systems including what have been termed "folk", "rural", "tribal" and "indigenous" Traditional Medicine, which has been handed over orally from generation to generation. Such systems of medicine are generally based on traditional beliefs, norms and practices based on centuries old experiences of trials and errors, successes and failures at the household and community level. These are passed through oral tradition and may be called "people's health culture" (Balasubramanian, 1997)

However, there are cases in which TM is and has always been kept secret. In specialized areas, such as knowledge dealt with by bone-setters, midwives or traditional birth attendants and herbalists, including knowledge of healing techniques and properties of plants and animal substances, access is restricted to certain classes of people (Koon, 1999). In Kenya, for instance, a study on herbal medicine showed that most of the herbalists interviewed maintained the secrecy of their knowledge. An intruder was always heavily fined in order to deter any attempt to steal such knowledge. The problem with this type of system is that such important knowledge was owned by and confined to a few family members and rapid development on innovations was hampered by secrecy” (Muchae, 2000).

THM knowledge can also be kept in databases by some communities. For instance, the “BIOZULUA” database established by the Venezuelan Fundación para el Desarrollo de las Ciencias Físicas, Matemáticas y Naturales (FUDECI) stores information held by different ethnic groups regarding plants and animals deemed useful for food and medicinal use, as well as the associated knowledge. The collected information is handled as a trade secret in order to avoid undue appropriation and use (Vivas and Ruiz Müller, 2001).

There have been initiatives to develop proper written documentation of traditional knowledge. They essentially aim at reducing the room for the patentability of codified TRM. These initiatives document knowledge, making it available to patent examiners throughout the world, so that “prior art” is readily identifiable. These documentation efforts have been facilitated in the last years by the application of digital technology. For example in India, an exercise has been initiated to prepare easily navigable computerized database of documented TK relating to use of medicinal and other plants (which is already under public domain) known as TK Digital Library (TKDL). Such digital databases would enable Patent Offices all over the world to search and examine any prevalent use/prior art. And thereby prevent the grant of such patents and bio-piracy” (Government of India, 2000). The documentation of this knowledge in the view of the Indian government, fosters not only the prevention of “bio-piracy” but may also provide a basis for the sharing of benefits arising from the use of such knowledge (Government of India, 2000). A clear effect of such libraries is that both local/indigenous communities and third parties will be prevented from obtaining patents over documented knowledge.

For instance, the “BIOZULUA” database established by the Venezuelan Fundación para el Desarrollo de las Ciencias Físicas, Matemáticas y Naturales (FUDECI) stores information held by different ethnic groups regarding plants and animals deemed useful for food and medicinal use, as well as the associated knowledge. The collected information is handled as a trade secret in order to avoid undue appropriation and use (Vivas and Ruiz Müller, 2001).

The issue of traditional knowledge digital libraries (TKDL) has also been addressed by WIPO with the aim of not only detailing in writing traditional knowledge already in the public domain, but of improving the WIPO International Patent Classification (IPC) so that the data is easily accessible to patent examiners. Ideally, as these TKDL come into being, they will be incorporated in the minimum search documentation list of the Patent Cooperation Treaty (PCT), therefore, ensuring that the data in these libraries will be considered during the processing of patent applications filed under the PCT system. It has also been suggested that search and examination guidelines in patent examining authorities be updated to ensure that TKDLs are consulted.

Sui Generis Protection System

Some developing countries have also actively promoted the increased involvement of the World Intellectual Property Organization (WIPO) in the discussion and development of a sui generis regime for traditional knowledge.

Sui generis literally means “of its own kind” and consists of a set of nationally recognized laws and ways of extending plant variety protection (PVP) other than through patents. TRIPS

itself does not define what a sui generis system is or should be. And although TRIPS does not mention UPOV, it is generally agreed that the UPOV standards meet the requirements for a sui generis system for plants. However, countries do not have to join UPOV to implement a sui generis system to comply with TRIPS.

A sui generis system might consist of some standard forms of IP protections combined with other forms or none at all, for genetic resources. For example, a country could provide patent protections for inventions, plant variety certificates (PCV) for plant varieties or just certain varieties, and/or exclude plants from any form of IP protection at all (although this could conflict with TRIPS compliance).

Potentially, a sui generis system could be defined and implemented differently from one country to another. In addition, a sui generis system might be defined to create legal rights that recognize any associated TK relating to genetic resources and promote access and benefit sharing. The government may choose to extend protections to genetic resources and/or knowledge to a community in the form of patents, trade secrets, copyrights, farmers' and breeders' rights, or another creative form not currently established in the IP regime

In addition, a sui generis system may adopt measures of protection specific to TK in order to nullify inappropriate patents. For example, the Andean Community's Decision 486 states: patents granted on inventions obtained or developed from genetic resources or traditional knowledge, of which any member state is the country of origin, without presentation of a copy of the proper access contract or license from the community shall be nullified.

A sui generis system may legally acknowledge and protect knowledge related to the use of genetic resources even when it is not officially documented, but instead, exists in the form of oral information, and traditional and historic use. Even though protections might be extended here, the government's IP office needs to know about the knowledge or practice in order to enforce protection. Therefore, if a country has some form of a sui generis system in place, it is important for local communities to establish a working relationship with the IP office. In addition, these offices may privately maintain inventories or registries of locally held knowledge, and can assist in its protection. For example, this office can deny a patent application if the knowledge it is based on is already held in the registry.

Under a sui generis system, and as called for by the CBD, any person interested in gaining access to a community's biological resources or knowledge for scientific, commercial or industrial purposes would need to obtain the prior informed consent of the indigenous peoples who possess the knowledge in question unless the knowledge is already in the public domain. This would allow the community to decide on access to and use of its genetic resources and knowledge, with the option to share or not to share them. If consent is granted, the person or persons wishing access to lands held by indigenous communities or a conservation area, its biological resources, and associated knowledge would need to present evidence of this consent to either the IP office or to the proper authority (Hansen and Van Fleet).

Thai sui generis TRM regime

The “Thai Traditional Medicinal Intelligence Act” distinguishes different categories of “Traditional Formulations”:

“*National Formulae*” are formulations which are crucial for human health and are held by the State.

The Act stipulates that the ministry of Public Health has authority to decree a certain formula of traditional Thai medicine as a “national formula”. To be eligible, the traditional formula must be of significant benefit or have special medical value. After the announcement, the rights of such a formula belong to the State.

The commercial use of a national formula, for the production of drugs or for research and development, is subject to permission from the government (criminal sanctions are provided for in the case of infringement).

“*Private Formulae*” can be freely used by the owner. Third parties must obtain permission from the owner to use the formula. The request for the registration of a “private formula” can be submitted by an inventor or developer of the formula, or an inheritor of the inventor or developer of such a formula.

The Act grants exclusive rights by allowing the owner of the registered personal formula to use the formula for research and to sell and distribute any product developed or manufactured by using the formula. However, there are certain limitations to the exclusive rights. The rights over a registered personal formula remain in force throughout the life of the owner and subsist for a further period of fifty years from the date the applicant dies. One of the main objectives of the sui generis protection is that the exclusive monopoly granted by the State should enable the owners of traditional knowledge to be adequately compensated for their contribution.

“*General formulae*”, finally, are well known traditional formula that may be used freely by anybody.

Source: Kuanpoth, 2001

Thailand is possibly one of the countries that has so far developed a comprehensive sui generis regime for TRM medicine. One important feature of the Thai law is that all three types of formulae can continue to be freely used domestically by traditional healers or Thai communities in limited quantities. The law also provides for measures aimed at the conservation and sustainable utilization of the medicinal plants, especially those at high risk of extinction. In addition, the Institute of Thai Traditional Medicine was formally established (after having been in operation for seven years), and a Thai Traditional Knowledge Development Fund was created.

