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Integrating Traditional Medicine into the Healthcare System in Ethiopia: Promoting Research and Avoiding Misappropriation

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Abstract

Traditional medicine is a form of medicine that has been widely used in Ethiopia for thousands of years. However, it is still practiced in the absence of formal healthcare. The current approach to the protection of traditional medicinal resources in Ethiopia is based on multiple fragmented legislations and neglects one of these problems. The main objective of this paper is to discuss the need for integrating traditional medicine into national healthcare system and protecting of traditional medicinal resources in Euthopia. This normative legal research employs statutory approach. It is found that Ethiopia has put in place a legal framework for the protection of its traditional medicinal resources, but the role of traditional medicine in healthcare is not clearly defined. Many medicinal plants are, consequently, at risk of extinction and biopiracy. Ay policy option that seeks to protect traditional medicinal resources must have in mind these three problems together, i.e loss of traditional knowledge, loss of medicinal plants, and potential misappropriation. Integrating traditional medicine into the modern health care system requires careful consideration of conservation, protection, and development of traditional practices.

Keywords: *Biopiracy, Healthcare, Intellectual Property Rights, Traditional Knowledge, Traditional Medicine*

1. Introduction

Traditional medicine has been practiced for thousands of years by indigenous communities around the world. It is deeply intertwined with their culture, customs, and spirituality. Traditional medicine, as defined by the World Health Organization (WHO), consists of health practices, approaches, knowledge and beliefs incorporating plant, animal, and mineral based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses and maintain well-being.[1]

Traditional medicinal resources refer to the various types of natural products and practices that have been used for centuries by different cultures to maintain and restore health. These resources are rooted in traditional knowledge systems and are based on the belief that the natural world offers a multitude of remedies for various ailments.[2] Traditional medicinal resources encompass a wide range of plants, animals, minerals, and other natural substances that are believed to possess healing properties.[3]

[1] WHO, 'Legal Status of Traditional Medicine and Complementary Alternative Medicine: A World Wide Review', *WHO Publishing*, Geneva (2001).
[2] WHO (2001).
[3] Simonetta Bullitta, Giovanni Antonio Re, Maria Domenica Iole Manunta and Giovanna Piluzza., 'Traditional Knowledge about Plant, Animal, and Mineral-based Remedies to Treat Cattle, Pigs, and Horses, and other Domestic Animals in the Mediterranean Island of Sardinia', *Journal of Ethnobiology and Ethnomedicine*, 14.1 (2018) <https://doi.org/10.1186/s13002-018-0250-7>.

Traditional medicinal knowledge refers to the knowledge and practices that have been passed down through generations as a way to treat and prevent illnesses.[4] It is a valuable and highly regarded system of healing that has been used by various indigenous communities around the world for centuries. Although traditional medicinal knowledge may vary across different cultures and regions, it shares some key characteristics and nature that are worth exploring.

One key aspect of traditional knowledge is its oral transmission. Traditional medicinal knowledge has been passed down orally through generations for centuries.[5] Through storytelling, songs, and myths, elders pass on their wisdom and experiences to younger members of the community, ensuring the preservation and continuation of their heritage. It is through this oral tradition that traditional healers have accumulated a profound understanding of medicinal plants, remedies, and practices that are effective in treating various ailments.[6]

In traditional societies, the role of a healer is often inherited or entrusted to individuals who have undergone rigorous training and apprenticeships.[7] These healers are responsible for understanding and utilizing an intricate network of herbal remedies, cultural practices, spiritual beliefs, and empirical observation. Through their orally teachings, healers pass down this accumulated knowledge to the next generation, ensuring its continuity and survival.[8] The oral nature of this knowledge not only enables its preservation but also allows for its continuous adaptation and evolution over time. However, it also has its own limitations contributing to the loss of the knowledge due to lack of documentation.[9]

Traditional medicinal resources are shared among community members, with knowledge holders transmitting their expertise to younger generations, ensuring its preservation. This communal sharing fosters a sense of collective responsibility and solidarity within the community.[10] The communal aspect of traditional medicinal knowledge also encourages collaboration and cooperation. Different individuals within the community may possess specialized knowledge about specific plants or techniques. By sharing their expertise, they contribute to a collective understanding of the different applications and potential side effects of medicinal plants or practices.[11]

Traditional medicinal knowledge is deeply rooted in nature and societal culture. Indigenous communities have developed a deep connection with their environment and have come to understand the healing properties of various plants, animals, and minerals.[12] They have observed and tested their effects over time, accumulating a wealth of knowledge about medicinal properties. This knowledge is often acquired through direct experience and passed

[4] WHO (2001).
[5] Anne Ouma, 'Intergenerational Learning Processes of Traditional Medicinal Knowledge and Socio-Spatial Transformation Dynamics', *Frontiers in Sociology*, 7 (2022) <https://doi.org/10.3389/fsoc.2022.661992>.
[6] Ouma.
[7] M.G Mokgobi, 'Understanding Traditional African Healing', *Afr J Phys Health Educ Recreate Dance*, 20.Suppl 2 (2015), 24-34. < https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4651463>.
[8] Ouma.
[9] Ryan Abbott, 'Documenting Traditional Medical Knowledge', *World Intellectual Property Organization*, (March, 2014), Available at SSRN: https://ssrn.com/abstract=2406649.
[10] KUO and others.
[11] Eddy Mantjoro, 'Traditional Management of Communal-Property Resources: The Practice of the Sasi System', *Ocean and Coastal Management*, 32.1 (1996), 17-37, doi:https://doi.org/10.1016/S0964-5691(96)00013-0.
[12] Khalid Ahmed and others, 'Traditional medicinal knowledge and practices among the tribal communities of Thakht-e-Sulaiman Hills, Pakistan', *BMC Complementary Medicine and Therapie*, 21.1 (2021), 230 <https://10.1186/s12906-021-03403-1. PMID: 34517846; PMCID: PMC8439060>.

down orally from generation to generation, making it a highly respected and integral part of indigenous culture.[13]

