



Legal Protection of Traditional Knowledge in Uganda: Development, Problems and Perspectives

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Abstract

The secret of the efficacy of traditional knowledge is tightly bound to the healthy survival of global biodiversity. Over the ages, this knowledge has suffered a lot of exploitation at the hands of outsiders who either took away the knowledge from their societies and patented the same as their invention (without the consent of the indigenous communities) or made commercial benefits with the misappropriation. This has often led to the erosion of the knowledge from the communities (at times the knowledge is lost forever because only a particular member of the community held the knowledge). This misappropriation has arisen out of the lacuna that there is no effective sui generis system for the protection of traditional knowledge. The efforts and achievements of the communities have never been recognized. Effective legislation and a strong political will are the need of the hour to check this exploitation and prevent the loss of knowledge from future generations. The present article is aimed at identifying the problems that are inherent in the legal protection of traditional knowledge in Uganda. An attempt has also been made to highlight the steps that have been taken so far at the national level and the probable future endeavors to safeguard traditional knowledge.

I. INTRODUCTION

A complex and evolving context surrounds the protection of traditional knowledge (TK) in Uganda. The form, features, and practices of TK are elaborate and multifaceted. The same can be said for the legal systems which regulate and control it. A comprehensive examination of TK and its legal protection in Uganda would require careful consideration and analysis of each of these intricate aspects. Regrettably, due to word limits, the restricted focus of this article is on a particular aspect of TK: its legal protection and its interplay with the national legal systems in Uganda. The importance and urgency to address this issue will be discussed later in the article (Chebii et al.2020).

The value of TK is often seen in its contribution to national and global knowledge and potential economic

development. In Uganda, TK remains an important resource in many rural communities, and it is still used for decision-making in many of the national-level policy and governance discussions. For a variety of reasons, TK has been subject to increasing vulnerability and erosion. Globalization, migration, acculturation, pressure from other knowledge systems, changes in land use and climate, and attitudes of younger generations are some of the many forces that have contributed to this decline. At the same time, there has been a growing realization that traditional knowledge is a valuable resource with a need to protect and preserve it.

The importance of traditional knowledge is profound in many societies. It is a form of knowledge that provides identity, culture, and community for indigenous people. In its holistic sense, TK embraces the beliefs, knowledge,

practices, innovations, and learning of indigenous and local communities. It is often dynamic and innovative, adapting over time to different influences.

1.1. BACKGROUND

The Republic of Uganda, a developing country, was a signatory to the TRIPS Agreement. As a result, Uganda is obliged to make a more extensive system of intellectual property law that complies with TRIPS. These new intellectual property laws will cover, inter alia, "traditional knowledge and expressions of folklore which form part of the cultural and intellectual heritage." This definition points to traditional knowledge and implies that it should be part of the global system of intellectual property, as all other forms of intellectual property are. Traditional knowledge is defined as a system of knowledge or beliefs handed down, generation to generation, that reveal the patterns of life of a community that are the products of interrelations between people and their environment. Traditional knowledge is quite broad and covers various aspects of pre-modern societies (Humphries et al.2023). This goes without saying that every society in the world has at one point had its traditional knowledge, be it the now-developed Western societies or the developing global South. Traditional knowledge has always been a part of humanity's quest to control and manipulate its environment for survival and the betterment of life, with knowledge often resulting in innovation. Even traditional knowledge evolves as societies adapt to new environmental conditions and external contacts. Traditional knowledge has been a source of sustenance and identity for local and indigenous communities that practice and possess it.

June 1995 saw the signing into law of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), the most far-reaching and comprehensive international agreement on intellectual property to date. Of interest to the international community, however, is the fact that the very conception of intellectual property is founded upon Western thought and history. The TRIPS Agreement is the culmination of Western thought on intellectual property and provides minimum standards, leaving open the possibility of more extensive protection of intellectual property in both developed and developing nations. It would be advisable, however, for developing countries to look towards their traditions and systems of knowledge and innovation before both accepting the standards put forth by TRIPS and making intellectual property laws that conform to TRIPS.