The Institute is governed by a committee composed of equal numbers of NGO’s and governmental officials. Registration and other activities are distributed among 75 provincial offices throughout Thailand.

The Thai regulations have permitted the registration of over 700 licensed local manufacturers producing traditional medicine. In 1998, there were already 4,300 formulations registered with Thai FDA. These numbers are still increasing. The total value of production in 1999-2000 was around 320 million bahts, without including traditional medicines produced individually by healers (Subcharoen et al, 2000).

The Thai Act provides a model of a special regime for the “protection” and the “promotion” of TRM which does not prevent the traditional healers from continuing to produce preparations for individual use. It contains, however, some questionable elements. In particular, the very long period of protection may create an “unnecessary burden on society” and provide “unreasonable profits to the owners of the traditional knowledge” (Kuanpoth, 2001). In addition, there have been implementation problems, since no “national formulae” have been announced, and it has been difficult to establish titles to “private formulae”.

An example of benefit sharing carried out outside IPRs is provided by the AICRPE project in India, in relation to a plant identified as *Trichopus zeylanicus travancoricus* (and called

'Arogyapacha', or "evergreener of health"). This plant has been, traditionally used by the Kanis tribe, with antifatigue and immuno-enhancing properties. Based on the lead from the Kani tribe, a scientifically validated and standardised herbal formulation ('Jeevani') was developed. The technology was transferred to a pharmaceutical company for commercial production. The Kani tribe will receive 50 per cent of the royalties paid by the company (Pushpangadan, 2002).

Customary laws may also play an important role in preserving and regulating the use of traditional knowledge in certain local/indigenous communities. Such laws are generally based on the principles of collective right and free flow of knowledge. Seeking to extend existing modern systems of IPRs protection to such communities might undermine their existing customary systems, and defeat many of the objectives that IPRs are supposed to contribute to.

The protection of traditional medicine could potentially be addressed through the enforcement of the customary laws of local/indigenous communities, rather than by the application of the current IPRs models. The success of a customary law approach would depend on its formal recognition, accompanied by adequate legal arrangements concerning matters such as self-determination, land rights and biodiversity protection. The recognition of communities' customary law, hence, raises delicate political issues in the framework of the modern nation state, the relationship between indigenous peoples and national governments being problematic in many countries.

The Sixth Meeting of the Conference of the Parties to the Convention on Biological Diversity, requested further consideration of the role of customary laws and practices in relation to the protection of genetic resources and TK, innovations and practices, and their relationship with intellectual property rights (Decision VI/24 C 3(b), The Hague, 7 - 19 April 2002).

An important limitation of the customary law approach is that, if adopted at the national level, it would not encompass - very much like in the case of sui generis regimes discussed above - recognition of the rights conferred in foreign countries, unless specific agreements on the matter are put in practice under international agreements or unilaterally under national laws.

2.2 Policies and laws

Different policies exist, in particular, in relation to the integration of Traditional medicine in national health care systems. Some countries, such as China, the Republic of Korea and Vietnam, have adopted measures to promote integration aimed at exploiting the complementarities of TM and modern medicine. Measures have included procedures for the registration of traditional healers or herbalists, the establishment of specialized hospitals, colleges and universities, the development of research programs, the validation and certification of TM products, the introduction of 'Good Manufacturing Practices' and the incorporation of medical doctors who have graduated from traditional medical universities, into the staff of hospitals of modern medicine to promote the use of TM in combination with the practice of Western medicine. In some countries, such as Zimbabwe and South Africa, the responsible authorities accord substantial recognition to healers through national efforts designed to integrate traditional and Western medical systems. In others, healers are afforded no substantive recognition, their status existing purely within the custom of local communities (Lettington, 2000).

Overall, the Uganda National Culture Policy recognizes that Indigenous Knowledge (IK) is a vital sub-system of culture. IK is a key factor in social and economic development as well as cultural transformation. In addition, there is recognition of the important role of local communities in contributing their indigenous knowledge systems to enhance the sustainability of development programs. It is important therefore to develop IK systems in Uganda to ensure that IK is maximally used for the benefit of people. Under the policy it is stated that

interventions shall emphasize the preservation, integration, utilization and promotion of indigenous knowledge.

Specifically, such interventions are to:

- Ensure research, documentation and dissemination of indigenous knowledge;
- Promote indigenous knowledge in formal and informal institutions;
- Evaluate indigenous knowledge for its efficacy and use;
- Facilitate the setting up of organizing frameworks for innovators;
- Establish a mechanism to support institutions involved in indigenous knowledge development. (ugandaemb.org/Uganda%20_National_Culture_Policy.pdf)

2.3 Institutions

In some countries, organizational structures (often structures imported from the West) such as associations, corporations, councils and cooperatives have been formed in order to address the communities' representation problem in benefit sharing. Some legislation has sought to provide for the recognition of indigenous groups and communities in general - e.g. Australia's Aboriginal Councils and Associations Act - or of land-owning groups in particular - e.g., Papua New Guinea's Land Groups Incorporation Act. Attempts have also been made to tailor the legislation to the particular nature, functions and powers of the indigenous body concerned, as in the case of Anangu Pitjantjatjara, the corporate body established in South Australia to hold and manage the ancestral lands of the Pitjantjatjara people (Fingleton, 1998). A review of this law, however, found in 1996 that the Act gave almost no room for local cultural variation in corporate structures and decision-making processes, and in fact caused groups to lose control over their affairs (Fingleton, 1998).

2.4 Benefit Sharing

An example of benefit sharing carried out outside IPRs is provided by the AICRPE project in India, in relation to a plant identified as *Trichopus zeylanicus travancoricus* (and called 'Arogyapacha', or "evergreener of health"). This plant has been, traditionally used by the Kanis tribe, with antifatigue and immuno-enhancing properties. Based on the lead from the Kani tribe, a scientifically validated and standardised herbal formulation ('Jeevani') was developed. The technology was transferred to a pharmaceutical company for commercial production. The Kani tribe will receive 50% of the royalties paid by the company (Pushpangadan, 2002).

3. Materials and Methods

3.1 Study Area and Selection

The study area covered four (4) districts of Uganda i.e. Mukono in Central, Jinja in the East, Hoima in the West and Lira in the North. The sampled districts' locations are indicated on the Uganda map shown below. These districts were selected because of the advantage of a paired proximity for convenient travel and access while at the same time they are endowed with a rich presence of communities with traditional herbal practitioners. Equally important, experiences of traditional herbalists in each of the four regions in Uganda were all represented, to reflect the national picture in the sector.



Figure 1: Map of Uganda -showing the location of Mukono, Lira, Jinja and Hoima Districts in Uganda.

3.2 Methods

3.2.1 Study Design

The study used a combination of participant case study and cross-sectional survey in design. This is because of the varied nature of the educational backgrounds of the respondents as well as that of the TK/traditional herbalists' holders and the business sectors. Survey and interview techniques were used for collecting data. The combined designs enabled the researchers to gather data from various respondents operating in different stages of the traditional herbal medicine value chain.

3.2.2 Study samples and sampling procedure

From each of the four districts, a pilot study was conducted focusing on FGDs with herbalists and policy makers, key informant interviews with policy makers, interviews with herbalists and herbal users and a field survey. A total of 10 herbalists and herbal users per district were interviewed. This helped to determine the level of practice, developed a research strategy and selected prospective TK/traditional herbal medicine holders at community and individual levels. Then the study performed comprehensive surveys still with 30 TK/traditional herbal medicine holders and 10 herbal users per district from the selected communities and individual TK/traditional herbal medicine holders to determine the prevailing factors, opportunities and constraints affecting their TK/traditional herbal medicine practice, benefits and how their livelihoods have been affected by their TK practices. In total, 160 herbalists and herbal users participated in the final comprehensive study process.

The key informant interviews were conducted with 13 individuals/institutions at national and local levels, policy makers and stakeholders in promoting THM.