Traditional medicinal knowledge is holistic in nature. Unlike modern medicine, which often focuses on symptomatic treatment, traditional medicinal knowledge takes into account the interconnectedness of the body, mind, and spirit.[14] It recognizes that imbalances or illnesses in one aspect of human existence can have far-reaching effects on others. Therefore, traditional healers aim to restore harmony and balance in all aspects of a person's being, rather than just treating the symptoms of a particular ailment.[15]

Traditional medicine includes practices such as acupuncture, herbal medicine, massage, and meditation, all of which aim to address the underlying causes of illness rather than just alleviating symptoms.[16] Traditional medicine provides alternatives and complements modern healthcare where it falls short. For instance, over a third of the populations of developing countries lack access to essential medicines.[17] Traditional medicine, therefore, plays an important role in the health care system of many countries. For instance, close to 80% of the population in Africa relies on traditional medicine for primary healthcare. In China, traditional herbal medicines account for 30-50% of its modern medicine consumption.[18] Likewise, about 80% of the Ethiopian population uses traditional medicine. Such a high reliance on traditional medicine in the country is attributed, among others, to the cultural acceptability of healers, low cost of traditional medicines, and difficulties in accessing modern healthcare.[19] Despite such a high level of use of traditional medicine in Ethiopia, it continues to be practiced outside of the formal healthcare system.[20]

Furthermore, traditional medicine plays a significant role in cultural preservation. It represents the cultural identity, values, and beliefs of different communities.[21] It reflects their understanding of health and wellbeing, encompassing not only physical health but also mental, emotional, and social health. The knowledge and practices associated with traditional medicine are passed down through generations, ensuring the continuity and preservation of cultural heritage.[22] By recognizing and incorporating traditional medicine into modern healthcare, societies can promote cultural diversity, solidarity, and inclusivity.

2. Research Method

The author employed a normative legal research that ivestigates secondary data to answer the research questions. The data were collected through library-based study. This

[13] Khalid Ahmed and others.
[14] Bonglee Kim, 'Traditional Medicine: A Holistic Approach to Health and Healing', *Mini Review*, 12.1 (2023).
[15] KUO and others.
[16] C.-T. Che, Varughese George, Ijinu T P, P. Pushpangadan and Kerstin Marobelaa, (Eds. Simone Badal and Rupika Delgoda), 'Traditional Medicine', *Pharmacognosy: Fundamentals*, *Applications and Strategies*, (2016), Elselvier Inc, doi:https://doi.org/ 10.1016/B978-0-12-802104-0.00002-0.
[17] WHO, 'Fact Sheet: Traditional Medicine', *WHO*, Geneva (2003) <https://apps.who.int/gb/ebwha/pdf_files/EB134/B134_24-en.pdf, Accessed 20/12/2022>.
[18] WHO (2003).
[19] World Bank Group, 'Ethiopia: traditional medicine and the bridge to better health: L'Ethiopie et la médecine traditionnelle: vers des soins de santé améliorés (French)', *Indigenous Knowledge (IK)*, Notes, no 35 Washington, D.C. <http://documents.worldbank.org/curated/en/880891511174371413/L-Ethiopie-et-la-médecine-traditionnelle-vers-des-soins-de-santé-améliorés>.
[20] World Bank Group.
[21] Khalid Ahmed and others.
[22] Khalid Ahmed and others.

normative legal research mainly used statutory approach. Various legal sources consisting of regulation and policies relating to traditional medicine in Euthopia have been studied to develop analysis and construct the conclusion.

3. Discussion and Analyses

3.1 Challenges and Threats Facing Traditional Medicinal Resources

One of the main challenges faced by traditional medicinal resources is the absence of legal protection and the resultant biopiracy. Without proper legal recognition and protection, these resources are vulnerable to exploitation and appropriation. Biopiracy, the unauthorized and exploitative use of biological resources, exacerbates the challenges faced by traditional medicinal resources.[23] With advancements in science and technology, pharmaceutical companies and researchers are increasingly turning to these resources for the development of new drugs and treatments. However, this pursuit often occurs without proper consent, benefit-sharing, or acknowledgement of the indigenous communities that hold the knowledge and preserve these resources.[24]

The consequences of biopiracy are multifaceted. Firstly, the indigenous communities that rely on these resources for their healthcare needs are often left without access to them.[25] The appropriation of traditional medicinal resources can lead to their commercialization and monopolization by pharmaceutical companies, making them inaccessible and unaffordable for the very communities that have depended on them for generations. Secondly, biopiracy threatens traditional knowledge systems and practices.[26] Indigenous communities have developed extensive knowledge about their local flora, fauna, and natural resources, including their medicinal properties. However, when this knowledge is exploited without recognition or compensation, it discourages the transmission of traditional knowledge to future generations, eroding cultural practices and endangering the preservation of traditional medicinal resources.

The loss of knowledge surrounding these traditional resources poses significant challenges and threats to their continued availability and potential for therapeutic use. One of the main causes of the loss of knowledge surrounding traditional medicinal resources is the rapid modernization and globalization experienced by many cultures. With the advent of modern medicine and the increasing accessibility of pharmaceutical drugs, traditional remedies have become marginalized and even stigmatized.[27] As a result, younger generations may no longer have the inclination or opportunity to learn about these resources from their ancestors, leading to a gradual erosion of traditional knowledge. For example, traditional medicinal knowledge is preserved in Ethiopia largely through transfer from generation to

[23] Yoonus Imran, Nalaka Wijekoon, Lakmal Gonawala, Yu-Chung Chiang, and K. Ranil D. De Silva, 'Biopiracy: Abolish Corporate Hijacking of Indigenous Medicinal Entities', *Scientific World Journal*, (2021) <https://doi.org/10.1155/2F2021/2F8898842>.

[24] Julie Micalizzi, 'Misappropriation of Genetic Resources in Africa: A Study of Pentadiplandra Brazzeana, Impatiens Usambarensis, and Combretum Micranthum', *Journal of Law, Technology and Interne*, 8.1 (2017) <https://scholarlycommons.law.case.edu/jolti/vol8/iss1/3>.

