# Perspectives on Researching Indigeneous Knowledge Systems-based healthcare in Southern Africa

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## Abstract

*This paper explores how indigenous research and development could be managed to unlock the full potential of health-based indigenous knowledge systems. The growing demand for biological or genetic resources for use in biotechnology and pharmaceuticals, as well as their commercialization, is a potentially viable option for sustainable development and public health equity. Studies show that IKS beneficiation could reduce poverty and generate wealth within the knowledge holding communities and their nations at large. The 'knowledge' has earned scientific validation and legitimacy by forming the basis of biomedical research and pharmacognosy, but IKS research has largely been inappropriate, Eurocentric and culturally irrelevant. Coordinated research on IKS would not only mainstream and develop the epistemology; it would indeed lead to product development and diversification of our factor-driven economies. As a novel area of research it should develop its indigenous methodologies and involve the knowledge holders as participants. The existing international tools and processes should be utilized to advance the research on IKS and TM. WHO has not only resolved to promote the role of traditional medicines in health systems, it has also developed a strategy to provide regulatory guidance and quality assurance standards. Since biodiversity is arguably Africa's most valuable asset, home-grown research, informing innovation that exploits indigenous knowledge potential should be intensified. This work has implications for policy and practice.*

**Key words:** traditional Medicine, Colonialism, Intellectual Property Theories, Indigenous knowledge systems.

## Introduction

This paper explores how indigenous research and development could be managed to unlock the full potential of health-based indigenous knowledge systems. The growing demand for biological or genetic resources for use in biotechnology and pharmaceuticals, as well as their commercialization, is a potentially viable option for sustainable development and public health equity. Studies show that IKS beneficiation could reduce poverty and generate wealth within the knowledge holding communities and their nations at large. It is estimated that over 80% of the African population relies on traditional medicine as their first line of primary health care (WHO, 2002). This figure holds promise, that if traditional medicine is properly managed it could be most novel way to address public health equity in the developing world. For instance, a continental strategy could be developed for the integration of traditional medicinal or herbal healthcare systems into the national and regional health care systems. The promise held by traditional medicine and indeed traditional knowledge in general, obtains from the fact that the

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epistemology has weathered storms before it could be recognised and accepted as a credible way of knowing (Mutema, 2003).

The socio-political paradigm that came with colonialism and postcolonial forms of government has done little to disrupt the seemingly superior power of indigenous knowledge in healing, food security and other uses. With lack of support from the new dispensation (then colonialism), IKS continued to exist and thrive informally by relying on the basis of its inherent value and efficacy. It survived the introduction of new learning systems, governance structures and legislative frameworks that sought to denigrate and condemn it to witchcraft and sorcery. Having existed from time immemorial, it is the oldest form of intellectual capital (Battiste and Youngblood, 2000).

The fact that TK is not written down but transmitted orally through apprenticeship and other means from generation to generation speaks volumes of its durability. It has generally been disclosed only to relevant persons in the community or family yet highly shrouded in secrecy and selectivity. This should not be dismissed at face value, but be seen as an effective way of protecting TK from misappropriation through the notion of secrecy – a trade secret. The secret would not last long however, as colonial masters and other post-colonial players found ways of convincing TK holders to disclose the knowledge to them. Hence this led to the high incidence of misappropriation that Africa has experienced in the past, and indeed is experiencing today. The knowledge is not only used for research purposes, it is a big commercial boom running into billions of dollars that exclude the knowledge holders.

This misappropriation of our knowledge snowballed into plain theft. Chilisa and Preece (2005) contend that stealing of African indigenous knowledge and resources by Western researchers and companies constitutes the contemporary marginalization African IKS. It also legitimizes the positional superiority of Western knowledge (Said, 1993). Incidentally, this has led to research of products that originate in our shores to be shaped and developed away from the appellation of origin, yet used to influence research back in the soil.

This paper therefore posits that our medicinal knowledge is fit for purpose. It is not only a comprehensive and self-contained knowledge system – it also a potential form of capital that could be appropriately valorised like any form of commodity in this commercial world. Before that is done, some loose ends need to be tied, so that two main objectives are achieved: protecting indigenous knowledge and acknowledging the moral and economic rights of the holder communities. This is in perfect step with Barnett (2001) and Bratspies (2007), who observe that in terms of San IKS, the San people lost an opportunity to profit from their knowledge, and the power of self-determination of their cultural and social heritage.

Most importantly it is hoped that traditional medicine can carry the baton where the current conventional national health care systems are failing. Traditional medicine lacks the challenges experienced by current health systems in developing countries such as low pay structures that demotivate staff, little and dwindling donations from foreign donors, as well as costly research and development that proves untenable for poor developing countries.

In the following sections, the grounding discourse that would assist in unpacking the pertinent issues shall be identified. Then the methodological issues and pragmatic solutions will be proposed, as well as current international instruments that are supporting the IKS issues in

general. These protocols, conventions and agreements are preparing the ground for the mainstreaming of traditional medicine.