1.2. IMPORTANCE OF TRADITIONAL KNOWLEDGE

The introduction provides an overview of legal and policy developments that impact the protection of traditional

knowledge in Uganda. The paper raises questions about the gap between international and national developments, and their implementation and enforcement. It suggests that work on traditional knowledge in Uganda may provide a practical example of how to bridge this gap. Traditional knowledge is an important issue in Uganda. Traditional knowledge of biological resources is an important asset in the livelihood of rural communities, who are the custodians of this knowledge. Moreover, it is widely recognized that the conservation of biological diversity is closely linked to the protection and promotion of traditional knowledge. There are also commercial interests in the utilization of traditional knowledge. Uganda has significant biodiversity, and many in the scientific community and private sector are interested in researching biological resources and developing products based on traditional knowledge. This makes the question of traditional knowledge particularly acute. Yet little attention has been paid to the legal status of traditional knowledge under Ugandan law.

What information exists is essentially documentation of traditional knowledge as part of ethnobotanical studies and the like. There is no specific framework for the protection of traditional knowledge, and traditional knowledge is usually treated as an indirect object of policy which is focused on the promotion of agriculture, health care, and conservation of natural resources. This is changing (Ssenku et al.2022). The international debate on traditional knowledge has had some impact in Uganda. At the international level Uganda has participated in the negotiation of the Convention on Biological Diversity, the Agreement on Trade Related Aspects of Intellectual Property Rights, and the International Undertaking on Plant Genetic Resources. This has provided an external impetus for the examination of traditional knowledge as it relates to these and similar instruments. At the same time, the Ugandan government has sought to review how laws and policies related to agriculture, natural resources, and health sectors are formed and executed. This has included initiatives for policy and legislative development which is participatory, and more sensitive to the needs and knowledge of local communities.

II. DEVELOPMENT OF LEGAL PROTECTION

One of the treaties that were drafted by the ARIPO was the Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore. This treaty was completed in 2010, but it is yet to come into force. The Swakopmund Protocol provides for the protection of the rights of the holders of traditional knowledge and holders of expressions of folklore. It also aims to prevent the

granting of patents or any intellectual property rights to an invention that uses traditional knowledge without the consent of holders of traditional knowledge. Current patent laws have made it easy for the grant of patents using prior art that is traditional knowledge and this protocol specifically addresses this issue. This treaty would significantly help Uganda in its efforts to provide legislative protection for traditional knowledge. (Mwenegoha, 2022)

According to Jessy Wabwire, the Ugandan effort to protect traditional knowledge started mainly with the evaluation of various laws in the early nineties. The government, aware of the erosion of traditional knowledge, started making attempts to protect traditional knowledge and folklore in 1995 (Masenya2022). The African Regional Intellectual Property Organization (ARIPO) and the World Intellectual Property Organization (WIPO) are responsible for the drafting of treaties and the formation of legislation that is used to protect traditional knowledge. WIPO currently has an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore. One of the goals of this committee is to establish an effective intellectual property protection system for traditional knowledge and folklore.

2.1. HISTORICAL OVERVIEW

There is no specific documentation on the intellectual property concepts in the pre-colonial times in Uganda. Most of the laws and customs were not documented. They were passed on and taught through oral traditions, and customs were practiced because they were the norms of the society at that time. These norms and customs had a direct influence on the way of life and the social, political, and economic institutions in Uganda. This meant that a lot of the traditional knowledge and expressions originated from these times. The cultural leaders and elders were the custodians of culture, and they transmitted it to the younger generation (Verweijen & Van Bockhaven, 2020). The various communities had their ways of life, with different customs and taboos. Each had folklore, music, dance, crafts, and similar traditions. All of this, in essence, was traditional knowledge.

The division of history in Uganda is commonly known as the pre-colonial, colonial, and post-colonial. The era before the coming of the Europeans in Uganda is referred to as the pre-colonial times. This occurred between the 1840s and 1890 when the colonial boundaries were being made. The period between 1890 to 1962 when Uganda gained independence is the colonial era. The post-colonial era is the time after Uganda gained its independence. Each of these times has had different impacts on the traditional knowledge and expressions of the people of Uganda.

