The Protection System of Intellectual Property Rights of Barolong Traditional Medicine Practitioners in Botswana

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DECLARATION BY PROMOTERS

We, the PROMOTERS whose names and signatures appear below, do hereby recommend that the following Thesis entitled: *The Protection System of Intellectual Property Rights of Barolong Traditional Medicine Practitioners in Botswana* completed by OC Rapuleng, student number 25848585, be accepted for examination.

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I, OUTULE CUTHBERT RAPULENG (Student Number 25848585) hereby declare that the entirety of this thesis being submitted for the fulfillment of the degree of Doctor of Philosophy in Indigenous Knowledge Systems at North-West University is my original work; that I am the sole owner of the copyright; that I have not previously, in full or in part, submitted it for obtaining any qualification or diploma or fellowship to any other university; that all the sources of materials used for the thesis have been duly acknowledged; and that I accept sole responsibility for any defects contained.

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Abstract

At best, the traditional knowledge, specifically the associated medicinal resources of Botswana in general, as evidenced by the Barolong tribe case, are ripe for the picking by anyone. This means that those outside the Barolong community, let alone the country of Botswana, find themselves benefitting more than the rightful owners of the resources, and there is nothing the Barolong can do about it under the current policy and legislative set-up. The unregulated harvesting leads to gradual extinction of the traditional medicines leaving the land a parched desert. The examples, which are well-known, are well documented in this study. The problem is rampant as it is mostly driven by pharmaceutical multinationals, which have discovered cheap raw materials from these unregulated and unprotected resources. Without much success global interventions have been advanced from the global levels like the World Health Organization down the continental and regional bodies. When this study took place in 2016, the Barolong were still an embittered tribe struggling to come to terms with disappearing traditional medicinal resources, mainly at the hands of outsiders.

This thesis aims to investigate this problem and eventually present the author's original contribution to the already existing body of knowledge, by way of a model that advances the interests of the Barolong indigenous group while also being realistic towards the exigencies of globalization. This model promises to protect these resources from the marauding commercially motivated parties who harvest the resources with reckless abandon to the detriment of the environment.

It is from this background that the study adopted a quantitative methodological approach to find answers to the research questions that emerged from the objectives, while well anchored to the indigenous research paradigms. Document Analysis was used to analyse the regulatory policy and

legislative instruments. Questionnaires were used to collect data from the Barolong traditional leadership, traditional healers and focus groups as well as Botswana policymakers.

The era of globalization is also a major player. Beyond pharmaceutical companies the Barolong treasure trove of bio-diversity is of interest to researchers and academics that use the genetic resources as well as the biochemical compounds occurring in nature for research purposes. The problem under investigation is partly informed by this reality. This has led to the injustices of researchers from the global North unilaterally collecting the resources, then value-adding and commercializing them without acknowledging the rightful owners, as per findings of the study. The study also finds that while Botswana responded to the problem by ratifying the Swakopmund Protocol, the Convention on Biological Diversity and Nagoya Protocol, the interventions proved to be not so relevant to the local setting, considering the lack of readiness and lack of a single line ministry to manage the issues. It further finds that indigenous methods of prudent resource utilization and conservation were more effective than the new profit-driven methods.

The concluding recommendation therefore remains tethered to the importance of indigenous knowledge for the indigenous people. It maintains a balanced ecosystem, not the least of which is environmental conservation. It motivates for government regulatory framework to adopt a hybrid system that takes globalization into consideration for a proper benefit sharing model as discussed above. The considered view is that Barolong medicinal knowledge and resources should also be of lasting benefit to the world whereupon the tribe shall also be entitled in return to other benefits such as research leading to marketable products and technology transfer.

Key words: Traditional Medicine; Indigenous Knowledge; Genetic Resources; Globalization; Benefit-sharing; Prior Informed Consent; Bio-piracy; Intellectual Property

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The substantive data collection was a success, and the support of the Barolong traditional leadership was highly beneficial. They welcomed me and shared the concerns that this research sought attend to. Special thanks also go to Professor Daniel Motlhanka who helped to draw a clear relationship between indigenous knowledge and science. My family was also great indeed, as they bestowed on me the doctoral title from the moment I registered for the study. That was tremendous amount of pressure to succeed. I also thank Dr. Emmanuel Moswela for the expert input and resources.

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List of Acronyms

ARIPO: African Regional Intellectual Property Organization

ABS: Access and Benefit-Sharing

AU: African Union

CBD: Convention on Biological Diversity

IKS: Indigenous Knowledge Systems

IP: Intellectual Property

IPRs: Intellectual Property Rights

IGC: Inter-Governmental Committee of Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore:

LDCs: Least Developed Countries

NGOs: Non-Governmental Organizations:

OAU: Organization of African Unity

PDR: Public Disclosure Requirements

PIC: Prior Informed Consent

R&D: Research and Development

SADC: Southern African Development Community

SDGs: Sustainable Development Goals

TK: Traditional Knowledge

TRIPS: Trade-Related Aspects of Intellectual Property

UPOV: Union for the Protection of New Varieties of Plants

WHA: World Health Assembly

WHO: World Health Organization:

WIPO: World Intellectual Property Organization

WTO: World Trade Organization

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The World Intellectual Property Organization (WIPO), at the clamouring and behest of concerned indigenous groups, immediately sought to recognize that traditional medicine, which is categorised as traditional knowledge, embodies traditional forms of creativity and innovation worthy of some [IP] protection. WIPO is a United Nations agency that promotes IP protection throughout the world. 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 (WIPO Report, 2015). The instrument would do more to effectively protect traditional knowledge. It is critical to note that WIPO is the global authority of IP matters. There are regional bodies that are made up of a group of countries such as the African Regional Intellectual Property Organization (ARIPO). The last jurisdictional protection is offered by national IP offices such as Companies and Intellectual Property Authority (CIPA) in Botswana, and Companies and Intellectual Property Commission (CIPC) in South Africa.

The question that is raised oftentimes is whether the norm-setting attempt by WIPO to protect indigenous knowledge systems, with its good intentions captures the background problem of ineffectual protection, in its distinctiveness. The WIPO initiative in a way responds to requests by various governments and indigenous peoples and local communities demanding protection of their medicinal resources as part of their cultural identity. This was in view of the rate at which developed nations were ransacking the developing countries of their medicinal plants, among other valuable resources.

To all intents and purposes, WIPO disregarded that indigenous people have always had their own way of using their resources sustainably by not giving them the platform to air their own ideas. Customary law and other indigenous codes have always effectively enforced protection of flora and fauna. Some of these have been rightly or wrongly referred to by outsiders as superstitions. This was a result of lack of understanding and appreciation by those alien to these methods. The protection mechanisms are still widely used to protect disappearing species. They may only need to be empowered and tweaked to suit the changing narratives of the lives of the communities as necessitated by civilization, globalization and other forms of development. But the clear advantage is that knowledge of biodiversity is part of the identities and institutions of the local communities. Hence it is safe to presume that the aborigines have co-existed with their environment harmoniously long before the introduction of outside influence. The above reference to customary law means it is regarded as a fundamental legal basis for a community's legal rights over its knowledge. The WIPO Report excerpt below rightly proffers to suggest that the knowledge, as a way of life is a complete and holistic ecosystem that is self-regulatory:

> Intertwined within practical solutions, traditional knowledge often transmits the history, beliefs, aesthetics, ethics, and traditions of a particular people. For example, plants used for medicinal purposes also often have symbolic value for the community. Many sculptures, paintings, and crafts are created according to strict rituals and traditions because of their profound symbolic and/or religious meaning. (WIPO Report 2001, p.212)

As a result of the aforesaid seemingly wrong approach by WIPO, bio-piracy and plain theft of indigenous genetic and other resources are still the norm. They are not only restricted to traditional medicinal knowledge - the onslaught is indeed representative to the plight of the rights of traditional medicinal practitioners. Over the years various communities have

complained about reckless misappropriation of their knowledge, including intangible cultural heritage, by outsiders without permission. The infringement is more flagrant, as these outsiders also shun acknowledging the source of this knowledge downstream the processing sequence. They opt to pass off and claim the originality. The following are some of the cases of theft in the form of bio-piracy that continue to rattle the Botswana and the region at large, inclusive of the Barolong tribe:

- Hoodia, the hunger-staving plant from Kalahari Desert between South Africa, Namibia and Botswana was patented elsewhere but the matter was later resolved amicably with a benefit sharing model; (Tonye, 2006)
- Sengaparile or Devil's claw from Botswana, Namibia and South Africa is under threat from being patented and commercialised by a German company (discussed later in Chapter 4)
- Kgengwe, the thirst suppressant from Botswana that looks like a small watermelon faces the risk of being stolen in a joint venture between a Japanese company and Botswana. The deal still raises eyebrows because all the studies on the fruit are done by the Japanese. (Botswana Daily News, 2014)

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 promote a generally healthy reproductive lifestyle. The scramble for these natural resources has been driven by the evident global renaissance in the use of natural traditional medicines as well as their growing importance and role in emerging field of biotechnology. In turn this has put traditional medicinal practitioners on a pedestal, with Emeka Amechi commenting that 'they have become

the darlings of national and global biotechnological and pharmaceutical corporations involved in ethnobotanical prospecting…' (Amechi, 2015).

For purposes of this study, traditional medicine would include all manner of medicinal products that are derived from natural plants using indigenous knowledge. The term includes complementary or alternative medicine; herbal medicines; integrative medicine; as well as allopathic medicine. This is the overall body of knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether they could be explained scientifically or not.