3.2.3 Data collection

Participatory Rapid Appraisals especially by Focus Group Discussions (FGDs) key informants and in-depth interviews (KIIs) were conducted with relevant stakeholders in the traditional herbal medicine production and marketing value chains in Mukono, Jinja, Hoima and Lira districts.

The PRA aimed at determining the needs of the TK holders (traditional herbalists) and the relevant TK protection mechanisms required restrictions and challenges for the execution of business. Other parameters captured included information technology use, levels of innovation, and their constraints.

Literature surveys and review of other secondary data sources were conducted to identify the prevailing levels of innovation, how the TK is passed among the TK owners over the generations, the life cycle evolution of traditional herbal medicine products and review of existing alternative TK protection regimes, legislation and conventions applicable to TK protection in general. Finally, the analysis of relevant International/Regional treaties conventions and protocols on the protection of Traditional Knowledge were undertaken.

3.2.4 Data Analysis and presentation

Data from FGDs and key informant interviews was analyzed qualitatively using transcription (including translation from local languages to English) and transcribed information was then organized, indexed and coded using qualitative analysis software. The coded data was then interpreted using content analysis techniques. The information was summarized into a research report. The data collected from 160 herbalists and users' using the survey questionnaire was analyzed using SPSS 12.

Results from both analyses were then triangulated to foster drawing of strong conclusions and making valid policy recommendations. Analyzed information was presented in form of illustrations, frequencies, percentages, tables and charts while at the same time being punctuated with the suitable narrative.

4. Research Findings

One of the objectives of the research was to assess the levels of traditional herbal knowledge among traditional herbalists, herbal users and policy makers in Uganda. The levels were assessed and the results are given below:

4.1 The levels of traditional herbal knowledge among traditional herbalists

4.1.1 Promotion of traditional herbal medicine practices

Traditional herbal medicine practice

The sampled herbalists showed high levels of knowledge on general herbal medicine practice by giving the types of traditional herbal medicine used in their communities, types of traditional herbal medicinal knowledge; types of diseases treated and suggested ways of improving the THM practice. Specifically, analysis showed the following:

Type of treatment most used

The research indicated that 59.2% (71) of the people in the sampled districts use herbal medicine while 36.7% (44) use western medicine mostly. On the other hand 4.2% (5) indicated that they did not have knowledge on the level of use of the concerned medicine. The reasons for using herbal medicine were mostly given by the participants as follows:

1. Less travel costs and time consuming.
2. Easy communication between the herbal practitioner and users.
3. Herbalists services are more affordable compared to conventional medicine.
4. Herbalists offer satisfactory services and care.
5. Herbal medicine has lesser side effects compared to the conventional medicine.
6. Herbalists readily offer advice.
7. Herbalists are nearer to the users so they are easily accessible and provide home based care.

According to the research, 65% (78) of the respondents inherited the practice from their parents / guardians / grandparents. While 35% (42) of the respondents got interested or trained in the herbal medicine practice.

The analysis also indicated that 79.2% (95) benefited, with an income from the practice while 16.7% (20) of the herbalists benefited in terms of employment and 4.2% (5) in image improvement.

The support towards traditional herbal medicine promotion was also assessed. The organizations that support the practice are as indicated in figure 2.

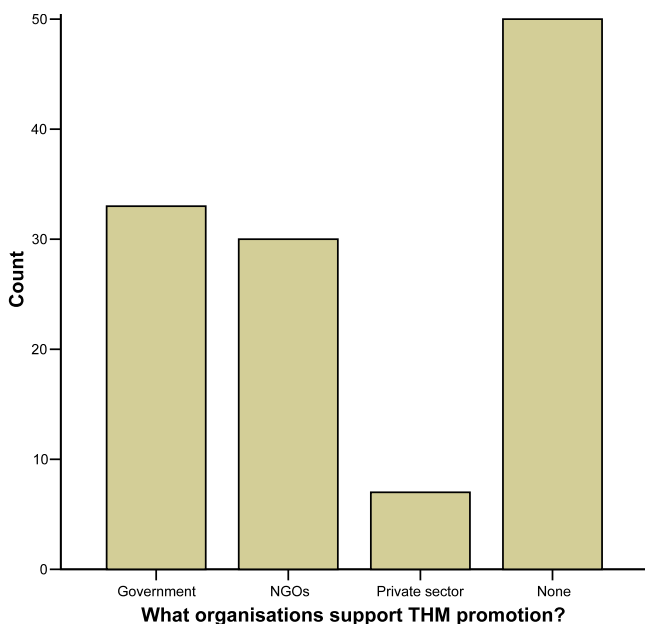


Figure 2: Organizations supporting THM in Uganda

27.5% (33%) of the respondents indicated that they get support from the government, 25% (30) get support from NGOs, 5.8% (7) indicated support from the private sector and 41.7% (50) did not indicate any support from any organization.

On the other hand the respondents mentioned that they get the following category of support as indicated in Table 1.

Table 1: Support given to herbalists

	Frequency	Percentage
Policies and laws	19	15.8
Training	101	84.2
Total	120	100.0

84.2% (101) of the respondents indicated that they get support in terms of training and sensitization; while 15.8% (19) of the respondents mentioned support in terms of policies and laws.

Ways of improving the use and protection of THM in Uganda

The respondents suggested the ways in which THM use and protection can be done in Uganda. The results are indicated in the figure 3:

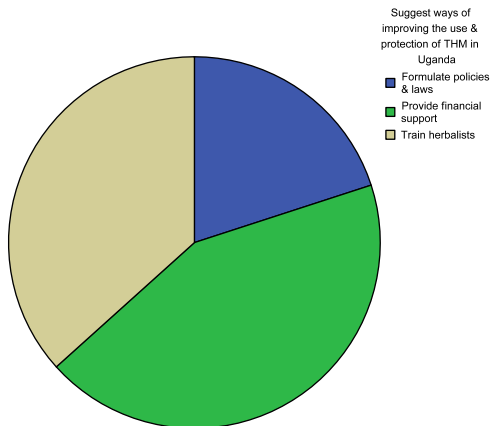


Figure 3: Ways of improving the use and protection of THM in Uganda

43.3% (52) of the respondents mentioned financial support as a major requirement in improving THM practice in Uganda. This was followed by 36.7% (44) that gave training herbalist in their practice. 20% (24) mentioned formulation of policies and laws for promoting THM in Uganda. Mukono district prioritized support in terms of training at 40%, while Hoima gave the highest percentage (40%) for formulating policies and laws as one way of promoting THM in Uganda.

Skills required by herbalists to improve THM practice in Uganda

The analysis of the skills required by herbalists to improve THM practice gave the results indicated in the figure below;

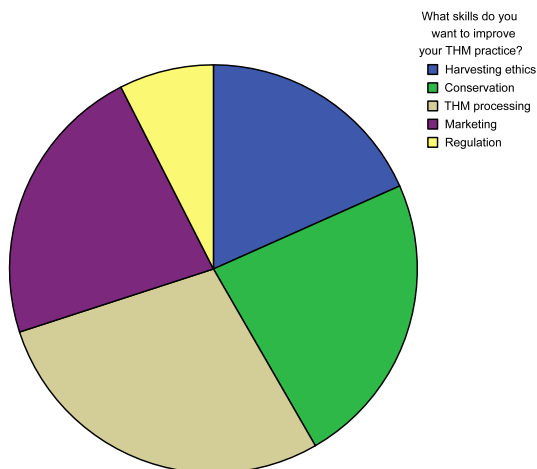


Figure 4: Skills required by TMPs in Uganda

30% (9) of the respondents indicated conservation of herbal medicine sources (biodiversity) as one of the skills required for their practice. This was followed by 26.7% (8) for THM processing, 20% (6) for harvesting ethics, 16.7% (5) for marketing and 6.7% (2) for regulation.