### *Intellectual Property Theories*

Saurombe & Ndlovu (2014) identify theories that underlie intellectual property research, three of which stand out as being relevant in exploring the IKS-based health care services protection issue in as far as the knowledge holders are concerned. These are the Natural Rights Theory; the Private Property Theory; and the Exchange of Secrets Theory, and they are briefly explained below:

- Natural rights theory: talks to goods that are communal, such as communal land and its resources; According to this theory a worker, herbalist, *sangoma*, or any person that innovatively interacts with their communal land to derive a product, service or solution has a natural right to the fruits of their innovation (sweat of the brow)
- Private property theory: it "promote the progress of science and the useful arts"; and proscribes infringement by outsiders that tends to come for the sole purpose of free-riding and passing-off on what they do not deserve. This means the biodiversity that is found in indigenous habitat is the cultural and social heritage of the inhabitants of the territory.
- Exchange of Secrets Theory: most knowledge would largely remain hidden if there is no incentive to release it. Incentives are the means by which an important public purpose may be achieved – allowing the public access to the products of the knowledge holder's genius. The incentive is tantamount to that sweat of the brow for the research time of the knowledge holder.

With the foregoing, the debate of public health equity can be shaped within the confines of relevant valid theories as well as relevant human rights imperatives. The theories create both an anchor and a platform to forge strategic networks and partnerships among various stakeholders. Ultimately and in the final analysis, the viable alternative in the form of traditional and herbal medicine would promote value creation for IKS in general. That would be converse to the current situation where the value of IKS is deliberately marginalized and its value effectively dissipated.

### *Contextual IKS Methodologies*

The historical bearing of formerly oppressed groups, as well as the relationship between the oppressed and the oppressor, assumes centre-stage in addressing IKS methodological paradigms. Michael Foucalt (1977) opines that in knowledge production there are various centres of power in constant struggle and "…whichever group is strongest establishes its own rules on what can be known and how it can be known." This is quite instructive. We are reminded that the current research methods into IKS may be irrelevant after all.

More contemporary scholars have also come out to discover that so far IKS has been wrongly researched. The studies into IKS by outsiders have been irrelevant, Eurocentric and generally inappropriate. The fact that foreign researchers are more inclined to "researching for"

rather than "researching with" means that their accounts of other peoples' ways of life, notwithstanding the observations and interviews, do not reflect the true and factual version of the researched people's way of life. The moral and ethical imperative in as far as indigenous knowledge systems research is concerned, is such that participants should be partners in the research. They should not be treated as mere subjects.

The following excerpt from Deloria (1988) shows us that the knowledge that we are taught about the formerly disadvantaged groupings is constructed in an almost arbitrary fashion; then it snowballs cumulatively into a body of literature that informs future research in a factually questionable manner:

"Anthropologist comes out to the Indian reservation to make observations. During the winter period, the observations will become books by which future anthropologists will be trained" (cited in Chilisa, 2012: p. 14).

Research designs and social science methodologies that are not home-grown would all but miss the point. An understanding of traditional knowledge, first and foremost requires an understating of relevant customary laws which are themselves a set of customs, practices and beliefs that are accepted as obligatory rules of conduct by indigenous peoples and local communities. Moreover, customary laws consists of a comprehensive group of customs that are recognized and shared collectively by a community, people, tribe, ethnic or religious group. This becomes the *de facto* 'operating system' of the community, people, ethnic or religious group, wherein the function of the aforementioned IP theories is aptly 'called in'. The emphasis is that TK is culture specific, integrative and synergistic and therefore must be viewed holistically.

To that effect, Mukherji (2004) questions and denounces that research methodologies that originated in and are indigenous to the West are necessarily universal to the rest of the world. Alatas (2004) refers to the uncritical imitation of Western research paradigms as the "captive mind" concept. This leads us to the shift that indigenous peoples and their researchers need to come up with their own methodologies, informed by the understanding of their locale and interrelations, knowledge that would have been accumulated over successive generations. Such rightful ownership of knowledge eliminates the researcher being at loggerheads with the local ethical norms underlying IKS, which is in contravention of the African concept of *ubuntu*. It eliminates the moral dilemma that normally arises when outsiders appropriate communal knowledge that would never have been intended for individual exclusivity. From that point of departure, it is then safe to advise that ethical norms provide a sound base and foundation for legislation. This is also known as the ethical foundations of law. It thenceforth validates legal decision-making (Feldman and Nadler, 2006; Feinman, 2000). The next section looks into the current debate on the issue of IKS-based healthcare.

### *Current Background Narrative*

In the quest to seek public health equity in sub-Saharan Africa, it is important to examine what is already happening. These are pertinent issues and factors that could highly influence the transition to traditional medicine and indeed the transition to healthcare leadership and equity. It could also help us position ourselves in order to establish any existing inadequacies, as a stitch in time saves nine.