Into the bargain, high success rates in drug developments based on the medicinal plants do not help the 'post-gold' rush. The following statistical excerpt from the World Health Organization (WHO), which looked at the SADC region and the world at large, puts the background issue in perspective: (WHO Global Report on Traditional Medicine, 2008)

- 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 Africa's population depends on traditional plant medicine while remaining 20% still relies on plant products by extension

WIPO is a United Nations (UN)organ formed by member nations that are supposed to enjoy equal status in terms of representation. But the reality is that a few developed countries still

influence WIPOs operations owing to their economic might and vested interests in African medicinal plants. In attempting to protect developing countries' indigenous knowledge systems (IKS), the same powerful countries drive the proceedings and make recommendations on behalf of the 'weaker' nations. Ironically the weaker nations are usually home to most indigenous knowledge holder communities. Noble suggestions and attempts to include these indigenous groups in the discussions regarding their affairs are always faced with obstacles. In the words of Prof. Rebecca Tsosie, a native American of Yaqui heritage speaking at the 33rd WIPO IGC session in March 2017: 'In over 16 years and 30 sessions of the IGC there has never been a formal consultation with the indigenous nations of the US, in the US'. Those included are allocated a shoestring budget which is hardly drawn from the regular WIPO budget. This is despite Kiene (2011), who suggests that '... their effective participation depends on proper financial support' (p.41). They still remain a paltry minority in their own affairs. This is because the developed nations, being home to the pharmaceutical companies collectively as an industry (the Big Pharma), want to maintain their foothold in the international pharmaceutical and ethno-botanical industry. This industry hardly feeds off in situ resources; it stretches its tentacles to indigenous communities.

With the foregoing, it is clearly apparent that biodiversity is Africa's richest asset. It has always been (and is still is) sought after by the former colonial powers. As discussed at the World Summit on Sustainable Development (WSSD), the knowledge Africa's people have developed over the centuries on the properties of plants, seeds, algae and other biological resources is now coveted by scientists for medicinal, agricultural and other purposes (WSSD Report, 2002:91). Pharmaceutical multinationals make huge profits from African biodiversity but do not share these with the communities that generated, preserved and transmitted the knowledge. It is

reported that thousands of patents on African plants have been filed on African indigenous knowledge, spinning out billions in profits, of which not a cent goes to the original owners of the knowledge. To-date, the plunder is unabated. With this study, it is hoped that over and above classical IP rights, more traditional and indigenous ways will be explored towards working formulae of sharing the benefits that arise from the use of this biodiversity and the traditional knowledge associated with it.

Furthermore the WSSD found that making sure that these benefits are shared equitably with the natural custodians of the resources was a key challenge. Hence the parties committed to work on 'an international regime to promote and safeguard the fair and equitable sharing of benefits arising out of the utilization of genetics resources' (WSSD Implementation Plan, Section 44). Accordingly, more value accrues when the holder communities grant access to the resources, resulting in the sharing of benefits that arise from value addition of the same resources. Scientific and technological breakthroughs from the research studies conducted on the resources (animal, microbial or plant genetic resources) serve a total utilitarian purpose for the larger humanity. Simultaneously, the recognition of the contribution and natural rights of the custodians of this 'intellectual property'; the very partners with whom the researchers are privileged to work, become part of the collective solution. Those that seek the knowledge for research purposes (the researchers) especially do so to generate relevant new knowledge for resource conservation and sustainable use and enhance their professions.

The current situation however is that in as much as the foregoing scenario would enable ethically responsible academic research borne out of more effective partnerships, the opposite is the case. At best, disarray and disorderliness are the order of the day. The situation is not helped by unsupportive and apathetic national legislations, which are yet to be expressly

specific on approaches and procedures to integrate relevant international instruments that talk to the issue.

Beyond WIPO, mutually supportive cooperation has been developed that includes 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 the latter's TRIPS (Trade Related Aspects of IP) agreement as the centrepiece. There have also been regional efforts in protecting and promoting traditional medicine. The WHO Regional Committee for Africa Resolution on promoting the role of traditional medicine in health systems was born in 2000; Organization of African Unity (OAU) Declaration in Abuja, Nigeria 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 State-2003. The achievements from these initiatives, if any are so hard to discern. OAU has since been renamed African Union (AU) since 2002. In line with that development, more regional (and continental) instruments have been promulgated either as sequels that increment on the work of OAU or to reflect emerging trends and realities. These will be dealt with in detail during the study.

1.2 MOTIVATION

This part addresses what actually prompted and urged the researcher to undertake this study. Being from central Botswana in the fringes of the famous Kalahari Desert, the researcher grew side-by-side the San (Basarwa), also known as First People of the Kalahari. It is this growth experience that exposed the researcher to the traditional intricacies of learning to live life in the

harshest and most rudimentary environments. Parched as it was, the desert still offered those with the creative genius of studying it a rich source of resources that equipped its inhabitants with the skills to survive it. Looking for food and medicinal resources in those years always meant traversing the vast terrain of the desert.

Interestingly, the Basarwa way of life was not only limited to ways and means of daily survival. They displayed creative genius of documenting their lives in mind-boggling ways that modernity has not been able to grasp. Their rock paintings such as those at Tsodilo Hills in northwest Botswana, some as old as 26,000 years, are said to communicate spiritual messages. Beyond just mere documentation of their daily life activities it should be of immense interest that the paintings withstood thousands of years without fading. The technology used is nonpareil, to this age. The Basarwa innovatively mixed eland blood and acacia gum arabic to come up with the inscriptions that would withstand the ravages of time; which now attract hordes of tourists to the region. The recurrent images of eland, their god's most favorite animal, communicate a spiritual medium that they held sacred in the quest for specific disease cures.

The resources that the researcher will discuss in this work are from a firsthand experience. The troubles and tribulations occasioned by overharvesting are moments that are being lived, not imagined or just studied in the textbooks. Hoodia, *kgengwe* (citrus melon), *sengaparile* (devil's claw) and others, which are now making world headlines for the potency in nourishment and healthy living, were a way of life for this researcher. These and about 500 more plants in the region are known to the Basarwa shamans through the guidance of spiritual mediums. Motlhanka (2008) relevantly observes that there is a treasure trove in the African flora with its immeasurable richness in variety of species and its traditional medical usage. This treasure attracted outsiders at a speed never experienced before. The communities of the region could

only stand aside and watch as these plants gained fame, attracted outsiders, and started being shipped out of the area with reckless abandon. Out of ignorance, and indeed good-naturedness the communities would even help these bio-pirates to dig out these tubers for no recompense at all. This denotes that the knowledge is free. The question is, should this not change?

It would never be business as usual when the resources were fast depleting to a point where the local people started to feel the pinch digging deeper and walking longer. What used to be enough for everybody changed to being hard to find and most sought after. The health system suffered. This also coincided with the researcher coming of age and acquiring the necessary erudition to understand the cause of the problems troubling his community. What would become the motivation broadened further when new health systems were prescribed and imposed by government on these indigenous people. From the foregoing background, it becomes crystal clear that the desire to investigate this phenomenon was not borne out of a mere academic pursuit. It emanated directly from the angle of health, intertwined with nutrition and the gradually sustained lack thereof. Then it all snowballed to become a solution-seeking enterprise meant to protect what little of the resources is left and possibly reverse the tide of dispossession and impoverishment. It partly became a human rights issue. The WIPO intervention was then studied but found to be wanting. The question then followed: which way to go?

In the final analysis, a comprehensive system that seeks to protect people's 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 intellectual property system will have no value (WIPO 1999). It is therefore in order that this study will look into the availability and efficacy of a system of protection, promotion and

effective enforcement of IPRs with the traditional medicine practitioners. Incidentally, it will also proceed to investigate if the practitioners do know about the enforcement remedies available to them, even beyond their borders. As Sackey (2010:99) points out, '…international and regional protection systems should talk to each other'. They should be in tandem. Even if a solution emerges off customary law, there will still have to be no counter-narratives.

The desire to investigate these issues explains and justifies the choice of the present topic for examining the above areas of concern. It is from that point of departure that Barolong tribe and region of Botswana, especially their knowledge holders, will greatly inform this study.

1.3 STATEMENT OF THE PROBLEM AND SUBSTANTIATION

. WIPO defines IP as '*creations of the mind*' (wipo.int). Creativity informs the focus of IP. This leads to the recognition of indigenous forms of creativity and innovation as protection-worthy under IP. It therefore follows that traditional medicinal knowledge of Barolong constitutes Barolong intellectual property. This serves to enable indigenous and local communities through their governments to have a say over the use of their medicinal resources and associated traditional knowledge by others. WIPO as the global intellectual property custodian always enters the discussion at government level via national line ministries, and otherwise cascades their role down through regional bodies such as ARIPO. The following are some of the main problems as substantiated.

1.3.1 Failure of foreign-based IP regimes to control the exploitation of Barolong intellectual property and IKS: At WIPO the powerful developed nations that ride roughshod over the traditional medicine holder nations for the former's vested interests influence the ongoing solution-seeking proceedings. To that effect, the intellectual property rights initiatives that they

propose result in an instrument that misses the point in proposing a protection system that has a positive bearing on local communities such as Barolong in Botswana. Naturally, this problem is less understood by those that are trying to help address it. In the end it is safe to surmise that the current IP system is being forced into a situation that it was not developed for like square pegs in round holes. As WIPO is part of this study, the veracity and true nature of this position will be adequately investigated.

1.3.2 General failure of Botswana policy and legal apparatus to protect Barolong indigenous medicinal knowledge: the WIPO superficial stop-gap protection of traditional knowledge (TK), to which Botswana is a signatory, is welcome to the extent that it filled a void. It is as good as merely a blueprint. The developed countries still easily bypass the system to continue the theft of these collectively held resources without the holders' informed consent or even due regard to conservation. This is an on-going scourge, and it affects Barolong on a daily basis. It is difficult to quantify how much of the Barolong IP is being infringed, but untested evidence suggests infringement is seriously happening. It is hoped this study will unearth those facts.

But why is the IP regime in its present form ill-suited for TK and particularly Barolong traditional medicine practitioners? The role of this paper is to deal with such questions, and then address this inadequacy by way of closing the chasm between community level protection mechanisms and WIPO international norms.

1.3.3 IP protection differs from jurisdiction to jurisdiction: What the developed world fails to recognise is that traditional knowledge of medicinal plants is inter-community and cross-border. In fact it does not recognise geographic borders. In order to understand the complex nature of IKS, let alone to record or define it, it may be critical to understand the cultural

nuances that shape it. Over and above that, the attendant issues of spirituality and religiosity, which the more Euro-Western WIPO is not privy to and in fact frowns upon, are involved. As the WIPO head honchos grapple with trying to strike the right chord of a working protection system, the plundering of Barolong and indeed other African medicinal plants and associated traditional knowledge continues with reckless abandon. And hence for the past two decades of seeking a solution, the problem is still unsolved - at WIPO. As of June 2018 when the last meeting of the IGC was held at WIPO in Geneva, Switzerland (Meeting Code WIPO/GRTKF/IC/36) there was still no tangible outcome. Instead, representatives of indigenous and local communities from around the world still begged to be included in the critical decision-making proceedings – to no avail yet.