Marketing

The marketing of the traditional herbal medicine was also assessed. The results are shown in Table 2:

Table 2: Ways of marketing of the THM in sampled districts

Marketing centres	Frequency	Percent
Home based sites	83	69.2
Own shops	16	13.3
Sales centre	21	17.5
Total	120	100.0

The results show that 69.2% (83) of the respondents mentioned that the THM in the sampled districts is sold at the home based sites, selling the medicine at herbalists' shops indicated 13.3% (16). The selling of THM at the sales centres was assessed at 17.5% (21). The figures below show some of the selling centres for the THM.



Figure 5: A well-organized herbal medicine site in Mukono shop in Hoima town



Figure 6: A home based herbal sales site



Figure 7: A stall (sales centre) in one of the herbal markets (Mukono)

4.1.2 Policies, laws and regulations

Regarding policies, laws and regulations, 19.2% (23) of the respondents mentioned that they had knowledge of some policies and laws that promote traditional herbal medicine. On the other hand 80.8% (97) did not have any knowledge of laws on traditional herbal medicine as indicated in table 3.

Table 3: Knowledge of laws that promote THM among the respondents

	Frequency	Percentage
Yes	23	19.2
No	97	80.8
Total	120	100.0

4.1.3 Conservation of traditional herbal medicine resources (biodiversity)

Regarding the sources of the traditional herbal medicine, the analysis gave the results as shown in the figure below;

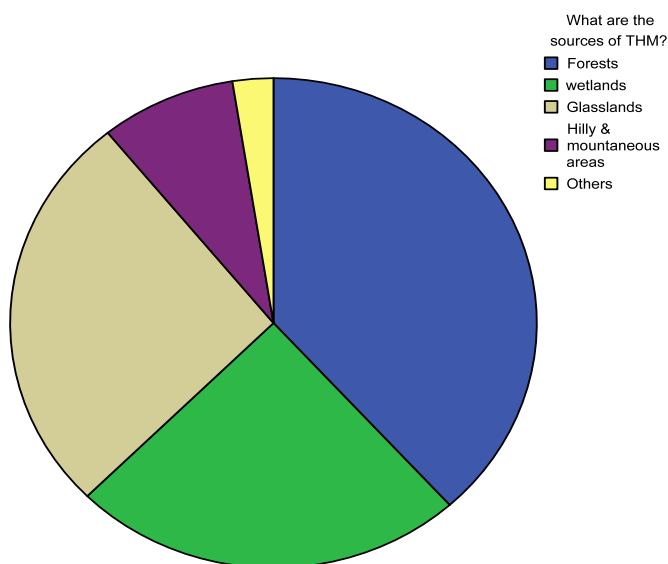


Figure 8: Analysis of THM sources in Uganda

38.3% (46) indicated THM sources as forests, followed by 26.7% (32) as grasslands, 24.2% (29) as wetlands, 8.3% (10) as hilly and mountainous areas and 2.5% (3) as others.

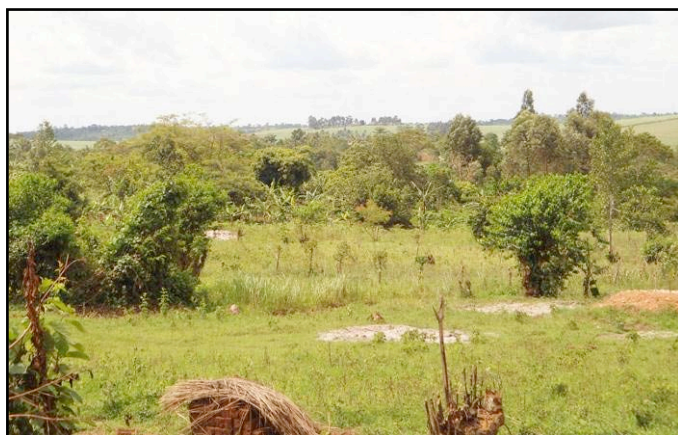


Figure 9: Woodland/ grassland herbal source in Mukono District

The status of the THM sources was also assessed and the results are given in the figure below:

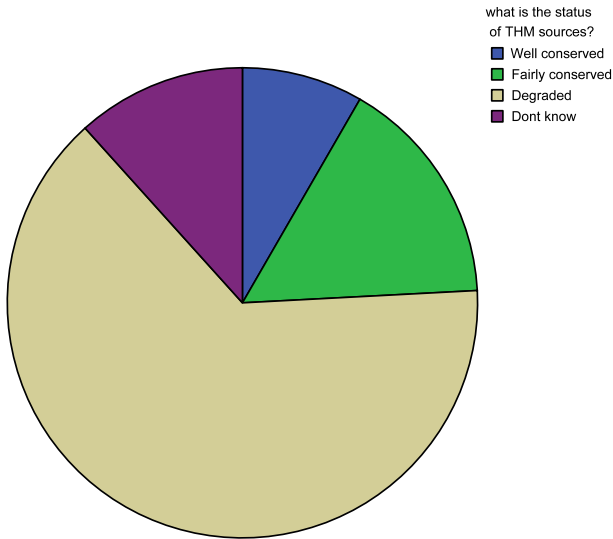


Figure 10: Status of THM sources in Uganda

64.2% (77) of the respondents mentioned that the THM sources are degraded (fig. below). While 15.8% (19) mentioned that the sources are fairly conserved. 11.7% (14) of the respondents said they did not know the status of the THM sources. On the other hand, 8.3% (10) mentioned that the sources are well conserved as shown in the following figures.



Figure 11: A THM source being destroyed in Hoima for agricultural practices



Figure 12: A degraded part of Mabira Forest in Mukono district. Source: Internet



Figure 13: A conserved natural forest in Mukono where herbs can be collected. (Mabira Forest reserve); Source: Internet

Ways of conserving THM sources (biodiversity)

The respondents were also asked to suggest ways in which THM sources could be conserved. The analysis results are given below:

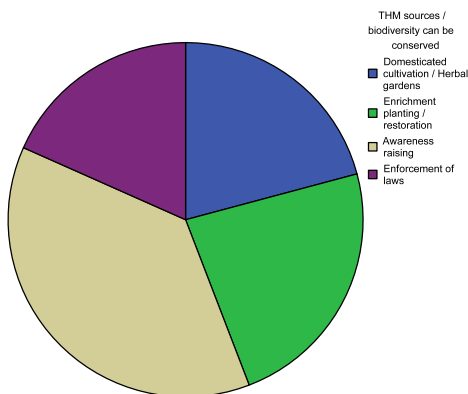


Figure 14: Suggested THM sources conservation approaches in Uganda

37.5% (45) suggested raising awareness as one of the ways of conserving THM sources. This was followed by 23.3% (28) that mentioned enrichment planting / restoration of degraded sources. 20.8% (25) of the respondents suggested domesticated cultivation / establishing herbal gardens, while 18.3% (22) gave enforcement of laws as one of the ways for conserving herbal sources.

Laws that promote biodiversity conservation

Table 4: Respondents responses on laws that protect THM sources (biodiversity) conservation

Parameter	Frequency	Percent
Knowledge of laws that promote THM sources conservation		
Knowledge of laws	29	24.2
No knowledge of laws	91	75.8
Total	120	100.0

Regarding the knowledge on laws that promote conservation of THM sources, the analysis showed that 75.8% (91) of the respondents did not have knowledge and only 24.2% (29) had knowledge of laws on conservation of THM sources. Even the 24.2% of the respondents could not specifically mention the exact laws and their intentions or objectives.

4.2 The levels of traditional herbal knowledge among policy makers

Table 5: Awareness among Policy makers on THM laws and policies

Parameter	Frequency	Percent
Knowledge of laws and policies	5	40
Lack of Knowledge on laws and policies	8	60
Total	13	100.0

40% (5) of the respondents mentioned that they knew some laws and policies that promote THM in Uganda while 60% (7) of the sampled policy makers lacked knowledge of the laws and policies. Some of the 40% could not mention the specific laws and their objectives.