In Botswana, medicinal IKS is still widespread. The findings of the situational analysis that evaluated the prevalence of IKS in Botswana found that together with arable farming, livestock rearing, traditional food systems and cuisine, cosmetics, traditional games, weather forecasting, water prospecting, handicrafts, attire and performing arts; IKS was also highly manifest in traditional medicine (Kgathi wt al., 2004). It is still highly used in cultural events and traditional medical interventions such as *botsetsi* (maternity), *boswagadi* (widowing), *go rupisa* (initiation ceremonies/circumcision), *loso* (post-death therapy) and other 'pathologic' healing (*kalafi*).

Kigen et al., (2013) note that trade in herbal medicine is gaining acceptance globally and is now a lucrative business generating lots of revenues. Most of the raw materials that fuel this trade are on our shores. This is because Africa has rich biodiversity which is a major source of the livelihood of its people. The resources are complementary, holistic, intergenerational and oral in nature. Traditional knowledge and its associated genetic resources contribute significantly to ecological management, sustainable agriculture, health and food security. This has fueled a global rush to Africa by companies that want to commercialize and research on the knowledge. With the upcoming groundswell of scientific validation and legitimacy, TK now forms the basis of biomedical research and pharmacognosy. This means the resources are under threat due to ongoing misappropriation, commercialization and extinction and in the process holders of the knowledge are effectively being dis-inherited and marginalized (Oguamanam, 2006).

Research and development (R&D) for conventional medicine in developing countries has also been another ever-growing challenge. According to the Commission of Intellectual Property Rights (CIPR, 2006) the big pharmaceutical multinational companies are not keen to do R&D in developing countries. However, the developing countries are the ones that carry the heaviest disease burden. For instance, tropical diseases (including malaria) account for 12% of global disease burden. Yet only 1.3% of new drugs developed address these diseases. R&D by the Big Pharma club routinely concentrates on diseases in rich countries. Where there is limited purchasing power, where the diseases affecting millions of poor in developing countries visit the harshest brunt, little to no research goes on because such disease are not 'profitable'. The commission further reports that the common threshold for the pharmaceutical companies is such that sales not forecasted to exceed $1.5billion mean no research will be conducted in that particular market. Hence the need to stimulate our own R&D and bring our own indigenous knowledge to the market that talks to it: psychologically, spiritually, physiologically, environmentally and socio-economically (Konadu, 2007).

In the following sections this paper will delve into various endeavors by different stakeholders and international organizations towards recognizing, protecting and mainstreaming traditional medicine.

### *WIPO*

World Intellectual Property Organization (WIPO) is a specialised United Nations organ responsible for managing intellectual property around the world. Its mandate is mainly promoting and protecting IP, creativity, and rewarding the same. WIPO has joined the race to protect IKS. WIPOs initiative came as the imposed answer to requests by various governments and their indigenous peoples and local communities demanding protection that is equivalent to that of intellectual property rights. This was in view of the rate at which developed nations were

ransacking the continent of its medicinal plants, among other valuable resources. Through the Intergovernmental Committee (IGC), WIPO is to develop international a legal instrument, which will ensure the effective protection of traditional knowledge, traditional cultural expressions (TCEs) and genetic resources (GRs). Under the WIPO structure, traditional medicine (TM) is classified under genetic resources while the knowledge of administering it is under traditional knowledge and to a certain extent, traditional cultural expressions. Generally genetic resources are not IP, but like in the field of medicine, they contain IP attributes. The WIPO intervention would then stem a lot of problems bedevilling IKS such as, theft of resources, misappropriation and bio-piracy. Effective protection of the resources would also address equity considerations and sustainable use and conservation concerns. Preservation of traditional practices, culture and heritage would prevent the appropriation of TK, leading promotion of its use in development, TM mainstreaming and possible economic diversification. (Moahi, 2007).

Bio-piracy and plain theft of indigenous genetic resources are still the norm. They are not only restricted to traditional medicinal knowledge - the onslaught is indeed representative of the plight of the rights of traditional medicinal practitioners. The following are some of the cases of theft that continue to rattle the continent at large:

- Hoodia, the hunger-staving plant from Kalahari Desert was patented elsewhere but the matter was later resolved amicably with a benefit sharing model;
- Sengaparile or Devil's claw from Botswana, Namibia and South Africa is under threat from being patented and commercialised by a German company
- Kgengwe, the thirst suppressant from Botswana that looks like a small watermelon is reportedly patented in a joint venture between a Japanese and Botswana. The deal still raises eyebrows because all the studies on the fruit are done by the Japanese.

The popularity of these botanicals leading to their bio-piracy obtains from their ability to promote general well-being; decrease appetite and thus weight-gain; and general promotion of a healthy reproductive lifestyle. These are the most attractive attributes of indigenous knowledge which contribute to make it the most sought-after by the developing world. The scramble for these natural resources has been driven by the evident global renaissance in the use of natural traditional medicines as well as the growing importance in Biotechnology. High success rates in drug developments based on the medicinal plants do not help the 'post-gold' rush.