The status quo has in fact been obtaining from since the IGC started the solution-seeking meetings. The progress, if any, is still painfully slow. According to *IPWatch*, a forum that tracks real-time developments in the IP front:

> The last World Intellectual Property Organization meeting before the annual general assembly in September ended today, meeting the same fate as many others this year (and since 2001). The committee addressing the protection of genetic resources and traditional knowledge could not agree on recommendations to be transmitted to the General Assembly… (*IPWatch*, 9/7/2014)

The above statement is tell-tale. It is the product of an on-going systematic review of the evidence that is available on the protection system that has a direct bearing on Barolong traditional medicine practitioners in Botswana. More than anything, it is this statement that

calls for concerted efforts of research geared towards solving the problem in a way that is relevant and responsive to the local needs. The solution should talk to the local ontology and epistemology that would demonstrate a trickle-down effect to a traditional healer in the village of Goodhope in Botswana.

1.3.4 IP regime totally goes against the communal and collective spirit of IKS: the proprietary and for-profit conditions under which indigenous knowledge systems (IKS) components could be protected under the current IP regime pose a problem to the nature of IP and IKS. IK is neither codified nor document intensive, like standard IP. Similarly, IK is not as exclusionary as mainstream IP is - due to its finite monopolism. To that end, Andanda (2012) resolves that '...it has been recognised that the existing IP regime is inadequate for protecting the holistic character of TK.' Patents for instance, have a set of requirements that should be satisfied before intellectual property protection can be granted. The patented invention, process or formulae should be written down clearly in English, a language quite alien to Barolong traditional medicine practitioners. Reducing the invention to material form is done so as to prove to those skilled in the art that indeed the subject matter is capable of useful application in the industry or relevant field. Failure to adhere to that will cause the patent application to fail or be rejected. This requirement simply forces an ordinary, semi-literate Morolong traditional medicine practitioner to use scientific terminologies that could only be understood by those skilled in the art because Setswana language does not have a place in classical intellectual property protection. This requirement disregards the fact that generally traditional medicine practitioners lack the wherewithal to legibly present requisite detail and do not know the chemical compositions of their medicines. At best, they use traditional descriptions that may sound too abstract and impossible to reduce to materially written form. All this is in spite of the fact that

their medicines are proven to be effective to the point of being universally used as a base from which to extract active compounds for modern medicine. Such disparities have led Gervais (2005) to conclude that '... in the current patent law environment, the scientific method itself may seem culturally discriminatory to some holders of traditional medicinal knowledge for example, but there is scant hope of avoiding the filter of accepted scientific canons to gauge the actual utility of an invention, . . .' This study seeks to resolve these shortcomings and possibly build a bridge that closes the gap between the two knowledge systems.

Of particular reference to the situation between Botswana and South Africa, and of course the SADC region at large, IP as is, is a largely failing blanket approach. It is yet to go with the spirit of the Convention for Biological Diversity (CBD) which states that medicinal resources belong to the countries they are found in. This further lends validity to the fact that the knowledge predates and outlives geographical borders. After all, the borders are a phenomenon of 'yesterday'. Most prepensely, the SADC bloc is looking for an instrument that will take into account the dynamic multilateralism, interdependence and fluid-state resource ownerships between its member countries. Tackling the problem as a regional bloc is more than just strength in numbers. It conveniently feeds into the Setswana idiom: *kgetsi ya tsie e kgonwa ke go tshwaraganelwa*. This is loosely translated by yet another (Kenyan) proverb, which further says: *teamwork divides the task and multiplies the success.* In the same vein, the argument here is that the current arrangement does not benefit the first-line owners appropriately. As a practical fact, the IP system, especially the patent system is used protect the very legal persons that have unscrupulously stolen the knowledge from the rightful owners. Furthering its flaws, the patent law then begins to criminalize and exclude the natural owners of the knowledge from practicing it as it is *now* exclusive and monopolized. This sounds irregular. It further highlights

the urgent need to seek an intellectual property protection system that makes sense to the local people, who might find themselves on the wrong side of the current patent laws unknowingly. It also discounts the belief that Euro-Western normative solutions and laws are necessarily universally applicable. Here now they are – not working at all.

The aforesaid constitutes a gap in knowledge in as far as the WIPO intervention is concerned; and hence the need to conduct this study to fill this knowledge dearth – the model of how to effectively protect Barolong IK, especially traditional medicinal plants for the benefit of the holders' organic health and wellbeing; for the benefit of the depleting environment and for bio-diversity at large. In that connection, this study will attempt to rescue traditional medicinal knowledge from the clutches of neo-colonialism and globalization. The recurring question is what alternative action might be resorted to in resolving these disparities and gaps? It is important to emphasize that while there is no universal panacea, local communities have evolved around these problems in the olden ages. It is fitting therefore to parade IKS as a possible and comparable solution to the problem, at *prima facie*. The inevitable bias is also occasioned by the fact that when IKS was in practice, the problems inundating Barolong and other communities today were not ubiquitous. With no contribution to global warming, it is unfortunate that generally, indigenous people bear the worst brunt because the corrective climate policies undermine their rights by imposing restrictions and forced relocations.

Having stated the background and statement of the problem of the study, the following chapter will highlight the aim of the research as well as its objectives.

1.4 RESEARCH AIM, OBJECTIVES AND EMERGING QUESTIONS

A comprehensive framework that talks to the uniqueness of the developing world, especially Africa and its respective regions, needs to be devised and put in place to stem the tide of misappropriation. The removal of Barolong natural resources continues, whether seen or unseen. It is real. By their very nature, the local people generally divulge most information pertaining to their medicinal resources gleefully and generously, which opens them to bio-pirates. They still neglect to attach any commercial importance to such communal treasure due to lack of awareness. The fact that this knowledge is mostly obtained by false pretences does not help the situation to the unsuspecting locals. As a starting point, it would be pertinent to address one burning question: what the exploited people are doing or not doing to counter the problem at their locale. This is yet to be investigated. It will provide a good basis for developing the alternative framework and action plan.

This study is setting out to look for a solution that addresses the problem in its local context. The solution will take in various unique factors that can only make sense to those living them in their countries and regions, while conforming in alignment to the international norms and standards. Conformity is as important as every theme of the study due to the current realities posed by globalization and other phenomena that contribute to making the world a global village. The study will also promote awareness and education about such issues to the community, as a valuable empowerment takeaway.

1.4.1 The Aim

For the purpose of this study, the research will be undertaken to achieve the aims and objectives as follows below. The aim of this research is to find a protection system which Barolong knowledge holders and traditional medicine practitioners could employ to safeguard their

knowledge, their environment and their most sought-after diversity in the face of a fierce onslaught by profit driven outsiders, within a universal framework of rights enforcement. The system should be able to take into consideration foreign based researchers in the globalised world of today, as well as other players that might need the local resources.

1.4.2 The Objectives

If this 'extrinsically motivated', profit-driven devouring of Barolong resources is left unchecked, it will lead to the depletion of these resources as they are finite. Profiteers, unlike the proverbial winners, do not know when to stop.

The attempt by this research to explore and possibly develop a home-grown enforceable system of protection that talks to the needs of the local communities would expand knowledge - indigenous knowledge - in this area. It has to be noted that in the indigenous outlook, mankind is intrinsically bound to his natural environment and the components of that environment. For example, man tills the soil to produce food to live on; and he relies on other wild plants for sources of ingredients for the formulation of remedies enhancing wellbeing. There is a generally supernatural connection between African man and his environment. The specific objectives of this study, therefore, are:

- To evaluate the relevant international instruments and standards in protecting the rights of Barolong traditional medicine practitioners.
- To establish how Barolong communities and traditional healers have been applying their indigenous knowledge (IK) for protecting and preserving their medicinal resources from plunder and depletion.

- To establish the efficiency and effectiveness of current policies, legislations and indigenous enforcement systems on the use and management of traditional medicinal resources in Botswana
- To examine compatibility of Botswana system of protection with international standards towards development of a home-grown protection system of Barolong traditional medicine practitioners in Botswana.
- To propose a system, model or arrangement that will protect the intellectual property and resources of Barolong traditional medicine practitioners in Botswana.

1.4.3 Emerging Questions

The following research questions derive from the above-mentioned objectives. These will be the basis of what the study seeks to examine on the way to achieving the main goal of the study.

- Are the current international instruments for protection of Barolong traditional medicinal knowledge relevant, practical and effective?
- What indigenous methods have been used by Barolong communities to protect and preserve their traditional medicinal resources over the ages?
- What policies, legislations and indigenous enforcement systems subsist on the use and management of traditional medicinal resources in Botswana and how effective are they?

- How have the current Botswana systems of protection given effect to IKS in as far as mainstreaming it in conforming to international standards.
- What system, model or arrangement could be used to protect the intellectual property and resources of Barolong traditional medicine practitioners in Botswana

In summary the study objectives and emerging research questions all point towards title of this thesis. They are further expected to determine and inform the research methodology. The following chapter will delve deeper into the hypothesis and the theoretical framework.