2.2. INTERNATIONAL AGREEMENTS AND TREATIES

With the continual globalization of societies and the increasing value of traditional knowledge held by indigenous communities, it is a natural progression that there have been increasing attempts to regulate its use and protection at an international level. Such efforts are evident in international agreements and treaties where traditional knowledge is dealt with directly or indirectly. While some commentators argue that international initiatives are often driven by Western concepts of intellectual property rights, many IP protections for traditional knowledge are based on the customary laws of the indigenous communities themselves.

For example, Article 31 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) provides that "Members recognize the need to protect traditional knowledge, folklore, and genetic resources, and to incorporate an appropriate method in the negotiation and the solution of disagreements over diverse expectations and demands held by member countries." However, the effectiveness of such international agreements is often limited in that the actual imposition of rules is optional and is dependent on individual member countries. This can lead to shortcomings such as the failure of TRIPS to provide extra protection or incentives for the development of new forms of protection for traditional knowledge in developing countries and a specific mechanism for access and benefit-sharing about traditional knowledge and biodiversity (Latulippe & Klenk, 2020).

2.3. NATIONAL LEGISLATION

The absence of a legal framework at the national level has been one of the major impediments to the preservation and protection of traditional knowledge (TK) from misappropriation. Uganda's national laws have been framed to serve the requirements of the Western knowledge systems. Contemporary laws do not recognize the existence of knowledge systems apart from modern knowledge and they grant protection to the rights of those who document the TK rather than the community from where it has been derived. This creates a high chance of bio-piracy and exploitation of TK without the consent of the knowledge holders. National laws are based on various sectors of TK such as agriculture, medicine, trade, and environment law. But there are no direct laws for the protection of TK. Laws related to Plant Breeder's Rights (PBR) and rights over new plant varieties are also major threats to the protection of agricultural TK. This grants monopoly rights over new plant varieties by providing exclusive rights to plant breeders to produce, market, and exchange. This subsequently dis-incentives farmers from

utilising their local varieties which are better adapted to the local conditions and have better medicinal properties (Mogos, 2021). Because Uganda is a signatory to the WTO and TRIPS Agreement, it has to comply with the obligations of the agreement. This means that Ugandan laws are expected to be in harmony with the IPR laws of the TRIPS agreement. This does not bode well for the protection of TK considering that the laws are tailor-made to protect modern Western knowledge and innovations.

III. PROBLEMS IN PROTECTING TRADITIONAL KNOWLEDGE

As traditional knowledge is a concept that is quite new to the legal domain, many problems are bound to arise. One of the foremost problems, which is present in many countries including Uganda, is that people are not aware or do not understand the implications of intellectual property rights and how such rights could affect their traditional knowledge. This lack of understanding is a problem in itself, but it also means that people with traditional knowledge aren't able to make informed decisions on whether to protect their traditional knowledge and if so how they should go about doing it.

The inadequate legal framework to protect traditional knowledge is a problem that is being faced worldwide, not just in Uganda. The intellectual property systems that are in place in most countries are more often than not based on Western concepts of intellectual property and don't provide adequate protection for traditional knowledge. Consequently, traditional knowledge is left largely unprotected and is subject to misappropriation. This inadequacy has led to attempts to reform the present intellectual property system at international, national, and regional levels.

Challenges in identifying and defining traditional knowledge have somewhat of a circular relationship with an inadequate legal framework as one of the reasons for the inadequacy of the legal framework is that traditional knowledge is difficult to define and identify. Nevertheless, traditional knowledge needs to be protected is essential to help improve the condition of indigenous and local communities who are known to be the custodians of traditional knowledge and are usually the ones that created such knowledge.