WIPO, at the clamouring and behest of concerned indigenous groups, immediately recognized that traditional medicine, as well as its corresponding traditional knowledge, embodies traditional forms of creativity and innovation worthy of some [IP] protection (http://www.wipo.int/tk/en/igc/). It was upon that premise that the Inter-Governmental Committee of Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC), was established. The IGC would develop an international legal instrument for ratification by members. It is important to note that prior to IGC, protecting IKS under the regular WIPO precepts proved problematic because intellectual property laws protect only 'original' and 'novel' works by known individuals, for a limited time, often only 'fixed' works (http://www.wipo.int/export/sites/www/tk/en/igc/pdf/igc_mandate_1415.pdf). IP laws placed traditional expressions and knowledge in the 'public domain', thus conferring a negative exclusionary effect. While productions based upon tradition can be protected as 'original'

creations or inventions (positive exclusionary effect), there still exists no legal duty to acknowledge or share benefits with tradition bearers.

The WIPO drive to protect indigenous knowledge resources under IGC is not without further administrative challenges. While WIPO is a United Nations (UN) organ formed by member nations that are supposed to be all equal, the truth on the ground is that a few developed countries still influence its operations in matters that directly affect indigenous people. This is owing to their economic might and vested interests in African medicinal plants. One could also surmise that this is a battle for control of what could easily be the best medicinal resources in the world today. In WIPO's attempt to protect African indigenous knowledge systems (IKS), the same powerful countries drive the proceedings and make recommendations on behalf of the weaker nations, or indigenous groups in the cases of Aborigines and others that are usually home to IK holder communities. They veto their way through, leaving proceedings to stall year after year, while the plunder continues. A colleague delegate who attended the proceedings reported that they spent the whole week debating the difference between 'people' and 'peoples!'

Furthermore, noble suggestions and attempts to include the indigenous groups are always faced with obstacles. IGC is allocated a shoestring budget which is hardly drawn from the regular WIPO budget. This is despite Kiene (2011:41), who suggests that "…effective participation depends on proper financial support." They indigenous peoples remain a paltry minority in these affairs. This is because the developed nations, being home to the pharmaceutical companies collectively as an industry or the Big Pharma, want to maintain their foothold in the international trade of medicines. It is this unfair stranglehold on the medicine industry that prompted WIPO and WTO to come up with flexibilities or relaxed terms for least developed countries. This was in view of their inability to be at par with the developed world in terms of patent filing and general R&D capabilities. The flexibilities are generally known as TRIPS flexibilities as discussed below.

Lastly, a comprehensive system that seeks to protect rights is only complete if it affords the right-owners redress to enforcement. Without an appropriate system for both enforcing rights and also enabling the grant of rights to others to be resisted, an IP system would have no value (WIPO, 1999). It is therefore in order that the mainstreaming of traditional medicine would also explore and look into the availability and efficacy of a system of protection, promotion and effective enforcement of IPRs with the traditional medicine practitioners. Incidentally, it would also intensify awareness efforts so that traditional health practitioners do know about the enforcement remedies available to them. As Sackey (2010) points out, international and regional protection systems should talk to each other. They should be in tandem. Even if a health equity solution emerges off customary law, there shouldn't be counter-narratives; the left hand should know what the right hand is doing. This is where the TRIPS agreement comes in tops. It sets a baseline for governments or state parties to provide effective measures and procedures for enforcement (Phuthego & Chanda, 2004).

### *WHO*

Beyond WIPO, mutually supportive cooperation has been developed to include World Health Organization (WHO) and World Trade Organization (WTO). The trilateral interactions are meant to strengthen their practical coordination on issues around public health, intellectual

property and trade, with TRIPS (Trade Related Aspects of IP) agreement as the centrepiece. There are more efforts spearheaded by WHO to de-stigmatize, regularize and promote traditional medicine. These efforts go by the slogan "Health for All", and they are propelled in the main by the realization that traditional medicine wields the potential to achieve public health equity. WHO Regional Committee for Africa Resolution on promoting the role of traditional medicine in health systems was born in 2000; the then Organization of African Unity (OAU) Declaration in Abuja, Nigeria which identified traditional medicine as a research priority in April, 2001; Declaration of OAU Heads of State that the period 2001-2010 be designated as the Decade of African Traditional Medicine – July 2001; and the adoption of OAU Plan of Action for implementing the declaration of the Heads of States-2003. The achievements from these initiatives may still be hard to discern, but the process towards the emancipation of IKS is in motion. OAU has since been disbanded in 2002 and replaced by African Union (AU). In line with the AU development, more instruments have been promulgated either as sequels or to reflect new trends and realities. For instance there is a sub-committee under AU's New Partnership for Africa's Development (NEPAD) that deals with the role of Africa's IKS in the rebirth of Africa - the African Renaissance.

What is the latest position of WHO with regards to traditional medicine, one might ask? The WHO Traditional Medicine Strategy 2014–2023 was developed and launched in response to the World Health Assembly resolution on traditional medicine (WHA62.13) http://www.who.int/medicines/publications/traditional/trm_strategy14_23/en/.

The strategy aims to support Member States in developing proactive policies and implementing action plans that will strengthen the role traditional medicine plays in keeping populations healthy.