[25] Kuashiki Das, 'The Global Quest for Green Gold: Implications of Bioprospecting and Patenting for Indigenous Bioresource and Knowledge', *Society and Culture in South Asia*, 6.1 (2020) <https://doi.org/10.1177/23938617198830>.

[26] Kuashiki Das.

[27] Ina Vanderbroek and Michael J Balick, 'Globalization and Loss of Plant Knowledge: Challenging the Paradigm', *Plos One*, 7.5 (2012) <https://doi.org/10.1371/journal.pone.0037643>.

generation through word of mouth under certain cultural and spiritual procedures.[28] This is particularly worrisome since many of the young generations (often thought in modern schools and civilized) are no longer willing to inherit these knowledge from their ancestors now a days.[29]

Furthermore, the loss of traditional knowledge is compounded by the encroachment of urbanization and habitat destruction. As more land is transformed for agriculture, industrialization, and infrastructure development, the natural habitats that once housed medicinal plants and animals are being destroyed.[30] This not only reduces the availability of these resources but also makes it difficult for communities to continue their traditional practices, as their source of knowledge and inspiration is disappearing. The loss of knowledge surrounding traditional medicinal resources has dire consequences for both indigenous communities and the global population at large.[31] For indigenous communities, the erosion of traditional knowledge threatens their cultural identity and way of life.

Another challenge facing traditional medicinal resources is overharvesting and unsustainable exploitation. Traditional medicinal resources have been a significant part of human societies for centuries. The increasing demand for natural remedies, along with the rise of global trade and industrialization, has led to overharvesting and unsustainable exploitation of these resources.[32] This poses various challenges and threats to their survival and the communities that depend on them.

Moreover, overharvesting and unsustainable exploitation of traditional medicinal resources disrupt the delicate balance of ecosystems.[33] Plants and animals are often collected in unsustainable ways, leading to their decline or even extinction in some cases. For example, some plants take years to reach maturity, and without proper management, their populations can be significantly depleted within a short period.[34]

Some medicinal plants, for example, have complex relationships with other species, such as dependent pollinators or seed dispersers. When these plants are indiscriminately harvested, these relationships are disturbed, leading to cascading effects throughout the ecosystem. This further threatens the survival of other species, including those upon which communities rely for their sustainability and cultural practices. Additionally, the overexploitation of medicinal resources often exacerbates conflicts between different stakeholders.[35] Local communities who have relied on these resources for generations may find themselves in direct competition with commercial enterprises or multinational companies. This can lead to increased tensions, land

[28] Kebede Deribe Kassaye, Alemayehu Amberbir, Binyam Getachew, and Yunis Mussema., 2006, 'A historical Overview of Traditional Medicinal Practices and Policy in Ethiopia', *Ethiopian Journal of Heath Dev*, 20.2 (2006) <https://doi.org/10.4314/ejhd.v20i2.10023>.

[29] Endashaw Bekele, 'Study on Actual Situation of Medicinal Plants in Ethiopia', *Japan Association for International Collaboration of Agriculture and Forestry (JAICAF)*, 2007 < http://jaicaf.or.jp/publications/ethiopia_ac.pdf> [accessed on 21/11/2022].

[30] Wondwosen Teshome-Bahiru, 'Impacts of Urbanization on the Traditional Medicine of Ethiopia'', *The Anthropologist (International Journal of Contemporary and Applied Studies of Man)*, 8.1 (2005).

[31] Wondwosen Teshome-Bahiru.

[32] Ina Vanderbroek.

[33] Prasant Kumar Singh, Santosh Kumar Prajapati, Kumari Sunita and Ravi Kant Chaturvedi4, 'Disturbance Induced Changes in Diversity of Medicinal Plants in a Dry Tropical Forest of India', *Front. For. Glob. Change*, 4 (2022) <https://doi.org/10.3389/ffgc.2021.718930>.

[34] Anne S van Wyk and Gerhard Prinsloo, 'Medicinal Plant Harvesting, Sustainability and Cultivation in South Africa', *Biological Conservation*, 227(2018), 335-342 <https://doi.org/10.1016/j.biocon.2018.09.018>.

[35] Prasant Kumar Singh.

encroachment, and even displacement of indigenous peoples.[36] The loss of access to traditional medicinal resources not only impacts healthcare practices but also erodes the cultural identity and self-sufficiency of communities.

Another challenge facing traditional medicinal resources is habitat loss and degradation. As human populations continue to expand, natural habitats are being destroyed to make way for agriculture, urbanization, and industrialization.[37] This destruction leads to the loss of key medicinal plants and animals, as well as the disruption of intricate ecosystems that support their growth and reproduction.

Last but not least, challenge facing traditional medicinal resources as a result of deforestation is the loss of biodiversity.[38] Forests are home to a wide range of plant and animal species, many of which have traditional medicinal properties. Each species has its unique set of compounds and properties that have been studied and utilized by local communities for generations. Due to deforestation, many of these species are now at the brink of extinction.[39] The loss of these species not only affects the traditional healing practices but also the potential for scientific discoveries and advancements in medicine.

3.2 The Legal Protection of Traditional Medicinal Resources

The globalization and commercialization of traditional medicine have raised concerns about the sustainable use of medicinal plants and the protection of traditional knowledge associated with these resources. Legal protection of traditional medicinal resources, both under international and national law, is of crucial importance for preserving the knowledge and practices surrounding these resources.

International law, in recognition of the significance of traditional knowledge (TK), has established a legal framework to safeguarding its integrity, ensuring consensual access to TK, and promoting equitable benefit-sharing. This sub-section aims to portray the legal framework for the protection of TK under International law by highlighting noteworthy milestones and ongoing efforts.