3.1. LACK OF AWARENESS AND UNDERSTANDING

At present, TK holders in Uganda are not fully aware of their legal rights and the potential positive and negative implications of the protection of TK. Some are not even aware of the issues of legal protection of TK, whilst others

have a vague idea that legal protection would be advantageous. A study conducted by the focal group discussion method on the "Protection of Baganda Cultural Knowledge" revealed that a few cultural leaders and elders have some understanding of intellectual property and the laws relating to it. However, their knowledge is sketchy, superficial, and sometimes erroneous. For example, during an interview with one informant, they thought that registration of a family's cultural knowledge as copyright would involve revealing secret or sacred information to the public. Generally, TK holders are more familiar with customary than national or state law, which further complicates matters as they tend to equate any form of legal protection with customary law or dispute resolution. This can be attributed to colonial policies which largely ignored or suppressed customary law and denied legal status to some customary institutions. It can be seen that there is a lack of effective communication between TK holders and policymakers of the laws relating to TK. This situation inevitably leads to TK holders being excluded from taking part in policymaking and thus failing to influence the content and form of the laws that will affect them.

3.2. INADEQUATE LEGAL FRAMEWORK

TRIPS makes it clear that member states should ensure that traditional knowledge within their domain is protected by an "effective sui generis system" or by inclusion within existing IP systems. This does not mean that traditional knowledge should be treated as conventional IP, but that the nature of traditional knowledge should be taken into account when developing the IP system. Uganda does not currently have an effective system for protecting traditional knowledge. The Industrial Property Act 2014, and the Copyright and Neighbouring Rights Act 2006 do not expressly exclude traditional knowledge. However, the emphasis of the Acts is on conventional modes of creation. For example, the Copyright Act 2006 is focused on protecting literary, musical, and artistic works. Traditional knowledge is not created in the same way as the works mentioned in the Copyright Act, and emphasis on this might exclude traditional knowledge from protection. This is problematic because the exclusivity of the rights could have unintended effects on customary users who, by definition, have less exclusive rights over traditional knowledge. Customary users could be liable for infringement.

3.3. CHALLENGES IN IDENTIFYING AND DEFINING TRADITIONAL KNOWLEDGE

The major challenge for the protection of indigenous and local communities' traditional knowledge (TK) is the difficulty in identifying and defining exactly what

constitutes traditional knowledge. It is rather difficult to make a clear distinction between what forms of knowledge are traditional and what forms of knowledge are a hybrid between traditional and 'modern'. As a result, there will inevitably be times when certain forms of knowledge are not protected because they are not deemed 'traditional'. This may deeply affect indigenous and local communities because the hybrid knowledge might have been created in an attempt to preserve cultural identity and improve the well-being of a community. Further, the rate of knowledge erosion in some communities means that they may lose knowledge simply because it is not being passed down during a specific period and as a result may forget it altogether. If it is not officially documented, it may be difficult to prove that it was lost traditional knowledge in the event of a dispute.

Linked to the issues of identifying traditional knowledge is the difficulty in defining what constitutes traditional knowledge. Different communities may view knowledge differently and thus have different ideas about what knowledge should be protected. There is a danger of assuming what traditional knowledge is for a community and thus infringing upon their rights to self-determination. There is also the challenge of defining traditional knowledge in such a way that it is inclusive of all forms of traditional knowledge from various communities around the world and yet not overly broad that it is unworkable. An overly broad definition may result in indigenous knowledge being lumped into the same category as traditional knowledge and folklore from the public domain and exploited by third parties (Ludwig & Macnaghten, 2020).

IV. PERSPECTIVES FOR ENHANCING PROTECTION

In consideration of the problems faced in determining and securing legal protection for traditional knowledge, there are steps that Uganda may undertake to enhance the protection of its traditional knowledge. In doing so, it will be better able to preserve and promote the knowledge in the future, thereby increasing the confidence and willingness of community members to continue practicing traditional customs and transferring that knowledge to the younger generations.

Strengthening education and awareness programs can serve to bring traditional knowledge to the forefront of community concern, while at the same time, educating policymakers and the general public about the issues and needs of the traditional knowledge holders. Often, traditional knowledge is taken for granted by those within the community and is only missed once it has disappeared.