The strategy addresses the challenge of systematic disparities in health achievement between social groups of the haves and the have-nots. These disparities resultantly constitute discriminatory health access, and they effectively move away from the moral imperative of making health accessible to all. This is against the backdrop of United Nations Human Rights Commission's position that healthcare is a human right imperative. In that connection, the strategy further responds to the needs identified by Member States and builds on the work done under the WHO traditional medicine predecessor strategy: 2002–2005. The new strategy for the period 2014–2023 devotes more attention than its predecessor to prioritizing health services and systems, including traditional and complementary medicine products, practices and practitioners.

In summary, the following statistical excerpt from the World Health Organization (WHO) puts the background issue in perspective, as to why world authority organizations cannot afford to ignore herbal or alternative medicine (http://www.who.int/topics/traditional_medicine/en/):

- Australia annual expenditure on alternative medicine: US$80million
- China herbal medicine production: US$2.5 billion
- Japan annual sales of herbal medicine: US$1.6 billion
- Republic of Korea annual sales of herbal medicine: US$544.5 million
- 80% of the World's population depends on traditional plant medicine exclusively while remaining 20% still relies on plant products by extension (WHO, 2005).

### *ARIPO*

The African Intellectual Property Organization (ARIPO) extends the mandate of WIPO but it is only regional, made of some 19 Anglophone countries of mainly southern Africa. This excludes South Africa, whose only role in the union is that of observer state. ARIPO's initiatives on the protection of genetic resources and traditional knowledge began in year 2000 when member nations resolved that "in view of the need of a coordinated strategy to deal with the problem of the protection of indigenous knowledge, the Organization should take initiatives on traditional knowledge and link its initiatives with those undertaken by the World Intellectual Property Organization (WIPO) through its active involvement in the WIPO activities in this field." To that end ARIPO came up with various interventions culminating with the Swakopmund Protocol, whose sole mandate is protecting traditional knowledge and expressions of folklore within its (ARIPO) framework (Refer to Figure 1 below).

ARIPO also developed regional approach in assessing the use of the TRIPS flexibilities that are an advantage available to all ARIPO members. ARIPO and World Bank embarked on regional study on TRIPS flexibilities engaging a team of consultants. They would review how countries in the African region have used the flexibilities to improve medicines and to review domestic production of medicines as well as sharing findings with fellow Member States of ARIPO.

The following graphical summary sheds more pellucid details on ARIPO's framework for discharging its mandate on the management of indigenous knowledge and indigenous knowledge systems.