1.5 SIGNIFICANCE AND RELEVANCE OF THE STUDY

While studies of this nature have been carried out before in other countries, it is reassuring to know that this study is highly likely the first in Botswana. The undergirding rationale behind the study is that it hinges on the following implications for the local setting:

a. Policy: the study has implications for policy and practice on the socio-economic benefits of indigenous knowledge, beyond Barolong. Botswana does not have an IKS policy, though plans are underway to come up with one. This study will likely merge with national policy especially at a time when the country is looking for ways to diversify the economy and slowly divorce itself from mineral dependence. It will further have a bearing on policy framework as a roadmap for the mainstreaming of IKS. Out of the policy, it is the hope that abject poverty which is associated with the knowledge holders will be lessened, while cultural preservation and prudent management of resources will be enhanced. The all-important but less touted issue of the enforcement and

enforceability of IKS rights will also be examined and underlined. This is because such a system, in policy, should be underpinned by robust redress mechanisms against encroachment. In the same vein, customary laws, the very basis of legal protection for IKS, should be strengthened to form part of the legal system which controls communal goods that are held collectively, and access to them. Whatever the outcome, there would have to be adherence with minimum requirements of international standards.

b. Awareness: the study will heighten awareness in the importance of IKS, especially traditional medicine and the attendant knowledge. The pervasive thought and attitude among the so-called civilized people that IKS is archaic, backward and static will slowly be dampened. More awareness among the populace will lead to sustained pride, integrity and identity. To those that have succumbed to the exigencies of 'civilization', this awareness campaign will be a bid to reverse this trend and restore a sense of pride and identity. This awareness would possibly be furthered to include IKS into the school curriculum, especially at basic education. As more and more people and governments become aware of the worth of their ways, a paradigm shift will come to pass, that will turn the tide against the norms as seen through the eye of the colonizer. As such, the study will feed into the post-colonial research paradigm and embolden the reader with a critical mind towards research, over and above contributing to giving IKS prominence. The study may also expand the legal horizons in the courts of Botswana as IKS is still, as well as IP, new with our jurisprudence.

c. Future of research: as of a relatively new area in our local setting, this thesis will contribute immensely in the future of research on the topic. This is further justified by the fact that debate on the topic is still ongoing, with no end in sight. For that reason this

work is highly justified as a pacesetter and a trailblazer. Subsequent research will build upon this work to the collective benefit of the region. It will also touch on IKS-scientific collaborative research, especially in the area of pharmacognosy, biotechnology and ethno-botanical studies, while safeguarding the arising intellectual property. There is already a groundswell of academic interest in the IKS areas such as ecological knowledge, climate change and environmental discourse, as well medicinal knowledge as earlier on referred. The research will also generate some theories that might prove to be beneficial to other researchers.

The relevance and importance of this study cannot be overemphasized as it is justified by the shortcomings that manifest themselves at WIPO in the area of Traditional Knowledge. These are necessitated by the fact that indigenous knowledge area is a bit amorphous in the eyes of those who do not understand local traditional knowledge in its holistic nature; or those that tend to relegate the knowledge as archaic and outdated. The following diagram depicts the problems that WIPO struggles with, in attempting to find a solution to protect IKS in general.

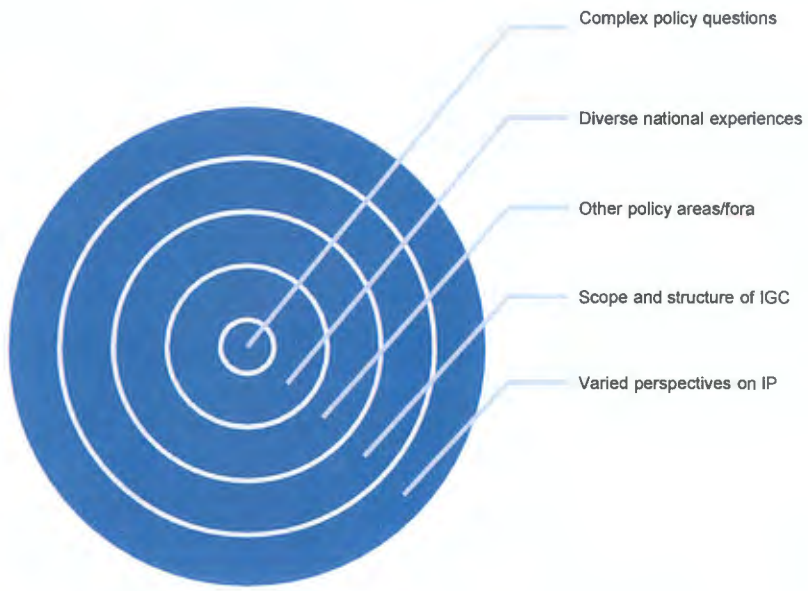

Figure 1 Reasons Cited by WIPO's IGC as Causing Lack of Progress in Protecting IKS

This study is further justified so as to underline indigenous knowledge as a raw material for scientific research. Together with other policies that it might inform, it will help to regularize the activities of many scientific groups that are currently exploring African flora and fauna for new compounds with pharmacological activities. According to Sackey (2010:91) the development of modern science in leaps and bounds was substantially bolstered by the input of traditional knowledge. Despite structural and epistemological differences between the two, it is not in doubt that the two could complementarily cooperate and collaborate in research.

Meanwhile, the situation in the world today is that modern medicine is desperately short of new drugs for emerging treatments. This is made worse by some existing medicines that have become ineffective due to drug resistance, partly caused by abuse and misuse of medicines. So pharmaceutical companies and scientists are under pressure to find drug sources, and the quick

wins so far have always been with traditional medicines both from plants and animals. Traditional medicinal knowledge offers leads to scientists which help avoid the years it takes to get novel drug synthesis through the costly research and development pipeline. This is over and above the stringent intellectual property laws in the form of a highly evolved protective patenting system.

The following table summarizes the sample of drugs that have been derived originally from traditional medicine as well as what they are used to cure. The table is originally derived from Scidev.net, a world leading source of reliable and authoritative news, views and analysis on information about science and technology for global development (See Table 1).

From this table, it can be stablished that a sizeable number of prescription drugs are derived from natural products which were originally used and regarded as traditional medicines. This further informs the inference that there are still some diseases that can so far only be treated using traditional medicine, while modern medicine is still grappling with research to find modern pharmaceutical formulations.

Table 11: Selected modern drugs that come from traditional medicine

Drug	What is it for	Derived from	Originally used in
Artemisinin	Antimalarial	Produced from the Chinese herb Qinghao or sweet	Traditional Chinese medicine for chills

		wormwood	and fevers
Cromoglycate	Asthma prevention	Based on the plant Khella, whose active ingredient is khellin	Traditional Middle Eastern remedy for asthma. Also traditionally used in Egypt to treat kidney stones
Etoposide	Anticancer	Synthesised from podophyllotoxin, produced by the American mandrake plant	Various remedies in Chinese, Japanese and Eastern folk medicine
Hirudin	Anticoagulant	Salivary glands in leeches, now produced by genetic engineering	Traditional remedies across the globe, from Shui Zhi medicine in China to eighteenth and nineteenth century medicine in Europe
Lovastatin	Lowers cholesterol	Foods such as oyster mushrooms and red yeast rice, also used to synthesise other compounds such as pravastatin	Mushrooms are used to treat a wide range of illnesses in traditional medicine in China, Japan, Eastern Europe and Russia
Opiates	Painkilling	Unripe poppy seeds	Traditional Arab, Chinese, European,

			Indian and North African medicines as pain relief and to treat a range of illnesses including diarrhoea, coughs and asthma
Quinine	Antimalarial	Bark of the cinchona tree	Traditional remedies to treat fevers and shivers in South America
Vinca alkaloids (vincristine, vinblastine)	Anticancer	Synthesised from indole alkaloids produced by the rosy periwinkle	Folk remedies across the world use periwinkle plants, including as an antidiabetic in Jamaica and Madagascar, to treat wasp stings in India, as eyewash in Cuba, as love potion in medieval Europe

The above table highlights the importance of this study with regards to indigenous peoples' knowledge. It is this knowledge that has fed contemporary medicine with existing prototypes of medicines from which to scale up. In what is known as 'new technologies for old treatments', scientists with pharmaceutical companies conduct a lot of reverse pharmacology with traditional medicine. This also involves a systematic study of how specific ethnic groups use the medicinal

plants to further gain insight. In the end the scientists would isolate the active ingredients from the medicine and produce drugs to sell to the whole world. Sadly, the original holders of the knowledge, who even helped with their knowledge of the plants, go home empty-handed. As a result the traditional medicine protection space in Botswana needs to be revamped and tightened to balance the benefits to the general populace that need the medicines, as well as the owners of the knowledge.

1.6 DIVISION IN CHAPTERS

The division in chapters constitutes an overview of how the chapter of this study are arranged. For instance, as shown in the table to follow below, the first chapter is Introduction of the study. Literature Review is Chapter 2 while the third chapter (Chapter 3) is Research Methodology.

The findings of the study are divided and arranged according the order of the research question. Therefore in consistence with that order, Chapter 4 is Findings for Research Question 1. Chapter 5 is Findings for Research Question 2. Chapter 5 and Chapter 6 are Findings for Research Questions 3 and 4 respectively. Research Question 5 will be covered at the end of the study to propose what a panacea to the studied problem could be.

The table below (Table 2) represents how the chapters of this research are divided, arranged and presented.

Table 2: Division in chapters

CHAPTER NUMBER	CHAPTER FOCUS
Chapter 1	Introduction

Chapter 2	Literature Review
Chapter 3	Research Methodology
Chapter 4	Evaluation of International Instruments and Standards Applicable to the Protection of the Intellectual Property Rights of Barolong Traditional Medicine Practitioners
Chapter 5	Application of Indigenous Knowledge by Barolong Traditional Medicine Practitioners to Protect the Intellectual Property Rights and Preserve their Medicine
Chapter 6	Effectiveness of Current Policies, Legislation and Practice of Indigenous Knowledge Systems for Protecting Intellectual Property Rights and Preserving Traditional Medicine in Botswana
Chapter 7	Compatibility of Botswana Systems of Intellectual Property Rights Protection with International Standards: Towards Developing Home grown Protection Systems in Botswana.
Chapter 8	Summary Discussions, Conclusions and Recommendations
Chapter 9	References
Chapter 10	ANNEXURES

1.7 CHAPTER CONCLUSION

This chapter introduced the research subject, the background of the study and presented the statement of the problem and study substantiation. The aim, objectives and emerging questions emanating from the objectives were also stated. This was then finally followed by the significance as well as the relevance of the study, especially as pitted against the current norm-setting interventions by WIPO which were found to have serious shortcomings.