Creating awareness about the value of traditional knowledge, the threats it is facing, and the options for securing that knowledge will serve to empower the traditional knowledge holders to take action in preserving their knowledge and to select which customary laws or practices are suitable for the knowledge (Chapman & Schott, 2020). This will ensure that traditional knowledge is not forced into the public domain, and will also enable the indigenous communities to revitalize and promote their traditional knowledge within their community or to the public. For policymakers, education programs can help them to better understand TK issues and provide options for integrating TK issues into national policies, legislation, and regulations. This will help avoid conflicts between national legal systems and customary laws and will better protect traditional knowledge both now and in the future.

4.1. STRENGTHENING EDUCATION AND AWARENESS PROGRAMS

Firstly, let's take the problem of educating the local people about what their rights so that their traditional knowledge and genetic resources are protected. This is a daunting task due to the low literacy levels in these communities (80% of the adult population in 1994) and the fact that lawyers inside and outside Uganda have very little understanding of traditional knowledge and often even hold derogatory attitudes towards it. As part of the WIPO program, funds have been made available to improve the mechanisms for the protection of traditional knowledge and genetic resources in Uganda, and it would be beneficial that a significant portion of this is allocated to providing education and awareness programs in local communities. The NPI and other concerned NGOs could play a role here using the draft bills' strengths and weaknesses to demonstrate how traditional knowledge can be eroded and giving advice as to how communities can set up their systems to regulate access to their knowledge and resources. There is an important role for local leaders here, who can be made to understand traditional knowledge and genetic resources in seminars and workshops and can then impart that knowledge to their constituents. The teaching material needs to be presented in ways that are understandable to illiterate populations, such as through drama, music, and traditional folklore. For those few people who do have access to higher education, research and teaching into traditional knowledge and genetic resources must be encouraged at universities. This will create a future generation of informed people who can help steer the country away from biopiracy. Finally, success stories and best practices need to be documented and publicized in ways that show how the protection of traditional knowledge and genetic resources has led to economic development and poverty alleviation. This will

prove to the skeptics that it is worthwhile investing time and effort into protection (Humphries et al.2023).

4.2. IMPROVING LEGAL FRAMEWORKS

The legal framework for the protection of traditional knowledge (TK) in Uganda, as discussed, has witnessed certain encouraging developments. However, one could generally conclude that it is still at a rudimentary stage and is riddled with several problems. It is not possible to mention every legal initiative here, but only the major ones. These include revising the patent law, making it relevant and responsive to TK and Traditional Cultural Expressions (TCEs), developing a sui generis legislation for preventing bio-piracy of genetic resources and TCEs, and specific provisions in various legislations for the protection of different communities and their knowledge systems.

The revising and development of new laws have been positive in the sense that they attempt to make the current intellectual property rights (IPR) law machinery applicable and effective in the protection of TK and TCEs. It is also significant to note the active participation of various stakeholders, which include government bodies, researchers, NGOs, and the communities themselves. However, a major drawback has been the inadequate level of participation and contribution of the knowledge-holders themselves in this law-making and reform process. It is only the tip of the iceberg to get to the knowledge-holders who represent an extremely large and diverse socio-cultural group (Humphries et al.2023). The laws may later exist on paper, but ensuring their effective implementation may also be the real issue. An optimistic view would suggest that the awareness and discussion of the problems of legal protection have led to some level of realization and might even have kick-started the beginning of a solution.

4.3. COLLABORATION WITH INDIGENOUS COMMUNITIES

One current fashion for promoting national development is to draw on the traditional knowledge and resources of indigenous and local communities. This is consistent with the reality that in many developing countries, a substantial portion of the population (and in some, the majority) comprises indigenous peoples and local communities. In India, for example, approximately 25% of the population belongs to the category of Scheduled Tribes and Other Traditional Forest Dwellers who are explicitly recognized for their significant dependence on forest resources for survival. In Uganda, the situation is less clear, and official statistics vary considerably from source to source. The 2002 official census identified 694,000 people as "indigenous". However, the State of the Environment

Report for Uganda prepared by the Environmental Management for Sustainable Development Program Trust (EMSD) states that "Whereas the whole population depends on biological resources, local communities in Uganda directly depend on these resources for their livelihoods" (Bwambale et al., 2022). The Report estimates that the number of people living in and around the network of gazetted parks and reserves supplied 6.4 million in 1998 and is projected to rise to 19 million. Since these areas are likely to be inhabited almost exclusively by indigenous communities, it is clear that Uganda is also heavily reliant upon the knowledge and resources of its local and indigenous peoples.