United Nations Declaration on the Rights of Indigenous People (UNIDRIP), clearly establishes the rights of indigenous people to own, use, develop and control their traditionally owned or otherwise occupied and used lands, territories, waters and coastal see and other resources.[40] The declaration calls upon countries to legally recognize and protect their lands and resources (TK) with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned and specifically to recognize Indigenous Peoples' land tenure systems within these territories.[41]

Another important international instrument in the protection of TK is the UN Convention on Biological Diversity (CBD) of 1992.[42] This convention aims at ensuring the conservation and sustainable utilization of biological resources. It, particularly, recognizes the importance of TK and reiterates the need for the respect, preservation and promotion of such

[36] Prasant Kumar Singh.
[37] Wondwosen Teshome-Bahiru.
[38] Wondwosen Teshome-Bahiru.
[39] Wondwosen Teshome-Bahiru.
[40] United Nations (UN), 'Declaration on the Rights of Indigenous People', *General Assembly Resolution* 61/295, New York (2007).
[41] United Nations (UN), (2007).
[42] United Nations (UN), 'Convention on Biological Diversity', *Secretariat of the Convention on Biological Diversity*, UNEP, Montreal (1992).

resources.[43] The convention obliges member states to enact access legislations with the view to facilitate access to genetic resources (which extends to TK associated with genetic resources) and ensure equitable benefit sharing out of such resources. A supplementary protocol to the CBD, the Nagoya Protocol provides for a fair and equitable sharing of benefits from TK and genetic resources.[44]

The World Intellectual Property Organization (WIPO) provides the forum for an intellectual property rights protection for TK, a process that still goes on. In 2000, WIPO established the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore (ICG).[45] The committee is entrusted with the task of creating International legal instruments for the protection of TK from misappropriation and ensuring a fair and equitable benefit-sharing. There is an ongoing negotiations, under the auspices of WIPO-ICG, in order to establish develop an International legal protection of TK.[46] One of the contributions of the WIPO in the protection of TK is that it led to the expansion of the minimum documentation that should be consulted during an international search (in verifying the novelty of patent application) to include TK related information sources.[47]

Even though a significant level of effort has so far been exerted at international level in protecting TK, there are still a number of challenges and limitations. The TRIPS agreement is, for instance, silent about TK although the WTO is directly related and relevant to the protection of TK.[48] Nor does it make any reference to with the CBD, an important international instrument for the protection of TK. It is, consequently, unclear if and to what extent the CBD is applicable within the TRIPS in relation to the protection of TK. In an attempt to fill this void, the council for TRIPS was instructed, on the Doha Ministerial conference in 2001, to examine the relationship between TRIPS and CBD, and the protection of TK and folklore.[49] While developing countries proposed for some form of protection for TK under the WTO (ex. *sui generis* protection), developed countries especially the US opposed such proposal in favor of bilateral and national level protections.[50] It seems that an international protection for TK under the WTO system is unlikely to happen any time sooner.

It is worth noting, however, that the conventional forms of private intellectual property rights are not compatible with the communal nature of TK that exists in the public domain.[51] Since the Western-centric intellectual property system does not adequately capture the

[43] United Nations (UN (1992) at Art. 8(j).
[44] United Nations (UN), 'Nagoya Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity', *UN Treaty Series*, 3008 (2010).
[45] World Intellectual Property Organization (WIPO), 'Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore', *WIPO/GRTKF/IC/16/INF/5(D*), Sixteenth Session, Geneva (2010).
[46] World Intellectual Property Organization (WIPO), (2010).
[47] World Intellectual Property Organization (WIPO), 'Intellectual Property and Traditional Knowledge', *WIPO Publication Number 920(E)*, Booklet No 2 (2005).
[48] World Trade Organization (WTO), 'Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)', *TRT/WTO001/002*, WTO (1994).
[49] World Trade Organization (WTO), 'Doha Ministerial Declaration', *WT/MIN(01)/DEC/1*, Ministerial Conference, Fourth Session (2001).
[50] World Trade Organization (WTO), 'The Relationships between the TRIPS Agreement and the Convention on Biological Diversity: Summary of Issues Raised and Points Made', *IP/C/W/368/Rev.1*, *Council for Trade-Related Aspects of Intellectual Property Rights*, WTO (2006).
[51] Nalin Bharti and Shaiwal Satyarthi., 'Why TK is Incompatible with IPR: Practical Implications and Illustrations', *Journal of Central European Green Innovation*, 2.2 (2014) <https://doi.org/10.22004/ag.econ.174288>.

communal nature and collective ownership of TK, there may be a high potential for misappropriation of such resources.

The legal framework for the protection of traditional medicinal resources in Ethiopia consists of a combination and interplay of several policies, laws and regulations. These laws, generally, aim to safeguard traditional knowledge, practices and resources from misappropriation and promote their sustainable utilization.

The Ethiopian National Health and Drug policies, in recognition of the role of traditional medicine across the country, accord due emphasis for the development of beneficial aspects of traditional medicine and its integration into the modern health care system after ensuring its safety and efficacy.[52] These policies outline a number of important strategies such as identification and utilization of beneficial components of traditional medicine, promotion of research including on its integration with the modern health care system, and the development of appropriate regulation and registration for practitioners. In this light, the Drug Administration and Control Authority (DACA) is entrusted with the task of preparing safety and quality standards of TM, register TMPs and grant license to the use of traditional medicine.[53] On the other hand, the Modern and Traditional Drug Research department of the Ethiopian Health and Nutrition Research Institute (EHNRI) is in charge of researching both traditional and modern drugs.[54] That said, there is so far no safety standards for traditional medicine prepared and no license issued for TMPs in practice.

No one can use traditional medicine in Ethiopia without due evaluation and registration by the relevant organ in accordance with the Ethiopian Food, medicine and healthcare administration and control proclamation.[55] The proclamation introduces a mandatory license to be acquired by TMPs before they practice their vocation, which shall be renewed every five years. One must also get a certificate of competence to manufacture, distribute or sell traditional medicine.