The following chapter would then look at reviewing the available literature for similarities and differences to this study. The chapter would also highlight the knowledge gaps that this study would really fill. The chapter will set the scene by defining the relevant concepts. The conceptual and theoretical frameworks would then undergird and mark the bounds of the review.

The actual thematic review of sources would search for what others authors are contributing with regard to solving the problem. A constant reminder during this study is that the assumptions that led to the current imposed intervention which is being a source of pain, should be avoided at all cost. The problem leading to this study simply has to be well-reviewed and well-researched. Statutes and policies would also add to the targets of review as they are powerful sources of a primary nature.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter introduces a review of literature related to the discourse. It provides definitive information from which to define and shape the study. It focuses on key themes such as the use and protection of traditional medicinal knowledge, as well impact on the environment. It captures key solutions from research undertakings that relate to the topic and research questions under investigation and identifies gaps which this study will fill in the bid to establish the novel knowledge of the study. The aim is to assess studies that have been carried out globally at the least, to address the aforementioned key themes, as well as in the African region, the sub-Saharan region and finally in the SADC region and Botswana. Fewer studies have looked at the enforceability of traditional health practitioners' rights as well as their adherence to international norms and standards. It is the aim of this chapter therefore to reveal the gap in knowledge that this study is attempting to cover. In summary, the current chapter will look at how other authors have attempted to address the problems that were highlighted in the previous chapter.

It is still fitting however, to first overview what this study sets out to undertake, as a prelude to the thematic literature review. This would also assist in the selection of the relevant literature to review and effectively guide the review of past works. Cited sources in this literature review are deliberately meant to clearly relate to the research problem as arranged in the previous chapter. Therefore the selection does not only include research that validates assumptions. It also considers contrary findings and alternative interpretations found in the literature, if any. As such all effort is undertaken to avoid capturing isolated statistical data that favours the research.

The study explores for a solution with the help of local folks that will help protect and safeguard the loss of their knowledge. It should involve the local people because it talks to the needs of the local people, quite unlike WIPO. This solution still expands on the WIPO work, which was largely seen to employ an inadequate and inappropriate approach. It is solely on that premise that this review relies more on current debates that are mostly in the SADC region, and then Africa at large. To a lesser extent, some international outlook would also be helpful, especially to the extent that in the global village of knowledge production and sharing, international norms and standards set the tone. As the study would likely have a bearing on international policy and practice, indeed it should bear upon the knowledge gap even at an international level.

2.2 DEFINITION OF CONCEPTS

This section reviews a number of conceptual issues by way of definitions associated with the current research. It goes beyond just focusing on terms relevant to the conceptual framework; it is indeed linked to IKS and IP. For IKS as a nascent area of research with multidisciplinary dimensions, the following operational definitions of terms would be singularly helpful to set the tone for the literature review. This is offered because some terms are of a native and localised origin. Additionally, dictionary meanings may not apply because they are merely synonyms that overlook relativity.

For purposes of this study, the following terms will be defined accordingly:

Intellectual Property: creations of the minds; also generalised in this study to refer to the traditional medicinal knowledge of Barolong

Intellectual Property Rights: also known as IPRs, these are the rights legally given to persons over the creations of their minds such as inventions, innovations, copyrights, patents, trademarks. They also include other types of rights, such trade secrets, publicity rights, moral rights, and rights against unfair competition

Kgotla: a public meeting place in the Tswana culture; also a customary court where cases are tried, knowledge is shared and announcements are communicated to the community (this discounts the derogatory notion that it is simply a place where human rights are flouted due to the authoritarian style of a traditional leader.

Traditional Medicine: refers to the knowledge, skills and practises based on the beliefs and experiences indigenous to different cultures, used in the maintenance of health and in the prevention, diagnosis, improvement or treatment of physical and mental illness.

Traditional Medicine Practitioner: persons endowed with the skills to practice traditional medicine, typically involving diviners, midwives, herbalists and others

International: occurring at the level of WIPO or UN

Dikgosi (Singular *Kgosi*)**:** kings or chiefs; a customary leader or ruler

Sangoma: a traditional healer (incorrectly referred to as witchdoctor in modern writings)

Sui generis: of its own special kind, not conforming to traditional and typical templates.

2.3 CONCEPTUAL FRAMEWORK

Figure 1 overleaf illustrates the proposed conceptual framework that guides successful access and benefit sharing that could facilitate the management of Barolong traditional medicine practitioners' knowledge. It shows a network of relationships as well as factors that shape the general success of access benefit sharing if practiced within the illustrated environment. The process is adapted from Professor Susan Peters' report commissioned by the World Bank titled Inclusive Education: An EFA Strategy for All Children.

The relevance of this framework obtains from the fact that Peters (2004) researches on inclusive education which deals with issues that refer to previously disadvantaged groups. The author's observations are highly relevant to this work. Being a proponent for 'affirmative action' for children or learners living with disabilities made her contributions worth borrowing from. The framework is a conceptual guide to assist us map out the relationships and factors that should be all considered in totality, which are also innate to Inclusive Education. This framework has proven to be a fitting formula that could also be used to legitimise the interaction of the actors in the IKS network that pertains to Barolong.

What makes the framework more favorable is its simplicity as it breaks down the interrelationships into clear distinct domains namely inputs, processes, outcomes and contextual factors. (See Fig. 1). In adapting the table for relevance to this study, it could be established that the issues that affect previously disadvantaged groups are not only applicable to indigenous peoples. Hence the experiences of some of these people could be used to guide us in other studies of similar history of exclusion and violation.

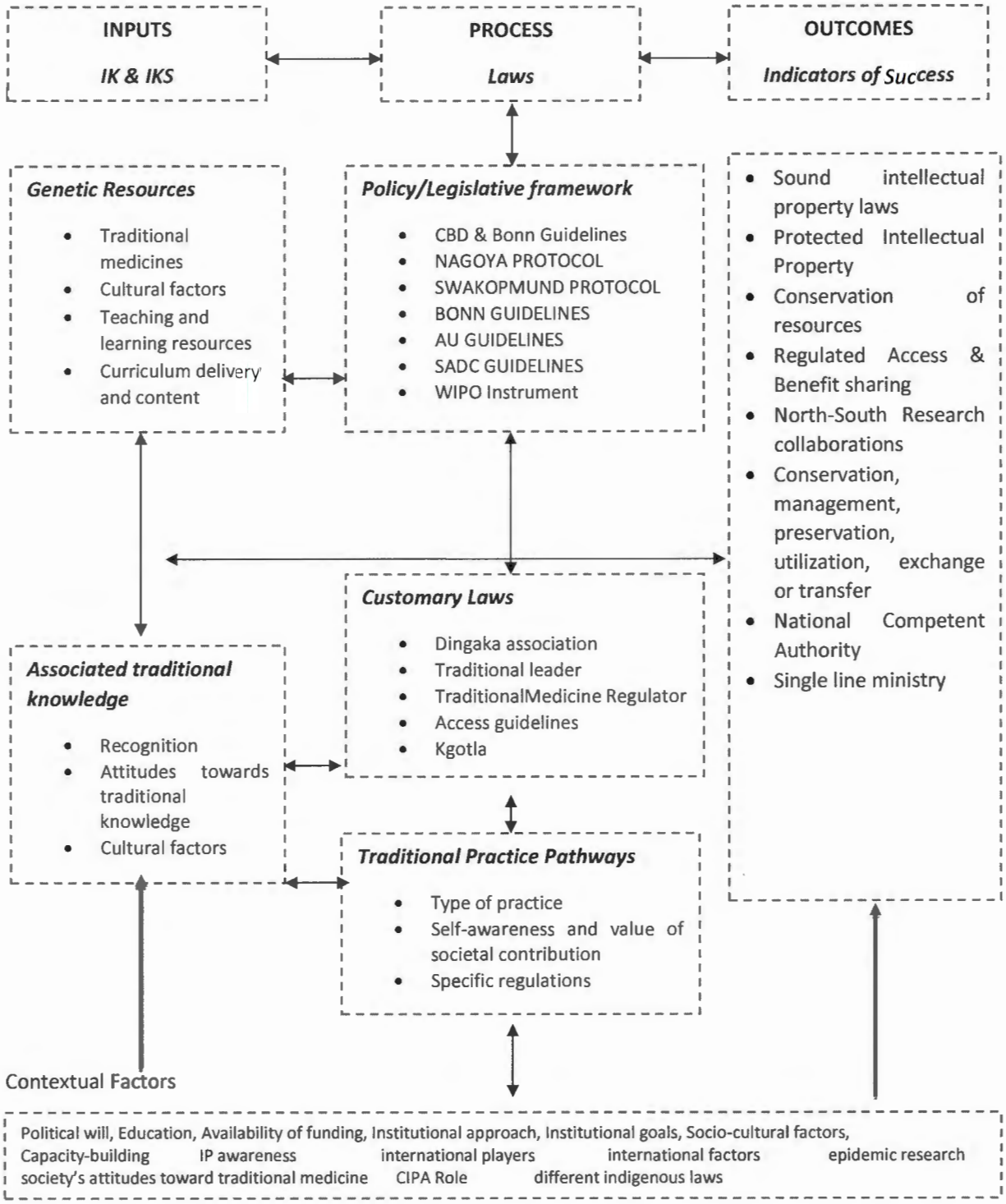

Figure 2: An input-process-outcome context framework for ownership, access and benefit-sharing model; Adapted from Peters (2004)

2.4 THEORETICAL FRAMEWORK

Barolong communities, and indeed almost all African communities, have a relationship with their environment. As a result, they have devised replicable knowhow, means and ways of a sustainable interaction with the environment to help them protect and preserve the environment's natural resources. By the researcher's personal experience of living and experiencing a life rich in rural culture and tradition, it is not uncommon to see a farmer feel the soil with their hand, and immediately learn from that feel interaction that it is time to plough a certain crop and not the other. This typifies an independent knowledge system that is equally environmentally friendly, most optimum and contextually appropriate. If the indigenous protection systems of medicinal genetic resources could be hybridized with the IP system, the complementary result could be an effective protection system that prevents misappropriation of localized resources.