V. CASE STUDIES

When considering the question of the protection of traditional knowledge, it is important to consider what we mean by protection in this context. The protection of traditional knowledge can mean several things, including preserving the knowledge within the community or giving the knowledge a status that will then lead to other things, such as legal protection of intellectual property rights. One of the most discussed methods of preserving traditional knowledge is to create a form of communal intellectual property rights. This is a form of protection that gives intellectual property rights that differ from the typical individualistic nature of intellectual property.

The form these communal rights may take can vary widely. They may be an alternative form of existing Western intellectual property rights, such as patents, trademarks, and copyrights. This method is something that WIPO is considering at the international level; however, it may not be the best system for traditional knowledge and may require a great deal of adaptation or development of law to be successful. An example of communal rights that may be more effective can be seen in the development of the sui generis systems in countries such as Panama and Papua New Guinea. These countries have developed systems of rights that are specific to their traditional knowledge and are designed to prevent exploitation of the knowledge, particularly by people outside of the community. These systems provide a greater deal of control and protection for traditional knowledge, but they can pose a risk of essentializing the culture and discouraging its evolution and interaction with outside cultures that can have positive results (Fredriksson, 2022).

5.1. SUCCESSFUL EXAMPLES OF TRADITIONAL KNOWLEDGE PROTECTION

The Indian Neem case is a classic example of the successful protection of traditional knowledge using the existing IPR system. The neem tree (*Azadirachta indica*)

has been known as a wonder tree for its innumerable benefits for more than 2000-3000 years. However, the Western world became aware of it only when the pharmaceutical and cosmetic industry 'discovered' its insecticidal properties. This led to a series of attempts to patent neem-based products. Up to 1994, 7 patents were awarded on the properties of neem as an insecticide. In 1995, the European patent on a fungicide isolated from neem seeds was revoked by the European Patent Board, following a lawsuit by a coalition of public interest groups and activists from Germany and India. This was possible under Articles 54 and 55 of the European Patent Convention which allow opposition to a patent already granted. This unprecedented victory demonstrated the potential of existing law to protect traditional knowledge (Sahu & Amin, 2022). A more comprehensive action to protect neem and to prevent biopiracy was the filing of a lawsuit by a US-based NGO (now called The Neem Foundation), in 1998, against the US Department of Agriculture and WR Grace and Co. The case challenged the award of a patent to the Department of Agriculture and co-assignees, on the use of neem oil as a pesticide, claiming that this was based on the use of neem in India, which is public knowledge. The judgment given in 2005-06 was in favor of the plaintiffs. This case has been hailed as a groundbreaking event in the attempts to prevent the misappropriation of traditional knowledge, especially in the international forum.

5.2. CHALLENGES FACED IN IMPLEMENTING PROTECTION MEASURES

The task of implementing protection for traditional knowledge has yet to prove domestic success in the vast majority of countries. This is due to the complex and unique nature of traditional knowledge, which does not fit comfortably into the legal mold. The first challenge is defining what constitutes traditional knowledge, and differentiating it from other information. The flip side to this is the need to avoid homogenizing the vast varieties of traditional knowledge. This involves achieving legal recognition of the rich diversity of traditional knowledge while overlooking no particular group's rights. The next challenge is establishing who are the rightful holders of traditional knowledge and obtaining their informed consent. This cannot be construed as a one-off occurrence, but rather an ongoing and constantly reassessed process. Underlying the issue of ownership is the need to determine the rights and access privileges of outside groups/providers, such as scholars and companies. This is a very sensitive issue, as it could potentially restrict the dynamic evolution of traditional knowledge, and lead to further exploitation of traditional communities. An effective system of managing and protecting traditional

knowledge must strike a balance between preservation and promotion. An area in which no country has yet managed to implement appropriate measures is the regulation of access to traditional knowledge. This involves controlling who may use, and for what purposes, specific bodies of traditional knowledge. An access denial may lead to accusations of bio-piracy, and conversely, too open access may compromise the knowledge and contradict efforts to preserve it. Another major challenge is transitioning traditional knowledge into a marketable commodity, without exploiting its original providers. This ties in with mechanisms currently in place to protect traditional knowledge in many developing countries, such as the inclusion of traditional knowledge within intellectual property rights. A common problem is that traditional knowledge is being exploited by foreign groups, while the rightful holders see little of the material benefits gained (Latulippe & Klenk, 2020). This often occurs due to the power imbalance between providers and users of traditional knowledge. This imbalance may stem from historical social injustices and cannot be easily remedied by legal measures.