Regarding other areas like institutions responsible for THM promotion and benefit sharing, level of use of THM, programs on THM, the policy makers were fairly knowledgeable.

4.3 Levels of traditional herbal knowledge among herbal users

The analysis of data regarding THM knowledge among the herbal users was done and the results are given in the table below:

Table 6: Levels of traditional herbal knowledge among herbal users

Parameter	Frequency	Percentage (%)
Treatment most used		
Herbal medicine		
Western medicine	26	65
Don't know	10	25
	4	10
Organizations' support to THM promotion		
Government	6	15
NGOs	20	50
Private Sector	4	10
None	10	25
Type of support		
Policies and laws	4	10
Training	36	90
Knowledge of laws that promote THM		
Yes	8	20
No	32	80
Knowledge of laws that promote herbal sources (biodiversity) conservation		
Yes	13	33
No	27	67
Ways of improving THM in Uganda		
Formulate policies and laws	7	17
Provide financial support	20	50
Train herbalists	13	33
Sources of THM		
Forests	13	33
Wetlands	12	31
Grasslands	10	23
Hilly & mountainous areas	4	10
Others	1	3
Status of THM sources		
Well conserved	4	10
Fairly conserved	6	15
Degraded	26	65
Don't know	4	10
Ways of conserving THM sources (biodiversity)		
Domesticated cultivation/herbal gardens	11	27
Enrichment planting/restoration	8	20
Awareness raising	19	47
Enforcement of laws	2	6

Promotion of traditional herbal medicine practices

Type of treatment most used

The herbal users had knowledge on the use of the herbal and western medicine in their respective communities. The analysis indicated that 65% (26) of the respondents use herbal medicine while 25% (10) use western medicine mostly.

Support for promotion of THM in Uganda

50% (20%) of the respondents indicated that the support provided towards promotion of THM is from the NGOs, Government, 15% (6) and 25% (10) reported no support from any organization.

Regarding the type of support provided, 90% (36) indicated training of herbalists in their practices and 10% (4) gave formulation of policies and laws.

90% (36) of the respondents indicated that the support provided towards THM promotion is in terms of training and sensitization while 10% (4) of the respondents mentioned support in terms of policies and laws.

About ways of improving THM practice in Uganda, 50% (20) of the respondents mentioned financial support as a major requirement. This was followed by 33% (13) that gave training herbalist in their practice. 17% (7) mentioned formulation of policies and laws for promoting THM in Uganda.

Policies, laws and regulations

Regarding policies, laws and regulations, 20% (8) of the respondents mentioned that they had knowledge of some policies and laws that promote traditional herbal medicine. On the other hand 80% (32) did not have any knowledge of laws on traditional herbal medicine.

Conservation of THM sources (biodiversity)

33% (13) indicated THM sources as forests, followed by 31% (12) as wetlands, 23% (9) as grasslands, 10% (4) as hilly and mountainous areas and 3% (1) as others.

65% (26) of the respondents mentioned that the sources are degraded. While 15% (6) of the respondent mentioned that the sources are fairly conserved. 10% (4) mentioned that the sources are well conserved. On the other hand, 10% (4) said they did not know the status of the THM sources.

47% (19) of the respondents suggested raising awareness as one of the ways of conserving THM sources. This was followed by 27% (11) of the respondents who mentioned domesticated cultivation / establishing herbal gardens, 20% (8) mentioned enrichment planting / restoration of degraded sources while 6% (2) gave enforcement of laws as one of the ways for conserving herbal sources.

The analysis indicated that 67% (27) of the respondents did not have knowledge on the laws that conserve herbal sources, while only 33% (13) had knowledge of laws.

4.4 The capacity of service provision by traditional herbalists

General respondents' profiles

In this section, the research team sought to establish how far the traditional herbalists in the four districts have gone in affirming their identities as well as having the basic infrastructure in place with regard to their herbal practices. While providing their actual names was optional, efforts were especially made to sound out the issues of herbalists' positions/titles, whether the practices had business names or not, postal and physical addresses (to determine whether the practices are fixed or itinerant), ownership, use of telephone and email addresses (to

ascertain communication, networking capacities and outreach); educational levels, gender and age brackets.

Mentioning of names

While the herbalists interviewed were verbally informed that giving their names was optional, all the 120 respondents mentioned their full names without hesitation. Probed further as to why they felt so free to reveal their identity, all of them separately emphasized that by giving their names, they were sending a message that their identity is part and parcel of them both as individual persons and as herbalists, an occupation they are not ashamed to practice and to promote for the good of themselves, their families and their communities.

Position in the Herbal Practice

Of the 120 respondents, only 10% specified their positions as “directors” 86.7% categorized themselves as “owners” in their respective herbal practices and 3.3% as others (e.g. sales persons, workers). This could be an indicator that most herbalists in Uganda have not yet developed the capacity to separate the personalities of their practices as intact business entities from their personal ones and in so doing, they are likely to find difficulties in streamlining the management/control systems, to realize and uphold efficient and effective service provision.

Other parameters of the respondents’ profiles are indicated in the table below:

Table 7: Other parameters of the respondents’ profiles

Parameter	Frequency	Percentage
Age groups		
21-35	26	21.7
36-50	46	38.3
51-65	48	48
Sex		
Male	68	56.7
Female	46	43.3
Organization’s name		
Had organization’s name	95	79.2
No organization’s name	25	20.8
Postal address /Physical address		
Presence of Postal address	48	40
Presence of physical address	72	60
Phone / e-mail use		
Phone	120	100
email	0	0
Main Occupation		
Herbalist	32	26.7
Farmer	43	35.8
Formal Employment	8	6.7
Trader	37	30.8
Education level		
None	31	25.8
Primary	48	40

Secondary	36	30
Tertiary	5	4.2

Organization's name

Out of the respondents interviewed, 79.2% (95) had the organization's names for their practices either formulated by using their personal names coupled with other wording (e.g. Musonge Pharmaceutical, Kaspiwa Natural Therapeutics Clinic, Adeko-kwok Herbal Clinic, Muna Herbal Research Centre, etc.) or having an independent wording altogether i.e. Agape Nutritional research Clinic, Etc. This shows that these herbalists have the interest and intention to make their practices formal although, as indicated in the above section, they still prefer to remain personally attached to them (herbal practices) probably, for purposes of utmost control. This could be explained by the prevalent tendencies from unscrupulous persons in Uganda and elsewhere, to pirate indigenous knowledge including that of herbalists in particular and traditional healers in general while 20.8% (25) did not have.

Post office / physical address

The research showed that 40% (48) had postal addresses and physical address while 60% (72) did not have. However, all the respondents had clearly indicated the physical locations of their practices, indicating that they rely more on directing their patients and other interested parties, to the physical locations of their herbal practices, for ease of communication and interaction compared to the postal medium (Figure below).



Figure 15: A sign post of one of the Traditional Herbalists Associations that the IK Team met in Mukono District

Ownership / use of mobile telephones and e-mail addresses

Of the 120 respondents interviewed, all of them (100%) owned and used mobile telephones for their herbal practice. However, none of them were using e-mail services.

This indicates that the majority of traditional herbal practitioners in Uganda hardly have access to ICT services in order to benefit from the internet, a tool they probably view as a mystery and a reserve for the highly educated. For instance, the traditional herbalists in Central Uganda usually express their opinions about the internet in Luganda that, "Intaneeti y'aaba abaasoma" literally meaning, "The internet is for those who are highly educated".

Age group

The analysis indicated that 40% (48) of the sampled herbalists fell under the age group of 51-65. While 38.3% (46) were under the age group 36-50 and 21.7% (26) were under 21-35. Apparently, most herbalists are in their fairly prime age and comprise a good base for capacity building in the various skills that they need to upgrade their work. There is also the need for them to initiate and conduct on-going grooming of their children or alternative persons of their

choice (based on trust and discerned interest) to run their herbal practices for the benefit of contemporary users and posterity, on a sustainable basis.