Lwoga, Ngulube & Sitwell (2010) assessed the application of knowledge management approaches in managing such indigenous knowledge by studying six Tanzanian districts. Their findings showed that knowledge management models can be applied to merge and integrate traditional knowledge with other knowledge systems, taking the respective differences into account. Notably, reputable African scholars such as Professor Ngulube have come out exceptionally outstanding in shaping the IKS aspects in this era.

Despite its novelty in knowledge, the current work is still guided by some other prior tenets of research. The proposed investigation is based on some established theories and as such empirical facts from the line of the discipline. As Trochim (2006) posits, research is guided by two domains namely: theory and observation. From that connection, the following Intellectual Property theories namely the natural and private rights, as well as the exchange or secrets

theories will inform the structural integrity of the study. These are supported by the constructionist theory, without which knowledge construction as a discipline would be remiss.

2.4.1 Intellectual Property Theories

Saurombe & Ndlovu (2014) explain that IP theories seek to establish and justify a basis for the protection of intellectual property rights. In that regard, three theories stand out as being relevant in exploring the Barolong protection issue: the Natural Rights Theory, the Private Property Theory and the Public Goods Theory.

Natural Rights Theory was coined by John Locke in 1689. In this regards it essentially deals with how to use goods that are communally and collectively owned, such as land and its resources. Accordingly this theory is used to justify that 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 (labour). Lionel Bently and Brad Sherman (2014), in their book 'Intellectual Property Law' concur with the Natural Rights Theory in saying that it is appropriate to recognize a property right in intellectual productions because such productions emanate from the mind of an individual author and as such it should be seen as their property (Bently & Sherman, 2014). On wider application, this theory is hereby used to justify how Barolong could have control over their environmental resources and even possibly prevent infringement. While their land is part of the earth in common with other inhabitants of the world, they have evolved in the land and interacted with it. They have learned to understand the land and its intricacies; they have distinguished the fertile soil from the infertile soil, chose parts of the land that would be of life benefits to them, where to grow what crop, etc. One could further employ the example of a lion cub in the wilderness. A farmer, who captures it, then applies his

skill to tame, domesticate and befriend it, becomes its eventual owner. In this connexion, Barolong have established exclusivity borne out of a natural symbiosis with the land. In that self-same spirit a corp of leaders from Brazil presented their case to WIPO by saying:

> 'As traditional indigenous people who inhabit the diverse ecosystems, we possess the knowledge on the unsustainable management and use of biological diversity…'

It is therefore a plausible notion which is based upon this premise that empowers us to move that the Natural Rights Theory discounts the act of foreigners coming into the shores of the Barolong communities solely to benefit from their intellectual property. The Natural Rights Theory thus manifests its link and applicability to Barolong natural resources and attendant knowledge to interact with the resources, which as a package constitutes theirs IP.

Another pertinent theory, The Public Goods Theory is more consistent with the spirit promoting 'the progress of science and the useful arts', as adjudged by the US Congress at drawing of the first copyright law. Paul Samuelson wrote about this theory in 1954, which has mainly been attributed as the hallmark of modern public finance and economics. While the theory was purely for Economics, and further used to help explain the Lindal Equilibrium, it still enjoys wider relevance and application in consumption of finite public resources. The idea was originally meant to balance the 'market forces'. The primary objective is not so much as to reward the labour of the knowledge holder (Barolong) but increasing the harvest and eventual sustainable distribution of their resource (land and its resources). If incentives are not given, then a 'market failure' will result and create a public goods problem (Saurombe & Ndlovu, ibid). Effectively, this scenario tends to subordinate the economic rights to the moral rights. Expanded further, the theory effectively proscribes infringement by outsiders that tend to come for the sole purpose of

free-riding on what they do not deserve. This theory then deals squarely with misappropriation of resources that the resident indigenous community through its creative genius took centuries and generations to understand, manage and sustain. It is then safe and sound to conclude that every aspect of the Public Good Theory indeed address and satisfies every aspect of the natural resources and communal goods of Barolong.

Last but not least, the Exchange of Secrets Theory espouses the incentivization of full disclosure of secrets. According to this 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 holders' genius. In so far as this investigation is concerned the Exchange of Secrets Theory relates to indigenous knowledge in several forms as follows. It is consistent with the access and benefit sharing (ABS) precepts under the Convention on Biological Diversity (CBD) and Nagoya Protocol. These are international agreements which if properly enforced within the Barolong, aim at optimising the sharing of benefits arising from the utilization of their genetic resources in a fair and equitable way.

In the same vein the prior informed consent (PIC) would automatically arise when the Exchange of Secrets Theory is considered. This means that the knowledge would only be exchanged upon the express permission of the knowledge gatekeepers. PIC is indeed one of the anomalies that have motivated for this study, as much of what is illegally shipped out of the study area is taken without consent of the owners. It is also pertinent to highlight that this theory is in consistence with one of the protection pathways recognised under the IP system – Trade Secrets. The foregoing then underlines the link of how the Exchange of Secrets Theory relates to intellectual property as well as to the indigenous knowledge systems of the Barolong of Botswana.

Further this discounts the notion largely used by foreigners which effectively posits that the secret nature of IK is what makes it an outdated and backwards system. Until the knowledge is understood in its own terms, all such ill-informed denunciations of IK will continue to miss the point, especially as the proponents do little to fully understand the lived experiences of Barolong. The Exchange of Secrets Theory is thus very critical in this regard as it recognises that some aspects of IK are not for public appreciation as sanctioned by cultural taboos and laws. Without a doubt the process of knowledge gathering by outsiders hurts the very soul of Barolong as it does not observe any of these rules of engagement, which have contributed to the production of the knowledge. The act of gathering and packaging the knowledge from its original holders to other alien people wears it down by attrition.

The researcher is of the strong opinion that these theories could present a powerful and potent system when they are fused together. Each and every one of them finds meaning in how IK can be protected. A fusion hybrid of the Natural Rights Theory and the Public Goods Theory is thus proposed to come up with yet another *sui generis* modus operandi of dealing with the problem in its uniqueness. Fusing together certain congruent aspects of these theories completely marries to the African concept of *Ubuntu*. Ubuntu refers to humanness, kindness and restraint that typify good manners and neighbourliness. Quite contrary to the western system which is largely driven by commercial interests, Ubuntu within the context of indigenous knowledge systems puts the collective good ahead of personal and largely selfish interests. This is how the Barolong communities have managed for centuries to hold everything together in perfect equilibrium by way of conserving their resources while still consuming them.

2.4.2 Constructionism

Constructionism deals with how knowledge is constructed. The theory can be applied to the social cultural world which epitomises this investigation because its emphasis is on daily interactions between people; and how the people use language to construct the realities of their lives. Constructionists accept that the social world is without meaning prior to one experiencing it. Researching on the impact of studying diversity through the lens of qualitative research, Donna Mertens found that reality is socially constructed (Mertens, 1998). This could be true because indigenous societies are a diverse lot, offering different understandings of what reality is. The constructionist epistemology is based on our ways of knowing and our ways of learning as distinct and independent as opposed to Eurocentric and influenced by foreign unnatural forces. It places premium on gaining understanding on people's interpretation of reality as derived from social interaction and interpersonal relationship. In this regard, the Barolong would deal with a phenomenon such as health or environmental conservation, very differently from how the Maoris for instance, would deal with it.

While it is outside the scope of this work to interrogate each and every relevant knowledge system, it would be remiss not to quip that on what other experts of qualitative research contribute to the study to help comprehend the concepts of IK from diverse worldviews. Creswell (2013) lists constructivism (among others such as positivism, post-positivism, interpretive framework, pragmatism and postmodern perspectives) in the same vein with indigenous knowledge.

In presenting the findings of studies undertaken from a constructionist epistemology it is thus of critical importance to provide direct quotes from participants who take part in the research to support the inferences drawn from the date (Wiersma, 1991; Stainback & Stainback, 1984).

2.5 THEMATIC LITERATURE REVIEW

2.5.1 Introduction

From the standpoint of WIPO the IP authority, there has been avowal that indeed the IP system is still wanting for IK. But since the second session of the IGC Committee, held in Geneva in December 2001, when a number of delegations emphasized the relevance of examining possibilities of IP *sui generis* systems for the protection of traditional knowledge, a final product is still elusive. The Latin term *sui generis* is described to mean 'one of its own kind' or something that is in its own class by itself. This would be a departure from the classical IP protection system, instead favouring the establishment of a new set of rules and norms for protection of the subject matter. Disjointed *sui generis* systems from different nations still cannot yield a comprehensive system of international scope and application. Reservations are still being expressed about whether the envisaged system 'would cover all manifestations and expressions of traditional knowledge in a broad sense' (WIPO, 2001), among others.

In order to ensure a thorough review yet simple to exhaust and understand, the researcher uses a rubric that grids the exercise according to objectives. Each objective is dealt with individually. This ensures that the review is not just a wild goose chase that lacks specificity. It is a targeted exercise in which only the work that deals with a specific objective is explored and analysed. Under each objective, then the literature is segmented according to regional relevance. This means starting out wide with international journals and research, then regionally and finally getting to closer to home. In the end the review would then yield a comprehensive and well researched investigation. The depth and the breadth of the review would then be justified. This is illustrated in Fig 2 below.

Table 3: Tabular representation of the literature review process

	International	Regional	Local
Objective 1			
Objective 2			
Objective 3			
Objective 4			
Objective 5			

2.5.2 The Review

a) Objective 1: To evaluate the efficacy and shortcomings of relevant international organizations' instruments (e.g. WIPO, WTO, WHO) and standards in protecting African traditional medicinal plants. Most of these organizations are inter-governmental, having presence in each country; hence their regional or local offices will act at the points of information.

The fact that there is still no effective broad-based solution to adequately address the problem of TK protection has led to a proliferation of several intergovernmental organizations that nibble at parts of the problem. In the like manner, WIPO's copyrights, patents, and others also do not succeed to be comprehensive and suitable in protecting the knowledge in their current

forms. As such, there are quite a number of international instruments that are used by various countries to safeguard and protect their TK assets. Most African countries, including South Africa and Botswana have ratified these instruments. The preceding status has necessitated an objective assessment into the efficiency and effectiveness of the current instruments, frameworks and legislative bodies in determining policy.