VI. FUTURE DIRECTIONS

Importance of Sustainable Development: It is essential that future global development recognizes the importance of traditional knowledge to local communities, and seeks to preserve and protect it. Where traditional knowledge has provided valuable innovations for commercial products, there must be an equitable sharing of the benefits between the users and holders of the knowledge. Any uses of traditional knowledge and genetic resources must be based on free and informed consent. The alternative, of course, is to continue to allow exploitation and biopiracy to occur. This will have serious negative effects on the holders of the knowledge and resources, and on the knowledge itself. In many cases, it may be irretrievably lost, to the detriment of the global community.

Role of Intellectual Property Rights: Although Ugandan law generally does not recognize property rights in traditional knowledge, certain forms of it may be protected under the existing intellectual property law. This includes copyright legislation on crafts and folklore, and patents on herbal medicines and other innovations. Unfortunately, the idea of using the existing intellectual property system seems to have adverse effects. It was feared that patenting could lead to biopiracy and exploitation of genetic resources, which led to the rejection of a WIPO draft for a treaty protecting the knowledge of folklore, failing the 'downgrading' of traditional knowledge to an alternative and less effective form of intellectual property protection.

Potential Impacts of Technology and Globalization: The world is becoming increasingly smaller, due to the rapid rate of technological advance in the communications sector. Information can be easily exchanged and distributed around the world. Technological advances have also led to the ability to exploit genetic resources for commercial gain. This increases the threat to traditional knowledge, as genetic resources are the raw materials for much traditional knowledge. If local communities continue to be deprived of an equitable share of the benefits arising from the use of their knowledge and resources, they may simply decide to 'give up' and stop practicing these traditions. Alternatively, they may decide to 'protect' what knowledge remains, greatly reducing the further exchange of knowledge and resulting in its eventual loss. Alternatively, with the right legal protection in place, traditional communities may be in a stronger bargaining position to negotiate higher benefit-sharing agreements for their knowledge and resources (Bronen et al.2020).

6.1. POTENTIAL IMPACTS OF TECHNOLOGY AND GLOBALIZATION

The revolution in Information Communication Technologies (ICTs) is another area that holds potential detrimental effects on indigenous knowledge and cultural heritages. The internet, global databases, telecommunications, and other such technologies would facilitate greater access and transfer of TK, but the question is whether the control over how this knowledge is accessed and used would remain within the realms of the indigenous communities. A global "cyber-bazaar" of sorts is emerging, and indigenous peoples' rights to their knowledge and informed consent as to its use are threatened by "free information" agendas and biopiracy by corporations and research institutions. The establishment of a global database of all the world's genetic resources is possibly the most dangerous of scenarios (Fredriksson, 2022). It will be practically impossible for indigenous peoples to maintain control over access to their TK and prevent misappropriation. The shift by many developed countries from traditional patent systems to more effective sui generis systems for the protection of traditional cultural expressions and genetic resources is an indicator that foreign interest in indigenous knowledge is not diminishing. This is because many of these new laws and international agreements provide protection for the rights of local or indigenous communities over collective knowledge and also require prior informed consent and benefit sharing from any outside users (Byron). This ultimately means that it is worth more than ever for indigenous peoples to seek legal protection and preventative measures for their knowledge.