Under the 1993 Ethiopian environmental policy, there are several measures in place to protect traditional medicinal resources. The policy recognizes the importance of these resources in providing healthcare to local communities and preserving cultural heritage.[56] One of the key aspects of the environmental policy is the establishment of protected areas and conservation sites.[57] These areas aim to safeguard the natural habitats where traditional medicinal plants grow and thrive. By designating these areas as protected, the government ensures the sustainability of these resources for future generations. Additionally, the policy also emphasizes the need for sustainable harvesting and utilization of traditional medicinal resources.[58] It promotes the adoption of traditional knowledge and practices in healthcare, while also encouraging responsible collection and cultivation techniques. This includes

[52] Transitional Government of Ethiopia (TGE), 'Health Policy of the Transitional Government of Ethiopia', *Food and Agriculture Organization of United Nations*, 1993 <https://faolex.fao.org/docs/pdf/eth174474.pdf>, Accessed on 18/02/2023>.
[53] Federal Democratic Republic of Ethiopia (FDRE), 'Drug Administration and Control Proclamation No. 176/1999', *Federal Negarit Gazzette*,5.60 (1999).
[54] Federal Democratic Republic of Ethiopia (FDRE), (1999).
[55] Federal Democratic Republic of Ethiopia (FDRE), 'Food, Medicine and Health Care Administration and Control Proclamation No. 661/2009', *Federal Negarit Gazzette*, 16.9 (2009).
[56] Federal Democratic Republic of Ethiopia (FDRE), (2009).
[57] Federal Democratic Republic of Ethiopia (FDRE), 'Environmental Policy of Ethiopia', *Environmental Protection Authority (EPA)*, 1997 <https://www.epa.gov.et/images/Polices/ENVIRONMENT_POLICY_OF_ETHIOPIA.pdf> [accessed at 18/02/2023].
[58] Federal Democratic Republic of Ethiopia (FDRE), (1997).

promoting the use of traditional medicinal plants in a way that does not harm their natural populations or disrupt their ecosystems.

The Ethiopian environmental policy, somehow oddly, states that it seeks to the establishment of a system for the protection of community intellectual property rights.[59] While the policy itself does not make clear what a community intellectual property rights stands for, no specific law has so far sought to establish such thing in the country. The only exception in this regard is the ABS proclamation which envisages IPRs as one form of benefit sharing schemes, which, too, have not so far been applicable.[60]

The protection of traditional medicinal resources is a key component of the Ethiopian biodiversity policy. Recognizing the importance of traditional medicine in the country, the policy aims to safeguard the knowledge, practices, and resources associated with traditional medicine.[61] One of the primary ways in which traditional medicinal resources are protected is through the establishment of protected areas and conservation sites.[62] These areas are specifically designated to preserve the biodiversity and ecosystems where traditional medicinal plants and resources are found. By conserving these areas, the Ethiopian government ensures that the natural resources used in traditional medicine can continue to be sustainably harvested and utilized.[63]

In addition to protected areas, the Ethiopian government works closely with local communities and traditional healers to promote sustainable practices in the collection and use of traditional medicinal resources.[64] This includes implementing regulations and guidelines for harvesting, ensuring that only a limited amount of resources are collected at a time to allow for natural regeneration. Traditional healers are also encouraged to share their knowledge and practices with younger generations, fostering the transmission of traditional wisdom.[65]

The Ethiopian biodiversity proclamation recognizes the need for protection of TK and an equitable benefit sharing from their exploitation.[66] It emphasizes the needs for survey, documentation, and study, improvement and utilization of TK, and the enactment of ABS laws. This led to the adoption of the Access to genetic resources and community knowledge, and community rights proclamation in 2006.[67]

The 1995 FDRE Constitution lays down the foundation for the protection of traditional knowledge (and traditional medicinal resources). Traditional medicinal resources have received protection under the FDRE Constitution through several provisions that recognize and protect cultural heritage and knowledge of local communities. Article 39 of the FDRE constitution affirms the rights of nations, nationalities and peoples to self-administer

[59] Federal Democratic Republic of Ethiopia (FDRE), (1997). at Sec 4.7.
[60] Federal Democratic Republic of Ethiopia (FDRE), 'Access to Genetic Resources and Community Knowledge, and Community Rights Proclamation No. 482/2006', *Federal Negarit Gazzette*, 13.13 (2006).
[61] Federal Democratic Republic of Ethiopia (FDRE), ''National Biodiversity Policy of Ethiopia'', *Ethiopia Biodiversity National Clearing House Mechanism*, 2006 <https://et.chm-cbd.net/biodiversity-policy-ethiopia> [accessed at 13/03/2023].
[62] Federal Democratic Republic of Ethiopia (FDRE), *Ethiopia Biodiversity National Clearing House Mechanism* (2006).
[63] Federal Democratic Republic of Ethiopia (FDRE), 'Institute of Biodiversity Conservation and Research Establishment Proclamation No. 120/1998', *Federal Negarit Gazzette*, 4.49 (1998).
[64] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).
[65] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).
[66] Federal Democratic Republic of Ethiopia (FDRE), (1998).
[67] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).

themselves.[68] This includes the right to preserve and promote their culture and traditional knowledge (includes traditional medicinal resources). Local communities have the right to develop and maintain their own customs, languages, and institutions that for example pertains to traditional medicinal resources. Accordingly, local communities are entitled to regulate the use of their traditional medicinal knowledge in a manner they deem to be fit using their own customary practices.