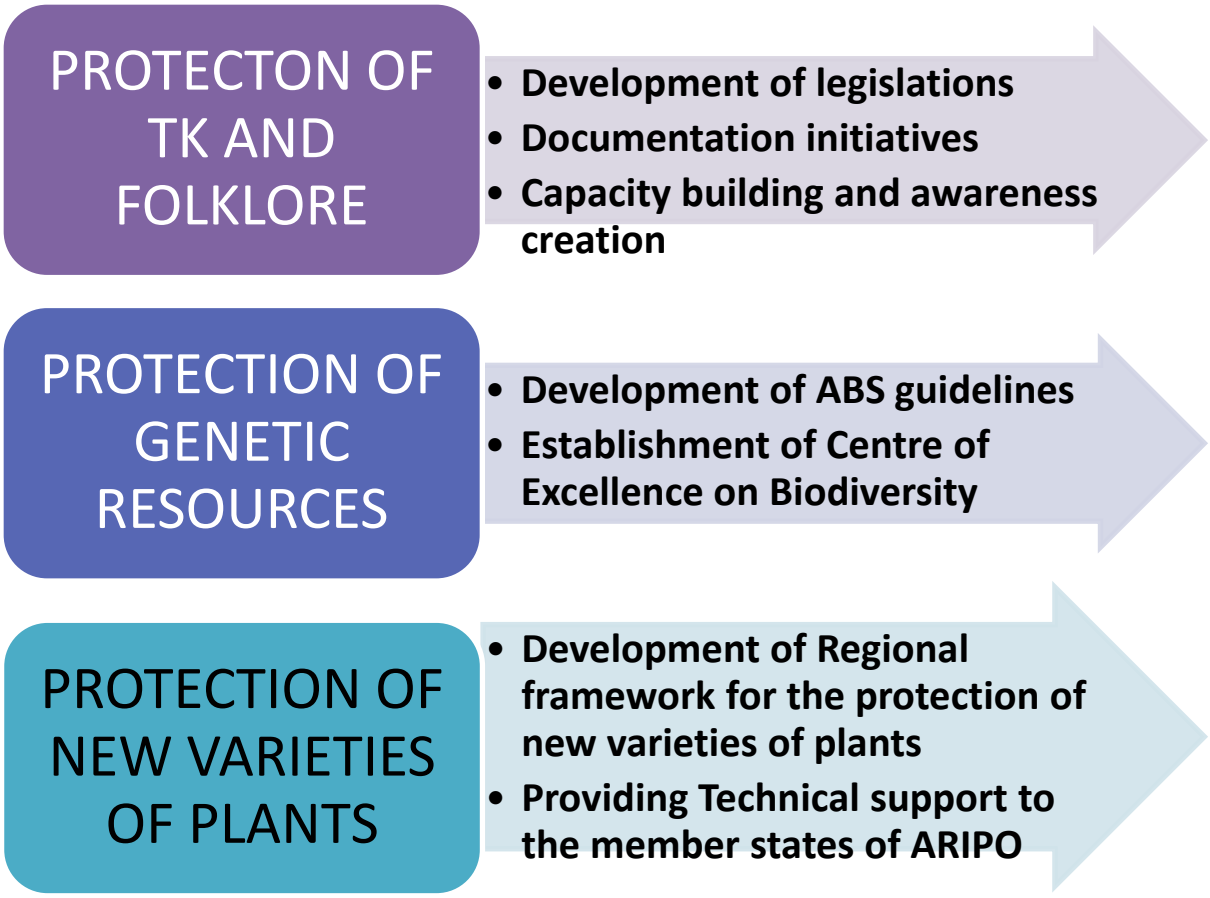


Fig 1: ARIPO's Framework on implementing its mandate

On a continuous basis, ARIPO seeks to come up with a comprehensive and all-inclusive approach in addressing the protection of traditional medicines within the intellectual property system. It continues to engage with OAPI, the IP union of Francophone Africa, on expert meetings to map out sustainable strategies for the promotion and protection of traditional medicine. The two African regional bodies continue to promote IP culture and innovation on the continent and undertake R&D of herbal plants and traditional medicine; foster closer inter-ministerial and institutional linkages and the administrative will to implement decisions based on sound and comprehensive guidelines and legal and policy frameworks

***UPOV and Arusha Protocol for Protection of Plant Varieties***

Once the traditional medicine is given its rightful prominence in its respective societies, there ought to be various spin-offs. It is therefore not a far-fetched idea that in consistence with sustainable use, reforestation and commercialization, new varieties of traditional medicine will be researched and produced. It is on that forward-looking note that International Union for the Protection of New Varieties of Plants (UPOV) and Plant Varieties Protection (PVP) protocol have been put in place. The Arusha Protocol as the PVP is known is administered by ARIPO as

its latest installment of growth roadmap. The Protocol was signed on the day of adoption by 4 Member States, namely The Gambia, Ghana, Mozambique and Sao Tome and Principe. The United Republic of Tanzania signed the Protocol on September 28, 2015. Protection is afforded to new varieties of plants to safeguard the interests of the plant breeder (excluding smallholder farmers) who have made certain selections and preserved old varieties, invented new varieties and adapted existing varieties to suit the local environment thereby enriching agro-biodiversity, and of course traditional medicine as envisaged.

For each state party that ratifies or signs up to the treaties, respective laws and policies should acknowledge the broad and narrow meanings of the plant varieties protections within their jurisdictions. Notwithstanding that, international obligations of the treaties impose on all countries (those which have ratified the instruments) the introduction of some form of IP protection for plant varieties. Intellectual property rights in the field of genetic engineering have triggered strides towards appropriation through private property rights of resources and knowledge previously deemed to be freely available to all. This becomes an act of privatization of resource knowledge favoring private ownership over public access and sharing of knowledge. Notably, this goes against the grain and spirit of "traditionality" and it remains one of the loose ends that a comprehensive system needs to tie to 'normalize' the narrative. "Traditionality" refers to the social process by which the cultural expressions and knowledge are created, used and shared. (Sackey, 2008).

### *WTO-TRIPS*

World Trade Organization is the parenting organization of the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement. In the quest to enrich public health equity and leadership through indigenous knowledge systems, this is one international instrument that has already prepared the ground for future trade of traditional or herbal medicine within the context and parameters of traditional knowledge, as well as biodiversity and plant and life forms. TRIPS agreement censors inappropriate patenting and seeks to nip bio-piracy in the bud.

On the back of TRIPS came the Doha Declaration in 2001. [2]The Doha Declaration on TRIPS agreement and Public Health gave respective signatory state parties the confidence that IP protection objectives and public health objectives are pulling together in tandem. This dispelled fears that they were at cross-purposes, especially for developing and least developed countries. TRIPS Agreement incorporates certain "flexibilities." [3]These aim to permit developing and least-developed countries to use TRIPS-compatible norms in a manner that enables them to pursue their own public policies, either in specific fields like access to pharmaceutical products or protection of their biodiversity, or more generally, in establishing macroeconomic, institutional conditions that support economic development

At bare minimum, Article 27.3(b) of TRIPS imposes on all countries the introduction of some form of IP protection for plant varieties. Member states are, however, free to devise a *sui generis* option, as a choice that will consider local realities. It is notable that TRIPS does not

[2] https://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_trips_e.htm (accessed 15 April 2016)
[3] http://www.wipo.int/ip-development/en/legislative_assistance/advice_trips.html# (accessed 15 April 2016)

recognize mechanisms to ensure fair and equitable benefit sharing with holders of TK and it does not touch on prior informed consent, access and benefit sharing. These have been left to CBD and Nagoya, as follows next. And lastly, while TRIPS does not cater for specificity of the country of origin of a resource (except for wines and spirits), its Articles 22, 23 and 24 have a clear element of Geographical Indications (GIs). GI is a form of protection that derives from the place of origin of a product having special features that enhance quality.