Other than WIPO, there is the World Health Organization (WHO) and the World Trade Organization (WTO); and these also have a direct bearing on indigenous knowledge relating to medicinal uses of plants. The above three form trilateral interactions that strengthen their practical coordination on issues around public health, intellectual property and trade, with TRIPS (Trade Related Aspects of IP) agreement. The UN Conference on Trade and Development (UNCTAD) is also steeped in the work of protecting, preserving and promoting traditional knowledge in general. There have also been regional efforts in protecting and promoting traditional medicine. WHO Regional Committee for Africa Resolution on promoting the role of traditional medicine in health systems was born in 2000; 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 State-2003. As mentioned earlier, the achievements from these initiatives are not readily identifiable. In line with that development, more regional (and continental) instruments have been promulgated either as sequels that increment on the work of OAU or to reflect trends and realities.

Currently, there is appreciable support from WHO to member countries that need assistance in regularizing their traditional medicine. The organization has strategy to provide guidance in

mainstreaming and integrating traditional medicine into national health-service provision of different countries. The WHO Traditional Medicine Strategy runs the span of 2014-2013. The World Health Assembly (WHA) resolution on Traditional Medicine (WHA62.13), adopted in 2009, is building upon the WHO Traditional medicine strategy 2002-2005. Coupled with the quest to seek public health equity in sub-Saharan Africa, the strategy is also based on countries' progress and current new challenges in the field of traditional medicine. The WHO Traditional Medicine Strategy 2014-2023 thus reappraises and increments on the WHO Traditional Medicine Strategy 2002–2005. These are pertinent developments that could highly influence Africa's envisaged reversion to traditional medicine and indeed the transition to healthcare leadership and equity. It could also help IKS holder communities such as the Barolong to position themselves in order to address any existing inadequacies in terms of quality assurance. They would then be able to finally enjoy the benefits that accrue from their own traditional knowledge – a sweat of the brow. The impact of these initiatives is not yet felt in Botswana, let alone to the common man who is an ordinary Morolong traditional practitioner. As stated earlier, the country still lacks a coherent strategy to incorporate traditional medicine. It is through this strategy and the attendant IKS policy that outside influence could be appropriately received and implemented at government level.

In Botswana, medicinal IKS is indeed still widespread. Generally, IKS is seen as the vehicle to sustainable development balance through social, economic and environmental indicators. It is seen as a rural development alternative solution and is known to have reduced economic gaps among the people of Botswana when it was still the main way of life in pre-colonial times. 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. 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*). It also pervades *kapari* (dressing), *ditlolo* (cosmetics), *dinkgwana* (pottery) and *tepo-loapi* (astrology) just to mention a few. With that background it becomes clear that all that is needed is the political will to embrace our ways of knowing. As of now, there is not a clear and concise policy that could tie all the above together to government coordination. Even the House of Chiefs, the traditional leadership authority is still not fully independent in terms of coordination frameworks because it can only do so much with government support. With this anomaly, it becomes clear that more needs to be done in mainstreaming IKS. It is hoped that this research will come up with a suggestion that could ensure that the gap between an ordinary medicine man in the hinterland of Barolong and the World Health Organization or any of the organizations stated above is narrowed.

Further to promoting the cause of indigenous medicinal plants, the Convention on Biological Diversity (CBD) came to being. The CBD's objectives broadened to include conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

Of particular relevance in CBD is Article 8(j) which states about member states that each party shall, as far as possible and as appropriate…:

> Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with

> the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices (CBD Art. 8(j)).

CBD is in the same basket of talking points with TRIPS referred to above. Each of these intergovernmental agreements deals with its own vital cog in the system that contributes to the wellbeing of traditional knowledge. They are not mutually exclusive but share considerable interactions. The main objectives of the TRIPS Agreement are to set minimum standards of intellectual property protection within WTO Members and to ensure that states make available to rights holders judicial and/or administrative procedures to enforce their intellectual property rights. On issues relating to traditional medicine CBD and TRIPS intersect on biotechnology and plant varieties. Plant varieties constitute traditional medicine in part. Moreover, environmental technology relating to the pertinent issues of conservation and sustainable use, as well as information relating to conservation and sustainable use, traditional knowledge and benefit sharing, also bring the two agreements to the table.

For all its comprehensiveness, why is TRIPS still not covering all the bases with IKS? The TRIPS agreement sets out minimum standards that its member nations are supposed to use as a baseline from which to implement the various forms of intellectual property protection. Effectively, TRIPS introduced IP into the international trading system. With regards to Barolong traditional medicine, or Botswana IKS for that matter, TRIPS agreement is a largely alien solution which addresses a western phenomenon. This underlines the incompatibility of western medicine to African traditional medicine. For instance, a lot of medicinal knowledge within the Barolong communities is too generic and in the IP system under TRIPS, it would automatically fall into the public domain. In effect, this renders it unworthy of protection.

Indigenous knowledge almost always falls outside the duration prescripts of TRIPS as it is too old dating back into generations. For that reason, TRIPS would not be able to provide exclusive rights for an undefined and unlimited period. In other words TRIPS and general IP protections set out a protection period during which the rights holder enjoys a monopoly. When that period ends (20 years according to Botswana patent law, also known as Botswana Industrial Property Act) that is when the intellectual property would then be free to the public to exploit. On the other hand, traditional knowledge or IK starts off from being in the public domain to being confined to private rights category, with exception of taboos and other secrecies that protect the knowledge.

Further on, the challenges that traditional knowledge poses on TRIPS pertain to the original owner of the knowledge. The knowledge is largely communal and collective; it is attributed to a group of people in a locale and at times extending across geographic borders, and it may manifest in several forms, versions or incarnations. This is caused by the fact that most traditional knowledge is originally not strictly codified, which opens it to constant improvements and refinements over time to suit the evolution of subsequent generations. Other questions posed include how TRIPS could even begin to protect the spiritual beliefs that sometimes go with traditional medicine. This is largely because traditional healing is a very complex issue occasionally involving rituals and spiritual aspects, far more than simply the use of plants (Cheikhyoussef, 2011). To that end, it is safe to conclude that TRIPS still finds traditional knowledge unwieldy to deal with because it is not *your* ordinary creation or invention in the usual sense as stipulated by copyright, patents, etc. Even though TRIPS is unsuitable for traditional knowledge, its Article 39 on trade secrecy may still hold sway with regards to protecting the most exclusive and expert knowledge that remains trusted with a few

confidantes or even one traditional healer. It follows therefore that failure by CBD and TRIPS to protect traditional knowledge holistically without dismantling it into manageable limbs leaves a gap that should be plugged. In the face of legitimacy of the concerns of the indigenous knowledge holders, the present research hopes to unearth a working solution that may address this problem. What could be deemed a solution that could fill this gap should emanate from the fact that while IK cannot be changed, TRIPS could be further tailored to include IK. This will be recommended at the end of the study.

Perhaps the most important piece of guideline that pertains to the protection of medicinal IKS anywhere in Botswana is the Indigenous Knowledge Systems (IKS) Policy. In Botswana, the jury is still out on the introduction of the national Indigenous Knowledge Systems policy. The first draft and the second draft have been passed. While the policy is still in the process of crafting and subsequent implementation, and still technically non-existent, it is important to take a fleeting glance at what blueprint is available now. As an instrument that will have direct bearing on the Barolong traditional medicine practitioners, what does the official working document put forward as the main objectives of the policy?

The document enunciates the objectives to be achieved through an implementation and monitoring system as follows:

- Promotion of the use and beneficiation of IK under the protection of Intellectual Property (IP), regulated access and benefit sharing so that IKS contributes towards economic diversification.

- Protection and popularization of IKS through review and development of appropriate institutional and legal frameworks.

- Development of a comprehensive IKS scientific research agenda for safeguarding IKS and Intellectual Property (IP) of its holders.
- Mainstreaming of IK into all sectors of the economy including learning systems to establish IK as the basis for sustainable national development and intergenerational transfer of knowledge
- Development of the necessary institutional and governance structure for implementation of the IKS Policy.

(Adapted from Botswana IKS Policy draft, 2015)

Seemingly, what will come off this draft is a widely inclusive and comprehensive policy. The narrative broadens to infuse IKS into national development planning processes so that IKS becomes the mainstay of the economy. The policy clearly envisions harnessing of Indigenous Knowledge for innovation and sustainable development. It intends to validate IKS, sustain its usage as well as mainstream and safeguard it through research, innovation and beneficiation. The goal is to make IKS the basic framework for innovation and integration in technology development for improved quality of life. The process will not only affirm and revitalize national pride and integrity; it would also act as the entry point into the global village with perceived links to international research captains and multinational corporations.

Despite all the positively lofty and ambitious plans within the policy, it (the policy) is not without a shortcoming. What comes out topmost as a flaw in the bid to address problems that face traditional medicinal practitioners in Botswana under the current IP regime is that the envisaged IP Policy latches on the already failing IP regime. The first objective of the policy

captures what would be the devil in the detail. Scholar after scholar, all have agreed that the current IP solutions in their forms are still quite deficient with respect to addressing the local traditional knowledge general air of malaise.

In similar fashion, it is fitting at this juncture to interrogate the legal basis of the current protection systems for indigenous knowledge. Important to the matter at hand is the Industrial Property Act (2010) of Botswana, as mentioned ealier. Housed under the Ministry of Investment, Trade and Industry, the Act remains the only piece of legislation that addresses traditional knowledge. And indeed the Ministry is the contact point or the entry point of WIPO in Botswana. Section 115 of the Act stipulates the registration requirement of traditional knowledge. Section 116 specifies who can register the knowledge. It could be a local traditional practitioner or anyone acting on behalf of the community. Incidentally, the section does not proscribe that trade secrecy can be used as a protective measure. This is where the owner of the knowledge opts to make it secret and not divulge its details. One would expect that since the knowledge is originally shrouded in secrecy, the trade secret loophole would be made available to knowledge holders in the Act. Some traditional medicinal experts might still have qualms with going cold turkey and switching wholesale to the new order. Also conspicuous in its absence from the Act is the definition of traditional knowledge. This lack of clear parameters that delimit the space opens up a continuum of uncertainty. This is over and above the fact that already there are still contentions about the WIPO definition as well. Others feel traditional knowledge definition should define who the holders are, which also casts in doubt whether all the knowledge held by a certain community would indeed be all *traditional*. The explanation is that it is still a challenge to define TK in concise legal terms, yet grassroots in content to reflect its originality.