On the other hand, the Constitution recognizes the rights of local communities to full consultation and participation in decisions concerning their cultural heritage.[69] This provision ensures that the perspectives of local communities and their traditional knowledge are given due care in matters that affect them. This means, local communities have the right to say in government regulations with respect to traditional medicinal resources. The government is also obligated, under the constitution, to recognize, protect and promote historical and cultural heritage. [70] This constitutional provision supports the protection and preservation of traditional medicinal resources as one part of the country's cultural legacy. The aim of protecting traditional knowledge, as a cultural right, is preservation of the cultural heritage and identity of local communities.[71]

In tune with the FDRE constitution, the conservation of biodiversity and sustainable use of natural resources proclamation of Ethiopia lays down regulations for the protection and sustainable use of traditional medicinal resources.[72] The protection of traditional medicine is a crucial aspect of biodiversity conservation and sustainable use of natural resources. The proclamation, consequently, acknowledges the significance of traditional medicine in the Ethiopian society and seeks to preserve and sustainably manage it for future generations as well. It also emphasizes the need for documentation of traditional medicinal resources and provides for communities' rights to benefit sharing derived from access to such resources.[73]

In addition to legal protection, the proclamation recognizes the importance of research and development in traditional medicine.[74] It encourages scientific studies and promotes collaborations between traditional healers and modern healthcare practitioners to enhance knowledge and promote the integration of traditional medicine into the national healthcare system. This approach facilitates the preservation and promotion of traditional medicinal resources by providing a scientific basis for their utilization.[75]

The Ethiopian Access to Genetic Resources and Benefit Sharing Proclamation aims to protect the traditional medicinal resources in Ethiopia. It is important to safeguard these resources to ensure their sustainable use and to benefit local communities and traditional healers. Here are a few key provisions within the proclamation that address the protection of traditional medicinal resources:

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[68] Federal Democratic Republic of Ethiopia (FDRE), 'Constitution of the Federal Democratic Republic of Ethiopia, Proclamation No. 1/1995', *Federal Negarit Gazzette*, 1.1 (1995).
[69] Federal Democratic Republic of Ethiopia (FDRE), (1995).
[70] Federal Democratic Republic of Ethiopia (FDRE), (1995).
[71] Khalid Ahmed, Mushtaq Ahmad, Franz K Huber, and Caroline S Weckerle. 'Traditional medicinal knowledge and practices among the tribal communities of Thakht-e-Sulaiman Hills, Pakistan', *BMC Complementary Medicine and Therapie*, 21.1 (2021), 230 <https://doi.org/10.1186/s12906-021-03403-1. PMID: 34517846>; PMCID: PMC8439060.
[72] Federal Democratic Republic of Ethiopia (FDRE), (1998).
[73] Federal Democratic Republic of Ethiopia (FDRE), (1998).
[74] Federal Democratic Republic of Ethiopia (FDRE), (1998).
[75] Federal Democratic Republic of Ethiopia (FDRE), (1998).

a) Prior Informed Consent (PIC): The proclamation requires obtaining prior informed consent from local communities or traditional healers before accessing their genetic resources.[76] This ensures that traditional knowledge and resources are respected and their benefits are shared equitably.

b) Benefit Sharing Mechanisms: The proclamation highlights the importance of fair and equitable benefit sharing.[77] Recognition, protection, and support for traditional healers' contributions in the development and commercialization of pharmaceutical products derived from traditional medicinal resources are emphasized.

c) Traditional Knowledge Digital Library (TKDL): The proclamation establishes the creation of a TKDL to document traditional knowledge associated with genetic resources and traditional medicinal practices.[78] This database helps protect traditional knowledge from misappropriation and facilitates its use in domestic research and development.

d) Collaborative Research and Development: The proclamation encourages collaboration between researchers, traditional healers, and local communities in research and development activities.[79] This fosters mutual learning, capacity building, and strengthens traditional medicinal practices.

It is important to note that the proclamation itself enforces the protection and benefit sharing of traditional medicinal resources, but its effective implementation and enforcement at various levels are essential to ensure comprehensive protection.[80] The ABS proclamation grants local communities ownership rights to their TK. This is to be contrasted, however, with the constitution which reiterates that all natural resources and land belongs to the public, which the government happens to be the custodian of.[81] The proclamation, nonetheless, clearly affirms the inalienable rights of local communities to use and regulate access to their TK and share the benefits arising out of its utilization.

The ABS proclamation, interestingly, mentions joint IPRs as one means of benefit sharing in addition to the notable financial and non-financial (ex. R&D assistance) means.[82] It also establishes a permit system as a means of access to genetic resources. It must, however, be noted that the ABS system seems to be built to fail due to absence of compliance mechanism at international level.[83] No better case other than the Ethiopian *teff* case can attest this, a case in which the user company defaulted in its obligations after patenting *teff* products however.[84]

Under the Ethiopian Patent law, an invention is patentable if it is novel, involves an inventive step and is capable of industrial application.[85] In such case, the patent holder is entitled an exclusive right to control the economic exploitation of his invention for a limited

[76] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).
[77] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).
[78] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).
[79] Federal Democratic Republic of Ethiopia (FDRE), *Federal Negarit Gazzette* (2006).
[80] United Nations (UN), (2010).
[81] Federal Democratic Republic of Ethiopia (FDRE), 'Constitution of the Federal Democratic Republic of Ethiopia, Proclamation No. 1/1995', *Federal Negarit Gazzette*, 1.1 (1995).
[82] Federal Democratic Republic of Ethiopia (FDRE), (2006).
[83] Florian Rbtiz, 'Biopiracy after the Nagoya Protocol: Problem Structure, Regime Design and Implementation Challenges', *Brazilian Political Science Review*, 9.2 (2015), doi: https://doi.org/10.1590/1981-38212014000200010.
[84] FIkremarkos Merso Birhanu, 'Challenges and Prospects of Implementing the Access and Benefit Sharing Regime of the Convention on Biological Diversity in Africa: The Case of Ethiopia', *International Environmental Agreement*, 10.1 (2010) <http://dx.doi.org/10.1007/s10784-010-9122-x>.
[85] Transitional Government of Ethiopia (TGE), 'A Proclamation Concerning Inventions, Minor Inventions and Industrial Designs, Proclamation No. 123/1995', *Negarit Gazzette*, 54.25 (1995).

time (20 years). It is however unlikely for traditional medicinal resources to be patented for they hardly meet the requirements of novelty. Most TMR are also composed of plant and animal varieties which already fall under the excluded subject matters under the proclamation.[86] Moreover, the idea of private and time limited ownership under the patent proclamation contradicts with the communal and time-transcending nature of TMR.[87] Accordingly, even if patent may accrue profits, it does not seem to be an appropriate form of protection for TMR considering their unique nature and cultural dimensions.