### *Convention on Biological Diversity*

The Convention on Biological Diversity (CBD) was put in place as a counter-measure against the erosion of biodiversity. It abolished the concept of common heritage of biodiversity and recognised the sovereign rights of states over their biological resource. It comes in as the saving grace where the profit-driven harvesting of medicinal plants for exports markets threatens extinction of the species. The harvesting of *sengaparile* (Devil's Claw) in Botswana is a case in point. The danger exists that the loss of biodiversity from habitat destruction and unsustainable harvesting practices will cause some species to become extinct (Magoro et al., 2010). In fact Article 9 of CBD encourages "…users and providers to direct benefits arising from the utilization of genetic resources towards the conservation of biological diversity and the sustainable use of its components."

The convention focuses on conservation and sustainable use of biological resources and stipulates that access to biological resources can only occur with the "prior informed consent" of the holder community. It provides for equitable sharing of benefits arising from the commercial use of communities' biological resources and local knowledge. The convention provides the basic framework for conservation and use of biological resources particularly Articles 15, 16 and 8(j).

CBD requires of respective state parties to preserve traditional knowledge, including medicinal knowledge and traditional medicines, as well as promote and foster its application. It also regulates Access and Benefit Sharing (ABS) on Material Transfer Agreements (MAT) and enforce that all agreements are subject to Prior Informed Consent (PIC) of the country of origin or community in question. The issue is that ccountries should have sovereign rights over natural resources and authority to determine access to the resources. It promotes respect, preservation and maintenance of knowledge, innovation and practices of local communities.

The convention has also received widespread acceptance elsewhere. The following except has put the force of the convention in perspective:

*'...knowledge is not merely a commodity to be traded like any other in the market place. Our knowledge of biodiversity is indivisible from our identities and our laws, institutions, value systems and cosmo-visions as indigenous Peoples. For generations, our people have been and continue to be custodians of nature upon which we all depend. We are therefore fully committed to the first two objectives of the CBD, that is, the conservation and sustainable use of biodiversity. However, any discussions of the third objective, that of access and benefit sharing, must recognize our fundamental rights to free, prior informed consent as peoples and our collective land and territorial security'*

(Indigenous Peoples statement at the International Indigenous Forum on Biodiversity, 22-26 October 2001 - Bonn, Germany).

### *Nagoya Protocol*

The protocol's full name is 'Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity.' It is a supplementary agreement to the 1992 Convention on Biological Diversity (CBD) and its main mandate is to ensure access to genetic resources. The protocol most importantly touches on the issue of the trans-boundary nature of traditional medicinal plants and traditional knowledge in general. Because biodiversity extends beyond geographical national borders, so does the resources and the knowledge. This is one of the main issues that distinguish it away from CBD. In addressing what the CBD failed to address on trans-boundary indigenous knowledge and trans-boundary cooperation between state parties, Article 11 of the Nagoya Protocol states that:

1. In instances where the same genetic resources are found in situ within the territory of more than one Party, those Parties shall endeavour to cooperate, as appropriate, with the involvement of indigenous and local communities concerned, where applicable, with a view to implementing this Protocol.

2. Where the same traditional knowledge associated with genetic resources is shared by one or more indigenous and local communities in several Parties, those Parties shall endeavour to cooperate, as appropriate, with the involvement of the indigenous and local communities concerned, with a view to implementing the objective of this Protocol (Nagoya Protocol, Article 11(1) & 11(2)).

Of further relevance is Article 4 the Nagoya Protocol, which states that the protocol does not affect the rights and obligations of any party deriving from a specialised international instrument regulating ABS: provided they are supportive of and do not run counter to the objective of the CBD and the Protocol. This eliminates the advent of a perceived hierarchical relationship between Nagoya and other instruments; but rather it promotes mutuality and complementarity. On that account for instance, the FAO's ITPGRFA (International Treaty on Plant Genetic Resources for Food and Agriculture), which regulates access to plant genetic resources for food and agriculture need not run counter to the CBD and the Nagoya Protocol. The ITPGRFA recognises that farmers have rights to their varieties which shall be recognised and protected under the customary law of the concerned local communities (residual rights to save, use and exchange and sell farm-saved seeds (ITPGRFA, Article 9).

### *African Traditional Medicine: Towards Health for ALL*

In Southern Africa, traditional medicine is generally regarded as a product of social institutions and cultural traditions that have been evolved over many centuries to enhance health. Therefore, the traditional medicine has been "tested and tried", as it is a product of careful and painstaking research that spanned generations. Traditional medicine in Botswana and South Africa for example, views sickness as the failure of complex social and spiritual relationships and begins

with an examination of both human and supernatural interactions. Traditional medicine is more holistic in its approach than allopathic medicine which emphasizes the exhibition of symptoms rather than the underlying causes (Odora Hoppers, 2002; Breidlid, 2009).