Sex

The analysis showed that 56.7% (68) of the respondents were male while 43.3% (52) were female.

Main occupation

Of the 120 respondents interviewed, 35.8% (43) considered farming as their main occupation. This was followed by 30.8% (37) for trade, 26.7% (32) for herbal medicine practice and 6.7% (8) for formal employment. This implies that the majority of the sampled herbalists (73.3%) consider herbal medicine practice as a supplementary job and possibly less time and other resources are dedicated to developing the practice.

Education level

The education levels of the respondents were assessed as having none at 25.8% (31), primary level 40% (48), secondary level 30% (36) and tertiary level 4.2% (5). Analysis per district indicated Hoima as having the highest percentage of respondents whose level of education at secondary is (50%). Jinja had the highest percentage for non-educated (40%), while Lira had a 56.7% of the respondents falling under primary education. Given that a good number of herbalists are not highly educated, their caliber base needs to be exposed to more education and training so as to boost their herbal practices, to ensure their products meet the set quality, safety and efficacy standards and requirements.

Average monthly income

The average income of the sampled herbalists was also assessed. The results are indicated in the figure below:

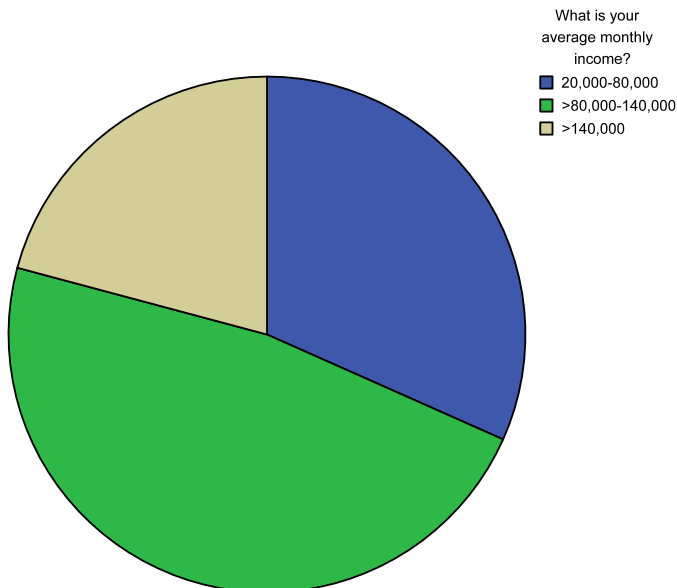


Figure 16: Average monthly income of TMPs

The analysis showed that 47.5% (57) of the respondents indicated that their average monthly income ranges between >80,000 – 140,000 Ushs. This was followed by 31.7% (38) that receives a monthly income of 20,000 – 80,000 Ushs. 20.8% (25) of the respondents indicated their average monthly income as >140,000 Ushs.

The capacity of service provision by traditional herbalists was also assessed by conducting field surveys in the sampled districts. The following parameters were assessed: source of herbal medicine, status of the source, cultivation & collection of herbal medicines (practices & sustainability), transportation of plant materials, whether the plant materials are promptly unloaded & unpacked on arrival at the processing facility, protection of the plant materials from rain, sun & any form of contamination, sanitation and hygiene, disposal of wastes from the processing unit, personal hygiene and premises.

The field surveys conducted revealed that the majority of the herbalists in the sampled districts have very low capacity in processing of the THM as required under the Guidelines for regulation of traditional healers or herbal medicine in Uganda. The herbalists do not follow Good Agricultural & Collection Practices (GACP) recommended by WHO for medicinal plants e.g. they over harvest the plants, debark the medicinal plants (see figure below).



Figure 17: Bad harvesting which may lead to loss of biodiversity and tree species

The majority of herbalists sampled do not have appropriate transportation means for their THM before they are processed. Sanitation and hygiene, disposal of wastes from the processing unit, personal hygiene are not adequately observed as provided for under the guidelines. The majority of the sampled herbalists were lacking appropriate premises where THM can be processed.

During FGDs in the four districts, the herbalists raised the following challenges that they encounter during their practice:

1. Discrimination from the conventional doctors/health workers
2. Lack of consultation between herbalists and authorities
3. Minimal support by the ministry of health and other stakeholders
4. Scarcity of herbs due to high rate of deforestation and wetland degradation
5. Harvesting ethics are not followed by the herbalists hence making the herbal sources unsustainable
6. Discrimination by some members in the community based on some religious beliefs which blanket traditional herbal medicine as satanic
7. Low awareness among stakeholders about the value of herbal medicine
8. Weak enforcement of laws conserving THM sources and those promoting THM practices.

4.5 The level of appropriate protection and benefit sharing policies, strategies and programmes in support to herbal medicine in Uganda

In Uganda, there is a comprehensive legal and institution framework regarding protection and promotion of traditional herbal medicine as well as benefit sharing mechanisms. The policies include;

- The National Science and Technology Policy, 2001
- National Forest Policy, 2001
- National Environment Management Policy 1995

However, some of the important policies in promoting and protecting THM and medicinal knowledge are still in draft form. These include: the draft National Biotechnology and Biosafety Policy and the draft National Policy on Indigenous Knowledge (IK). The draft National Policy on Indigenous Knowledge (IK) seeks to guide the process of integrating IK in the national development process. The draft policy calls for recognition of the value of Indigenous Knowledge (IK) in empowering local communities and urges government to adopt and support national IK efforts and to incorporate IK in its comprehensive National Development Framework. It provides for the sensitization and advocacy for IK, documentation, Research, Validation and Dissemination of IK, commercialization and industrialization of IK, capacity building for IK and resource mobilization for IK.

Among the laws that protect, promote THM and benefit sharing include the Patents Act 1991, the constitution of the Republic of Uganda, promulgated in 1995, the National Environment Act Cap. 153, the Uganda National Council for Science and Technology Act Cap, 209, the Uganda Wildlife Act, 2000, the National Forestry and Tree Planting Act, 2003, the land Act, Cap 227 of laws of Uganda, the National Drug Statute Policy and Authority Act, 2000, and the National Environment (Access to Genetic Resources and Benefit Sharing) Regulations, 2005.

The main objectives of the National Environment (Access to Genetic Resources and Benefit Sharing) Regulations, 2005 are, to prescribe the procedure for access to genetic resources for scientific research, commercial purposes, bio-prospecting, conservation or industrial applications; to provide for the sharing of benefits derived from genetic resources and to promote the sustainable management and utilization of genetic resources, thereby contributing to the conservation of the biological resources of Uganda. Specifically, Regulation 10 states that no person shall access genetic resources from any part of Uganda, unless that person has obtained a written prior informed consent form, and entered into an accessory agreement with the lead agency, local community or owner; carried out an environment impact assessment, in accordance with regulation 16, where required; entered into a materials transfer agreement in accordance with the regulations and obtained an access permit from the UNCST in accordance with the regulations. While Regulation 20 (1) states that the benefits accruing from the collection, modification and use of genetic resources shall be shared in accordance with the principle of fairness and equity, and on mutually agreed terms.

Regulation 20 (2) states that the benefits accruing from access to genetic resources under a materials transfer agreement or accessory agreement shall vary on a case basis and shall include among other things participation by Ugandan citizens and institutions in scientific research and other activities involving access to genetic resources; sharing of access fees and royalties, research funds, license fees, and other special fees that support conservation of biodiversity; payment of salaries, where mutually agreed; collaboration in education and training related to genetic resources; transfer of knowledge and technology under favorable terms and, in particular, knowledge that makes use of genetic resources, including biotechnology, or knowledge that is relevant to the conservation and sustainable use of biological diversity; access to scientific information such as biological inventories and taxonomic studies; contributions to the development of the local community; benefits

relating to food security and joint ownership of patents and other relevant forms of intellectual property rights.