Any policy option that seeks to protect traditional medicinal resources must have in mind these three problems together, i.e loss of traditional knowledge (due to modernization), loss of medicinal plants, and potential misappropriation. As will be shown in the next sub-sections, the problem with the current approach to the protection of traditional knowledge in Ethiopia, as in many other countries, is that they use multiple but fragmented legislations having in minded one of these problems and leave out the rest. For this reasons, it has not been possible to devise an effective and holistic solution for the protection of traditional knowledge addressing all the problems in one single and unified policy. For example, where a given law is able to tackle the conservation problem it is often impotent to prevent biopiracy and the vice versa.

A positive, also called an offensive, mode of protection of traditional knowledge involves the granting of some form of exclusive rights to owners in the form of intellectual property rights such as patent, trade secrets, trade mark and geographical indications.[88] Intellectual property rights might play a vital role in making sure that local community and traditional knowledge holders derive benefits from their cultural heritage.[89] The problem, however, is that traditional medicinal resources either fail to meet the requirements of the conventional intellectual property rights or such an intellectual property rights does not go in line with the very nature of TMR, hence is inappropriate.[90]

Although TMR, at first glance, might seem to be inventions worth patenting, they often hardly meet the more onerous standards of patentability (namely, novelty, inventive step, and industrial applicability.[91] For example, the requirement of novelty would not be met if there is a prior disclosed art which is mostly the case for TMRs. It is worth noting here the fact that a significant portion of TMK had already been disclosed to the public due, mainly, to attempts of codification, societal use, collection and publication by researchers.[92] Ethiopia, as in most other countries, applies the universal novelty standard in which prohibits the patenting of information published in writing or has otherwise been made available to the public either through oral disclosure or disclosure by use in any country.[93] This coextends with the definition of novelty under the TRIPS agreement.[94] In addition, most TMR are also composed of plant and animal varieties which already fall under the excluded subject matters under the proclamation.

[86] Transitional Government of Ethiopia (TGE), (1995).
[87] KUO and others.
[88] KUO and others.
[89] Karin Timmermans, 'Intellectual Property Rights and Traditional Medicine: Policy Dilemmas at the Interface', *Social Science and Medicine*, 57.4 (2003) <https://doi.org/10.1016/s0277-9536(02)00425-2>.
[90] KUO and others.
[91] Transitional Government of Ethiopia (TGE), (1995).
[92] Karin Timmermans, 'Intellectual Property Rights and Traditional Medicine: Policy Dilemmas at the Interface', *Social Science and Medicine*, 57.4 (2003) <https://doi.org/10.1016/s0277-9536(02)00425-2>.
[93] Transitional Government of Ethiopia (TGE), (1995), Art. 3(2).
[94] World Trade Organization (WTO), 'Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)', *TRT/WTO001/002*, WTO (1994).

The conventional Intellectual property rights system is not appropriate to protecting TMRs even if the latter can meet its requirements. This is so because there is a fundamental clash between the conventional property rights based on notions of private, monopoly and time bound rights and that of traditional knowledge based on communal, mostly non-exclusive and time transcending entitlements.[95] Moreover, TMRs have cultural dimensions that the conventional intellectual property rights system hardly accommodates as it exclusively prioritizes commercial gain.

A defensive mode of protection of TK, sometimes referred to as misappropriation regime, works by taking measures that make it impossible (difficult) for third parties to acquire formal intellectual property rights over TK.[96] As such, it aims at deterring unauthorized access to TK and the consequent misappropriation of such resource. A notable example of defensive protection includes making TK related information available for patent examiners so that it constitutes a prior art and increasing the burden of disclosure in patent applications.[97]

A patent cannot be granted if an invention is not novel, i.e constitutes a prior art.[98] There are a number of possible ways in which TK related information can be made available to patent examiners. Some of them include documentation and traditional knowledge database (TKDs). Once information is available in the form of documentation and database, patent examiners will cease to grant bad patents that seek to appropriate existing knowledge.

On the other hand it is possible to prevent misappropriation of TK by increasing the burden of disclosure in patent application (a disclosure requirement). [99] A disclosure requirement underlies and supports the enforcement of an ABS regime in which access to TK must be based on an informed consent, mutually agreed terms and benefit sharing. To meet the disclosure requirement, a patent applicant must indicate, in a patent application, the source and country origin of TK used in an invention, evidence of prior informed consent, and proof of an equitable benefit sharing.[100] However, since there is no an internationally binding obligation for a disclosure requirement, any unilateral incorporation of the requirement under national laws cannot be effective in addressing misappropriation.

In conclusion, neither the positive form of protection nor the defensive modes are effective in safeguarding TMRs from misappropriation. This is so because while the positive form of protection suffers from incompatibility of systems (between the conventional IPRs and TK), the defensive mode often relies on either on an international framework or user countries for an effective compliance (which is beyond the control of provider countries). For this reason, the best option seems to be building local research and development on Traditional Medicinal Resources, which requires the integration of Traditional Medicinal Resources into the formal health care and research system at local levels.

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[95] Riya Bali, 'Protection of Traditional Knowledge under Intellectual Property Rights Regime', *E-Journal of Academic Innovation and Research in Intellectual Property Assets (E-JAIRIPA)*, 1.1 (2020), 19-164.
[96] KUO and others.
[97] KUO and others.
[98] Riya Bali, 'Protection of Traditional Knowledge under Intellectual Property Rights Regime', *E-Journal of Academic Innovation and Research in Intellectual Property Assets (E-JAIRIPA)*, 1.1 (2020), 19-164.
[99] Karin Timmermans, 'Intellectual Property Rights and Traditional Medicine: Policy Dilemmas at the Interface', *Social Science and Medicine*, 57.4 (2003) <https://doi.org/10.1016/s0277-9536(02)00425-2>.
[100] World Trade Organization (WTO), 'The Relationships between the TRIPS Agreement and the Convention on Biological Diversity: Summary of Issues Raised and Points Made', *IP/C/W/368/Rev.1*, *Council for Trade-Related Aspects of Intellectual Property Rights*, WTO (2006).