The apprenticeship training of traditional doctors is extensive and arduous. It is subject to protocols and discipline and includes specialization similar to biomedical approaches. The specializations include: midwifes, gynaecologists, paediatricians, men's health practitioners, orthopaedics and many more. Just as in modern medicine, there are fewer general practitioners in traditional medicine, which lends credence to the reality that traditional medicine is medicine in its own right. Traditional medicine and practitioners are a major source of public health indeed, in southern African countries. It is the first line of defense in primary health care. The advantages of IK-based health care are well documented. The healers are viewed as true community health workers in their communities. The time taken to consult a traditional healer is relatively shorter, and in most cases these healers are people who understand the local setting. This empowers them to consider each case and the holistic issues surrounding it such as the spiritual, economic, environmental, physiological, psychological issues as well as the social aspects of health (King & Homsy, 1997). The following table below (Table 2) gives the ratio of traditional health practitioners (THP) to the population as compared with the ration of medical doctor to the same population. This study was carried out by ARIPO. It covers countries where traditional medicine is practiced, and incidentally the countries are ARIPO members.

**Table 1:** Comparing THP and Medical Doctor Ratio to Population

| Countries | Ratio of THP to the Population | Ratio of Medical Doctor to the population |
|---|---|---|
| KENYA Urban (Mathare)<br>Rural (Kilungu) | 1:833<br>1:146-345 | 1:987<br>1:70 000 |
| ZIMBABWE | 1:600 | 1:6250 |
| SWAZILAND | 1:100 | 1:10 000 |
| NIGERIA (Benin City)<br>National Average | 1:110<br>No Data | 1:16 400<br>1:15 740 |
| SOUTH AFRICA (Venda area) | 1:700-1:1200 | 1:17 400 |
| GHANA | 1:200 | 1:20 000 |
| UGANDA | 1:700 | 1:25 000 |

| | | |
|---|---|---|
| TANZANIA | 1:400 | 1:33 000 |
| MOZAMBIQUE | 1:200 | 1:50 000 |

Source: Chatora, 2003.

With the foregoing, there is no doubt that traditional medicine, or IK based health care systems are still an inherent part of the health of Africans. It is also abundantly clear that traditional medicine is a product of research and innovation, as it is indeed the basis of research and innovation for contemporary conventional medicine. Different contexts from which the mainstreaming of traditional medicine can be done have also been discussed. The different players that tackle various sides of the issues are also working together as well as complementarily, to ensure that all bases are covered.

With countries such as Ghana having taken the lead (through its Ministry of Health – Traditional and Alternative Medicine), it is upon more countries in Africa to go back to their roots and recognise the medicine they understand. It should start with documentation of the knowledge, followed by research and coming to fruition with legislation and practice. For indigenous knowledge research to be appropriate and fitting, it should be divorced from conventional knowledge research because these are two different epistemologies. Even the WHO recognises the disparities. The WHO strategy for IK-based medicines has built the knowledge base for traditional medicine management; strengthens quality safety and proper use and also sees traditional medicine as potentially carrying the capacity to promote universal health coverage.

All the aforementioned stakeholders should take a vital part in the process, with intellectual property as the overarching raw material of the value chain. The intellectual property element would always recognise that in the knowledge of the indigenous people, there exists private property, natural rights and secrets of the trade. CBD and Nagoya protocols would ensure conservation, equitable sharing, prior informed consent in parties that work with the resource, even if the resource is trans-boundary. For commercial purposes TRIPS would complement CBD and Nagoya to eliminate bio-piracy and misappropriation. Customary law should never be left out in the solution towards IK-based health equity research and development. This is because the development and transfer of the knowledge is originally governed by communal ethics and norms.

The classical solution of our times as seen through the prism of innovation studies is cooperation. To that end, it is important for the indigenous societies to learn to cooperation with international pharmaceutical companies in commercialization deals. Partnering with modern science and technology players would effectively add value to traditional knowledge. It is also important to note that only certain types of traditional knowledge that can be commercialised should be commercialised. It is impossible to commercialise the knowledge and resources wholesale, as some of its elements survive on spirituality and confidentiality. The most important outcome of any partnership is a win-win situation. In that spirit such partnerships should equitably share the benefits with the knowledge holders.

## Conclusion

From the above overview it is clear to research and develop IKS is not a cut and dry exercise because several international tools and processes are in place and there is a recognition that IKS holds values to be unearthed for the benefits of mankind. The IP theories and instruments provide sufficient guaranties for the protection of discoveries and recognition of holders of IKS. As IKS in medicine is becoming more of a relevant alternative, we can only hope that certain diseases of the new age such as sugar diabetes, high blood pressure and cancer could be finally meeting their match.

To accomplish this, new methodologies and techniques should be found to assess the effectiveness of treatments from TM and IKS with the participation of IKS knowledge holders. Coordinated research on IKS would not only mainstream and develop the epistemology; it would indeed lead to product development and diversification of our factor-driven economies. The existing international tools and processes should be utilized to advance the research on IKS and TM.

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