In terms of Traditional Knowledge (TK) and expressions of culture, globalization is probably a real threat to indigenous peoples. Although globalization may very well provide a means for greater economic development and wealth, it could be achieved at the cost of cultural homogenization. As mentioned earlier, TK isn't confined to the past and its continual dynamic nature means it usually changes and adapts to new influences and information. However, globalized influences are generally imposed. A continuously developing and changing body of knowledge is more likely to change drastically when faced with foreign information, which is usually to the disadvantage of indigenous peoples. Often, this knowledge change occurs because indigenous knowledge in many cases is proven to be less effective than imported knowledge and technology, often resulting in a loss of pride and identity. With increased economic development and modernization, there is also a shift towards cash-based economies and wage employment as opposed to subsistence farming and other traditional practices. This results in a further loss of traditional knowledge as practices and customs are abandoned in favor of those more lucrative, and this loss of knowledge is often irreversible.

Globalization and technology have powerful impacts on the world in terms of wealth, culture, information, and numerous other social changes. These changes in the world are leading many societies to re-evaluate and reconsider how they can maintain autonomy while securing their place within the global community. The concern facing many indigenous communities revolves around whether external forces will undermine their cultural heritage.

6.2. ROLE OF INTELLECTUAL PROPERTY RIGHTS

Formalized systems of intellectual property such as patents, trademarks, and copyrights are based on an individualistic model that emphasizes private innovation and invention. The rationale of the TRIPS agreement is that private rights in these areas promote economic development; therefore, the agreement obliges all WTO members to adopt these intellectual property standards. The potential problem arising from this agreement is that an international standard for intellectual property may not be suitable for all countries and all forms of knowledge. This is particularly so for traditional knowledge, which is often collective and cumulative and in many developing countries is a primary resource for subsistence. Rights for private ownership of singular innovations contradict the common rights systems about much traditional knowledge and could lead to the loss of this knowledge from the public domain. This shift towards a monopoly-based

model of intellectual property has several negative implications for the protection of traditional knowledge in developing nations (Sriwiset & Nurnazar, 2022).

The possibilities for further knowledge about living organisms are certainly almost limitless. The development of technologies and ongoing processes of globalization could have far-reaching consequences on the levels of plant diversity and the traditional knowledge associated with it. The impacts of globalization on the loss of traditional knowledge are well-documented, and the creation of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights is viewed as an indicator of changing trends in the protection of traditional knowledge. This agreement marks a significant departure from customary international laws regarding intellectual property and its effect on traditional knowledge and could lead to the loss of potential innovations from developing countries such as Uganda.

6.3. IMPORTANCE OF SUSTAINABLE DEVELOPMENT

Development is important, but it has sometimes had a devastating impact on human welfare, culture, and the environment. The development process has often been wasteful of natural resources because the price of those resources has been kept too low. This is because the cost of replacing the services provided by the resources has rarely been calculated into the cost of the product. An example of this is traditional medicine (Badeeb et al., 2020).

At a time when we are facing critical decisions about how we will live on this planet, there is an urgent need to reconcile the processes of development with the maintenance and enhancement of culture and ecological systems. We need to distinguish between development that improves the quality of human life and development that erodes cultural and ecological diversity. It is widely acknowledged that the latter often occurs at great cost to the former. This is certainly true in the case of traditional knowledge, which people are forced to sell.

Traditional knowledge systems provide a basis for sustainable and appropriate development, in which social, cultural, and ecological integrity is maintained. Sustainable development involves meeting human development goals while sustaining the ability of natural systems to provide resources and support living systems. This is the basis of life.

VII. CONCLUSION

After the independence of Uganda in 1962, people started to realize that to compete internationally, they had to have

a system of recognizing and protecting intellectual property rights. It was in response to this realization that Uganda joined various intellectual property treaties and later integrated them into the national law. Uganda, on the other hand, did not have the same reasons as other developed countries. The main aim of Uganda was to protect its farmers and preserve their knowledge from abroad. This is seen in the preamble of the Industrial Property Act, of 2014, which states that the act is aimed at promoting and encouraging technological innovations and the transfer and dissemination of technology. This is also further seen in the Industrial Property Act, of 2014, which goes on to elaborate the definition of what can be patented. It states that a patent can only be granted to an invention that is new and has an inventive step. This helps to preserve traditional knowledge coming from rural farmers.

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