3.3 Integrating Traditional Medicinal Resources into the Formal Healthcare: Building Local Research and Development

Any attempt to integrate traditional medicinal resources into the formal health care system must begin from a careful consideration of conservation, protection and development of traditional practices. In this sense, the first important question becomes how to design a policy option that meets the three goals at the same time. The other important issue is to address is the clash of values between the formal health care governance and traditional (medicinal) knowledge which effectively blocks any attempt of integration.

Promoting local research and development is the most effective and appropriate approach to integrating traditional medicinal resource into the forma health care.[101] This is so because building local research and development, as an approach, promotes cultural preservation, biodiversity conservation, the development of traditional medicinal knowledge, and enhances the overall health and wellbeing of the society. There are a number of specific strategies to do this, including:

a) Establishing research institutes:[102] this requires setting research institutes or centers dedicated to studying traditional medicine. These institutes will collaborate with academic institutions, healthcare institutions, and traditional healers so as to research the safety, efficacy, and mechanisms of traditional medicine. The aim of such research collaboration must be to locally develop traditional medicine and utilize their value.

b) Clinical trials:[103] undertaking clinical trials to evaluate the safety and effectiveness of traditional medicinal treatments. This can be done through collaboration with traditional healers, healthcare professionals, and researchers to designing and implementing rigorous trials that adhere to the relevant ethical and scientific standard parameters.

c) Training and capacity building:[104] providing training and capacity building programs for traditional healers, healthcare professionals and researchers. This is key to enhancing skills in undertaking research, clinical trials, and quality control measures with respect to traditional medicine.

d) Knowledge exchange and collaboration:[105] facilitating knowledge sharing and collaboration among traditional healers, researchers and healthcare professionals. This specifically involves promoting dialogue, mutual learning, and sharing of expertise with the view to bridging down the gaps between traditional and modern healthcare systems.

Any attempt to implement the above discussed strategies of integrating traditional medicine into the formal health care system cannot be successful without first tackling the underlying value divergence and thus clash of the two systems (traditional and modern healthcare). The traditional medicine regime is built upon the notional of conservation of

[101] Charles Fokunang and others, 'Traditional Medicine: Past, Present and Future Research and Development Prospects and Integration in the National Health System of Cameron', *African Journal of Tradittional Complement Alternative Medicine*, 8.3 (2011) < https://doi.org/10.4314%2Fajtcam.v8i3.65276>.
[102] Charles Fokunang and others.
[103] Charles Fokunang and others.
[104] Eva Krah, Johannes de Kruijf and Luigi Ragno, 'Integrating Traditional Healers into the Health Care System: Challenges and Opportunities in Rural Northern Ghana', *Journal of community health*, 43.1 (2018) <https://doi.org/10.1007/s10900-017-0398-4>.
[105] Eva Krah, Johannes de Kruijf and Luigi Ragno, 'Integrating Traditional Healers into the Health Care System: Challenges and Opportunities in Rural Northern Ghana', *Journal of community health*, 43.1 (2018), <https://doi.org/10.1007/s10900-017-0398-4>.

traditional medicine as a common societal patrimony.[106] On the other hand, the modern healthcare is often driven by notions of private and profit.[107] According to the theory of institutional incongruence conflicts arise when there is misalignment between formal institutions (ex. laws, policies) and informal institutions (such as customary water rules).[108] Conflicts are, thus, bound to arise when the modern healthcare regime does not adequately consider and recognize the values, knowledge and practices embedded in traditional medicinal practices.

The theory of intuitional incongruence, most importantly, suggests that any attempt to integrate traditional medicine into the modern healthcare system must first address the value divergences between the two systems.[109] A closer look at the Ethiopian health and drug policy reveals that it does not go into the details of value divergences between the traditional and modern medicine except simply recognizing the important role of the former within the formal health care system.[110] The consequence of this is that it reduces the important issues down to normative question, instead of addressing the value clash between the two systems which is the real limitation to incorporating traditional medicine into the formal healthcare system. Besides, even if the Ethiopian health and drug policy recognizes the important role of traditional medicine in the formal healthcare, it does not at all define what exactly their role is, how to utilize them, and how they can feature in the health research and development process.[111]

4. Conclusion

Ethiopia has put in place a legal framework for the protection of its traditional medicinal resources, but the role of traditional medicine in healthcare is not clearly defined. Many medicinal plants are, consequently, at risk of extinction and biopiracy. Any policy option that seeks to protect traditional medicinal resources must have in mind these three problems together, i.e loss of traditional knowledge, loss of medicinal plants, and potential misappropriation. Integrating traditional medicine into the modern health care system requires careful consideration of conservation, protection, and development of traditional practices.

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[106] Karin Timmermans, 'Intellectual Property Rights and Traditional Medicine: Policy Dilemmas at the Interface', *Social Science and Medicine*, 57.4 (2003) <https://doi.org/10.1016/s0277-9536(02)00425-2>.
[107] KUO and others.
[108] David Littlewood, Peter Rogers and Colin Williams, 'Experiences, Causes, and Measures to Tackle Institutional Incongruence and Informal Economic Activity in South-East Europe', *University of Sheffield*, 68.7 (2020), 950-971 <https://doi.org/10.1177/0011392118788911> [accessed at 12/03/2023].
[109] David Littlewood, Peter Rogers and Colin Williams, 'Experiences, Causes, and Measures to Tackle Institutional Incongruence and Informal Economic Activity in South-East Europe', *University of Sheffield*, 68.7 (2020), 950-971, <https://doi.org/10.1177/0011392118788911> [accessed at 12/03/2023].
[110] Transitional Government of Ethiopia (TGE), (1993).
[111] Transitional Government of Ethiopia (TGE), (1993).

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