On the other hand, there are two proposed laws that are still in draft form. These include: Industrial Property Bill (2001) and the Traditional Medicine Bill. The Industrial Property Bill (2001) provides for the promotion of inventive and innovative activities to facilitate the acquisition of technology through the grant and regulation of patents, utility models, technovations and industrial designs. The bill, if enacted into law, would modernize an important part of Uganda’s regime of intellectual property law. It covers all industrial property (patents, industrial designs, utility models and technovations) except trademarks. On the other hand, the Traditional Medicine Bill seeks to establish a Council to regulate the practice of traditional medicine, to register practitioners and license practices and to provide for related matters. Practice in herbal medicine in Uganda has been under the National Drug Policy and Authority Act but it was felt that there was need to regulate traditional medicine independently and bring it to nationally and internationally acceptable standards.

Herbal medicine regulation in Uganda was established by the National Drug Authority Statute and Policy of 1993. The law for herbal medicines is the same as that for conventional pharmaceuticals. There is no specific regulatory status given to herbal medicines. Claims which may be made by law include health, medical, nutrient content and cultural use claims. The National Biodiversity Strategy and Action Plan for Uganda that was prepared in accordance with Article 6a of the Conservation of Biological Diversity on general measures for conservation and sustainable use of Biodiversity. The strategy seeks to promote the sustainable use and fair sharing of costs and benefits of biodiversity.

Guidelines for regulation of traditional healers or herbal medicine in Uganda are being finalized. The objective of the guide lines is to guide applicants dealing in herbal medicinal products to conform to regulatory requirements so as to foster proper monitoring of safety and efficacy issues involved. They address issues of manufacturing herbal medicine, registration and promotion of local herbal medicine. The extent of implementation of these guidelines and constraints are not known.

The consumption levels of herbal users

It was not easy to determine the consumption level of herbal medicine in the sampled districts. However, efforts were made to interview the users and other stakeholders as well as reviewing literature on consumption levels.

The analysis of data regarding the use of herbal medicine in the four sampled districts was done and the results are given in table 8 below:

Table 8: Herbal users’ profile

Parameter	Frequency	Percentage (%)
Age Group		
21-35	11	29
36-50	13	31
51-65	16	40
Sex		
Male	11	36
Female	19	64

Education level

None	12	30
Primary	24	60
Secondary	3	7
Tertiary	1	3

Main Occupation

Farmer	17	42.5
Formal employment	4	10
Trader	19	47.5

Average monthly income

20,000-80,000	20	50
>80,000-140,000	16	40
>140,000	4	10

Treatment most used

Herbal medicine	26	65
Western medicine	10	25
Don't know	4	10

Age-group

The analysis showed that 40% (16) of the sampled herbal users were under the age group of 51-65. This was followed by 31% (13) for age group 36-50.

Sex

64% (11) of the respondents were female while 36% (11) were male.

Main occupation

Of the 40 respondents interviewed, 47.5% (19) were traders, 42.5% (17) were farmers and 10% (4) were formally employed.

Education level

Regarding the education levels of the herbal users, 60% (24) of the respondents had their education level as primary and 30% (12) non-educated.

Type of treatment most used

65% (26) of the respondents mentioned that the herbal medicine is used most while 25% (10) indicated western medicine as being used most. On the other hand, 10% (4) did not have knowledge on the consumption levels of either THM or western medicine.

Consumption of THM resources is prevalent at the community, district and national levels. Specifically consumption at community level especially in rural areas is high.

The herbal users also indicated some constraints regarding the use of THM. These are:

1. Stomach upsets
2. Bitterness of some herbal medicines
3. Loss of appetite
4. Limited awareness on legal and institutional framework on THM

Consumption of THM resources is prevalent at the community, district and national levels in Uganda. Specifically, consumption at community level especially in rural areas is high, as illustrated by Uganda's four regional scenarios/experiences highlighted below.

About 80% of Ugandans depend on traditional plant medicines and reversing this trend is not likely for the next 20 years as changing people's behavior is difficult. (www.ethnobiomed.com/content/7/1/7/)

A recent ethnobotanical study conducted in the four parishes in Ngai and Otwal sub-counties, Oyam district, Northern Uganda – one of the areas affected by a 20-year insurgency – documented medicinal plant species for treating health conditions among the local people. As part of the research findings, records reveal that a total of 41 conditions were treated with medicinal plant parts in Oyam District. The common condition being treated in Ngai and Otwal sub counties was found to be abdominal pains and this was reported by 11% of the respondents, followed by cough at 10%. Other conditions such as wounds had 5.6%; headaches, epilepsy and STD/STI at 4.6%. Those least mentioned at below 1% were impotence, toothache, cholera, fever among others.

In Central Uganda, the residents near Uganda's last rain forests have always believed that there are cures in the plant life of the Mabira Forest Reserve, and those seeking treatments for sexual impotence, cancer, malaria and other illnesses are simply taking plants from the forest, parts of which are already in danger of being razed e.g. the "sex tree," which grows deep in Mabira's dense, tropical forest. Consequently, Dr. Kamatenesi (from Makerere University) is leading a campaign/drive, to conserve plants such as *Citropsis articulata*, or the "sex tree" together with the *Pronus Africana* - commonly used to treat malaria and some forms of cancer.

Kamatenesi believes that plants like the "sex tree" may have other medicinal properties besides treating sexual impotence and says that Uganda will miss out on drug discovery and manufacturing if the government does not protect the forest. Researchers also say that the plants' extinction would take a toll on local Ugandans who have been using the trees as herbal cures for generations. Ibrahim Senfuma, a bird guide, says that he and his friends take *Citropsis articulata* to boost their sex drives. Locals either chew the roots and leaves of the plant (salt is added for flavor), or mix them in a half liter of water and then boil to make tea. Lowering his voice amid the crowing and squawking sounds of the forest, Senfuma confides: "I don't know if it is psychological, but it works. You feel stronger than before."

Another local resident, Faziira Nakalama, proudly lists the ailments (her own and her neighbors') cured by the leaves and roots of the *Pronus Africana* i.e. "Decreased immunity, stomach pains, malaria (<http://www.time.com/time/world/article/0,8599,1698267,00.html#ixzz5UiSxJpuu>)

Kamatenesi, Oryem, and Ogwal, (2007) carried out a study to document indigenous knowledge on medicinal plants used by traditional healers in the treatment of some gynaecological morbidity ailments in reproductive healthcare in western Uganda. The documented conditions under gynecological morbidity considered include excessive-bleeding (hypermenorrhea), painful menstruation (dysmenorrhoea), irregular menstruation and prolapsed uterus. Fifty-two medicinal plants were documented by the researchers as being used in the treatment of these ailments and conditions. Leaves are the most commonly harvested plant parts and the most common growth forms harvested are the herbs 51.9%, followed by trees 25% and shrubs 17.3%. Over 50% of these herbal remedies are harvested from the wild ecosystems. The main methods of preparation of herbal remedies were boiling, squeezing and pounding and the medicines are administered orally. The nutritional status of individuals plays a vital role in the well-being and in fighting diseases as some medicinal plants are used as foodstuffs like *Lycopersicon esculentum* Mill., *Mangifera indica* L., *Carica papaya* L., *Cucurbita pepo* L., *Physalis minima* L., *Rumex abyssinicus* Jacq., *Daucus carota* L., *Zingiber officinale* Roscoe and *Ananas comosus* (L.).

In Budiope/Busoga, Eastern Uganda, twenty seven species distributed between 24 genera and 16 families were reportedly used in herbal preparations for the treatment of malaria. The most frequently mentioned species were *Vernonia amygdalina* Delile, *Momordica foetida* Schumach., *Zanthoxylum chalybeum* Engl., *Lantana camara* L. and *Mangifera indica* L.

Drugs from these plants were prepared as water extracts and made from single species. The drugs were administered in variable doses and over varied time periods (Tabuti, 2006)

4.6 Research limitations

From its experiences and observations during the entire study exercise, the IK Research Project – Uganda team noted a number of challenges which it endeavored to address with reasonable success, namely:

- It was not possible for the team to meet a majority of the key informant, policy makers either during the FGD session or to get them to fill the key informant interview questionnaire. This was because in either case, they were said to be very busy with other pressing issues in their respective offices. To overcome this challenge, the team managed to get responses from the available Officers to respond to the questions.
- Getting the herbalists to open up to respond to the FGD tool in groups was not easy mainly because they were apprehensive about being asked to give information on how they conduct their practices. They were suspicious that the team had come to pirate information from them and then vanish as had been the case with some other teams that had visited them earlier on. In this case, the team took some more time by engaging the herbalists in a plenary session during which it was explained that the purpose of the FGD exercise was to identify ways of how best to protect and ensure better benefit-sharing for herbal medicine practice in Uganda.
- A big capacity gap was noted especially with regard to the way the herbalists go about processing their products. During the field visits, the team did not see elaborate facilities for the processing of herbal medicine. Regarding this gap, the team advised and encouraged the herbalists to seriously find ways of establishing and running properly organized facilities for basic processing of herbal products, to ensure the availability of herbal services that would be qualitative, safe and effective (efficacious) – to build confidence in the herbal users and the public in general.
- The training and involvement of the youth in the practice of herbal medicine is minimal. The team alerted the herbalists on this gap and thus encouraged them to begin bringing youngsters on board by equipping them with skills so that they would assume responsibility of these practices, for purposes of sustainability.
- Most herbalists are of primary education level and hence, they are not confident enough to embrace modern methods of herbal medicine e.g. engaging in basic and intermediate processing practices. The team encouraged the herbalists to make it a habit to attend seminars, and related training events so as to update their skills in order for them to modernize their practices. They were also encouraged to participate in the functional adult Literacy (FAL) Programme, as a way of transforming their practices into modern ones.

5. Discussion, Conclusion and Recommendations

5.1 Discussion

The research findings indicated that more than half of the herbalists and herbal users mentioned that herbal medicine is used more than the western medicine in the sampled districts. This is in line with Nelson-Harrison et al., (2002) and WHO, (2004) observations that indicated that 80% of the people living in the African region use traditional medicine for their health care needs. The WHO, (1996) also indicated that Uganda's health status remains poor, with many prevalent diseases, thus need to utilize traditional African knowledge and herbal medicines.

Regarding support to promote THM practice, almost half (41%) of the respondents mentioned that they do not receive any form of support from organizations towards THM promotion. Only a quarter of the respondents indicated some form of support from Government and NGOs in form of trainings and policy and law formulation. There is a need to provide adequate support for THM promotion.

The research findings revealed very low levels of awareness among stakeholders in promoting THM and benefit sharing. More than three quarters (80%) of the respondents lacked knowledge on policies, laws, conservation of biodiversity as far as THM promotion is concerned. Concerted efforts are needed to promote awareness among stakeholders at all levels.

Research findings indicated varied sources of THM in the sampled districts ranging from forests, woodlands, wetlands, grasslands, hilly and mountainous areas. However, it was indicated that the majority of these sources are degraded (more than half of the respondents) and this makes the herbal medicine materials scarce and the practice not sustainable. There is a need to conserve the THM sources through awareness creation, trainings, restoration of degraded sources, and enforcement of laws.

The findings are supported by NEMA, (2005) that observed tropical high forests cover dwindled from about 12.5% of the total area of Uganda in 1900 to 3% in 1987. NEMA, (2005) went ahead to indicate that Uganda's forest cover is estimated to be shrinking at 55,000 ha per year. Already 30% of the tropical high forests which provide high value forest products, THM inclusive, environmental services and biodiversity are estimated to have been degraded with all their associated dependent biodiversity, mostly due to agricultural expansion and unsustainable harvesting of forest resources, urbanization and industrialization (Bush et al., 2004; NEMA, 2005). This is particularly worrying given that as of 2001 what was left of forest cover was approximately 4.9% million ha of which 70% is on private or customary land and only 30% is in protected areas. In the absence of appropriate interventions, forests and woodlands on private land could be wiped out in 17-62 years (UNDP, 2005; NEMA 2005).

Hamilton, (1984), Mafabi and Taylor, (1993), FAO, (1996) reported that cultivation of various crops in wetlands was one of the leading causes of wetland loss of which wetlands are very important sources of THM. MWLE, (2001) and NEMA, (2002) also reported the following

percentages of wetland conversion mainly due to agriculture in various districts of Uganda: 80% of wetlands in Jinja, Iganga 60% , Tororo 46%, Pallisa 64% and Kibale 74%.

The findings also indicated very low capacity of herbalists to deliver efficient and effective services in their practice. The capacity of the herbalists should be built to make them deliver better and promote the practice. This can be done through training, providing financial resources, monitoring and supervision by technical personnel.

5.2 Conclusion

The research team has come up with some conclusive impressions regarding the status of traditional herbal medicine in Uganda. These impressions include:

- The majority of people in sampled districts use THM more than western medicine for their health care.
- There is a low level of awareness on THM practice and promotion among policy makers and stakeholders.
- The level of appreciation of and support to, the practice and promotion of traditional herbal medicine by policy-makers and other stakeholders is minimal and needs significant improvement.
- The herbalists have low capacity in THM processing, conservation of THM sources (biodiversity), marketing, and harvesting ethics.
- The herbalists showed relatively low levels of education and therefore a need to be addressed creatively and innovatively, to enable the herbalists to eventually modernize their products to high, credible levels.
- The significant mechanisms (e.g. policies, laws, institutions etc.) are not adequately implemented and enforced for the efficient and effective practice of traditional herbal medicine in the country.
- The Biotechnology and Biosafety Policy, the Policy on Indigenous Knowledge (IK), laws on the Industrial Property, the Traditional Medicine, and the Guidelines for regulation of traditional healers or herbal medicine in Uganda are not yet enacted.
- The THM materials are obtained from varied ecosystems but most of them are degraded through deforestation, wetland conversion, and unguided land use changes.
- The THMK is fairly protected by the existing legislation but the knowledge is currently not comprehensively documented, shared and therefore inaccessible.

5.3 Recommendations

1. Advocate and raise awareness on THM practices and medicinal knowledge among stakeholders (policy makers, academicians, scientists, local communities, development partners, traditional herbalists, THM users).
2. Capacity building in documentation and information management of THMK at both national and community levels.
3. Promote exchange of THMK among communities and practitioners through the establishment of community-based traditional knowledge resource centres.
4. Provide support (technical, financial, programmes, projects, material) for THM promotion.
5. Capacity building for the THM practitioners is paramount. The focus should be put on the skills requested for by the practitioners and these included THM processing, conservation of THM sources (biodiversity), marketing, harvesting ethics and regulation of THM practice. Capacity in documentation and information management of traditional herbal medicinal knowledge should also be considered.
6. Promote conservation of THM sources (biodiversity) through awareness-raising, enforcement of existing laws, enrichment, planting and establishing of herbal gardens (in-situ and ex-situ conservation).
7. Empower the institutions responsible for promotion of THM and benefit sharing in terms of finance, personnel, equipment to enable them implement the policies and programmes, and enforce laws.

8. Ensure adequate and effective coordination of the institutions responsible for THM promotion and benefit sharing.
9. Align the pending Bills to the Swakopmund Protocol in order to have a comprehensive sui generis form of protection and at the same time provide for benefits sharing.
10. Enforce laws on biodiversity conservation as well as the ABS regulations and related laws.

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