Section 115 and 116 are silent on the issue of validating actual owners of TK. Timothy Moalusi, the Registrar of TK in the Botswana IP office notes that: 'We now have a challenge because people who have applied for TK have applied for knowledge that is in the public domain; it makes it difficult to really say who they the owners of the knowledge are.' He further mused that:

> *One application we have registered is for XX by YY where he claims it XX cures a number of ailments but apparently that is knowledge that most people in Botswana know. Once we registered that TK and he started stopping other people from selling XX even though he added absolutely nothing on XX (by way of innovation). So we are now challenged on this issue....*

The above makes the Industrial Property Act on Traditional Knowledge an insufficient solution to the prevailing problem of protection of the knowledge. As such, this contentious flaw constitutes a gap that this research is venturing to close.

It is at this point pertinent to revert to the IP system and examine the patent system. This is because so far, the IP system is touted as befitting the protection and commercialization of traditional medicine. In his very comprehensive and highly brilliant and widely inclusive piece of work, Polycarp Amechi (2015) examines how patents can protect against theft of traditional medicinal products and knowledge in the South African context. The paper is titled: 'Traditional Knowledge Relating to Medical Uses of Plants and the Patent Regime in South Africa: Whither the Traditional Healers?' The paper delves deeper into the suitability and unsuitability of the intellectual property regime in close unison to the present research. This is after citing cases of misappropriation that have been carried out by outside multinationals on

African resources. The author decries that while the southern African region is undoubtedly home to rich biodiversity, so far there is nothing to show in terms of commercial benefits to the knowledge holders and custodians of the assets. While annual global turnovers for products that use African raw materials soar into the billions, no benefits or even compensation has been appreciated in the countries from which the materials are shipped out. Amechi further laments that:

> In response to this seeming inequity coupled with several instances of outright misappropriation of their TK indigenous communities, their advocates, and developing country governments have, for over a decade, pressed for TK protection in the form of internationally recognised intellectual property rights (IPR). While no tangible progress has been made towards fashioning such Intellectual Property (IP) protection at the international level, despite the public sympathy, most developing countries have adopted IP measures at national and regional levels to protect their TK from misappropriation (Amechi, 2015).

The spirit of Amechi's paper is almost similar to that of this research. The author has articulated the contemporary issues that deal with this burning issue. What did not come out clear from this work is how national measure would feed into the international aspects. This is always important to address this issue as the assets of the local communities will always find a ready market outside the South African shores. Any solution that does not take cognisance of emerging forces such as globalization would take us back to the drawing board.

It is also easier said than done, to suggest that nations should come up with their own ways to turn the tide of misappropriation of their assets. It would be more helpful if the author had zeroed in on a somewhat specific framework that might yield sound results. This would encourage conformity and regional harmony between countries that would want to use the

suggested solution. This is not to say the author should identify a solution already, but a guideline would come in handy as it would be well-researched and made to address the issue even at an international level.

Andanda (2012:556) discusses various ways in which different indigenous groups from different countries have attempted stop-gap measures to protect their knowledge from being stolen and used without permission, while awaiting the WIPO norm-setting solutions. The paper is titled 'Striking a Balance between Intellectual Property of Traditional Knowledge, Cultural Preservation and Access to Knowledge'. By her admission though, she concludes in reference to her research on the topic, that:

> The protection of TK is an evolving field that raises new issues and there are still ongoing debates in this field. As such, instead of providing readymade answers to some of the issues, this article raised more questions …particularly at the policymaking level (Andanda, Ibid).

The above author has admitted on the glaring gap of her study – which is that it omitted to address policy framework that supports what the different communities are advancing as their protective measures. No doubt that the author raises some pertinent issues which also take into consideration that there is WIPO above. She also raises the similar challenges that are in involved in striking the 'balance between protecting TK through the IP regime and ensuring cultural preservation and access to knowledge'. She further credits the IP regime with preventing third parties from using protected knowledge. This is very critical and is one of the most encouraging aspects about the intellectual property protections.

The other problem with the work with regards to Prof. Andanda's working paper is that 'it does not focus on discussing specific types of TK'. TK runs the gamut from traditional medicine,

expressions of folklore, genetic resources and all the components that make them up including poems, basketry, oral history and others. A solution that protects traditional medicine for instance, cannot possibly be banded together with one that protects a poem. Even under intellectual property, the two are protected by patents and copyright respectively.

Prof Andanda has casted a wide net and encompassed critical relevant components that pull the strings in TK protection. She discussed in detail the challenges that are experienced in protecting TK with mainstream intellectual property law. She further highlights that:

> One notable feature of the societal structures that govern TK in a manner that creates incompatibility with the formal IP system is collective ownership. Collective ownership is complex in the sense that the individuals may hold the knowledge their own use but 'ownership is often subject to customary law and practice and based on the collective consent of the community.'(ibid)

Citing the IGC, and in consistence with this research, she further accurately points out and describes the practical and conceptual challenges that are involved in protecting the knowledge using the intellectual property laws. Further avenues within the IP system are also explored and these include creation of databases and registries for traditional knowledge. These databases have been created in countries such as India, Venezuela and China. The databases are used for defensive protection, which means their introduction 'safeguards against illegitimate third-party assertion of IPRs over TK. This is a noble solution, but only to the extent that it operates within the confines of the contentious intellectual property law. It is commonplace that secrecy has always been the assay-mark of traditional healing. This may lead to failure of the system as the people it is intended to assist (the knowledge holders) would refuse to publicise their knowledge that way.

Lastly, the Swakopmund Protocol, a normative framework for the protection of TK in the member countries of ARIPO, is one regional instrument that sets the standards. On 31 August 2010, WIPO issued a statement in which WIPO Director General Francis Gurry was praising the Swakopmund protocol, describing it as 'an historic step for ARIPO's (then) seventeen member states, and a significant milestone in the evolution of intellectual property.' The protocol is meant to 'protect creations derived from the exploitation of traditional knowledge in ARIPO member states against misappropriation and illicit use through bio-piracy,' according to ARIPO statement at Swakopmund, Namibia. The protocol would also prevent the 'grant of patents in respect of inventions based on pirated traditional knowledge … and promote wider commercial use and recognition of that knowledge by the holders, while ensuring that collective custodianship and ownership are not undermined by the introduction of new regimes of private intellectual property rights'. The Protocol has taken a further novel step in recognising that in this era of innovation, a single person is capable of innovating on the knowledge to yield a useful solution. To such persons, the Protocol states thus: 'Where traditional knowledge belongs exclusively to an individual, protection shall last for 25 years following the exploitation of knowledge beyond its traditional context by the individual.'

In reviewing the Protocol, the present researcher found it to be still applying western legal and economic principles to collectively owned knowledge in traditional communities. The Protocol loses sight of the overarching fact that in the indigenous setting whereby knowledge is created and owned collectively the responsibility for the use and transfer of the knowledge is guided by traditional laws and customs. The Protocol expressly disregards that in the beginning there was indigenous customary law which is the instrument that held everything together. Customary law established TK collective rights of its community.

As a departure from the customary laws and indeed the indigenous ways of doing things, the Protocol still speaks the language of western countries in emphasising private exclusivity and reducing the indigenous medicinal knowledge and cultural genetic resources to commodities. In soothing the said ills, there is still a caveat in WIPO's stated readiness to respond to requests from ARIPO and the African Intellectual Property Organization (OAPI) member states for support in the development of national laws for the protection of traditional knowledge and traditional cultural expressions. This gives Botswana and her neighbours the flexibilities they need to tailor their initiatives to the local worldview. This will afford the nations the ability to do patchwork where the Protocol seems to falter, especially that a major TK-sharing neighbour such as South Africa is not party to the protocol.

b) Objective 2. To investigate the history of how Barolong communities and traditional healers have been applying the IK for protecting and preserving their medicinal resources from plunder and depletion and to what extent they still carry out such practices.

The paper by Kigen, K.K., Ronoh, H.K., Kipkore, W.K. & Rotich, J.K. (2013) titled 'Current Trends of Traditional Herbal Medicine Practice in Kenya: A Review' is a very comprehensive work in its dimension. It reviews the current state of traditional medicinal practice in Kenya as well as the attendant challenges and their possible solutions. The authors also articulate the relevance and applicability of traditional herbal medicine in the face of intractable diseases such as malaria and cancer among others. Pivotal to the work is that the knowledge should be documented towards building a database of ethno-medical information that will act as a repository of knowledge. The authors also bemoan that the knowledge holders are ageing and the youth are reluctant to take over as the next experts; there is also loss of diversity and

medicinal raw materials due to deforestation. Deforestation, they observe, may be happening together will loss of potential cures for the troublesome diseases that cannot be managed with conventional medicine. This amounts in part to disappearance of the knowledge. Loss of traditional knowledge has impact on the development of modern medicine (Alves and Rosa, 2005). What is still missing from the good work however, is the discussion on how the knowledge can be protected by means that the local people are party to. At the very least, the noble work fails to recognise that the bigger problem is the loss of knowledge as well as genetic resource as a result of bio-piracy. From that standpoint we could then move towards actively finding the solution which talks to the people facing the problem. In other words, this research will go a step beyond and build upon the work by the above mentioned authors.

In Namibia, Ahmad Cheikhyoussef conducted a study which was published in the Journal of Ethnobiology and Ethnomedicine. The research was titled: Ethnobotanical Study if Indigenous Knowledge on Medicinal Plant Use by Traditional Healers in Oshikoto Region, Namibia. The study sought to establish a regional profile of IKS for medicinal plant use, among other objectives. It also examined the culture-based practices that are associated with the healing capabilities of the medicinal plants in the area (Oshikoto region). The ethno-botanical survey was undertaken to collect information from traditional healers and data was collected through the use of questionnaires and personal interviews during field trips in the ten constituencies of the Oshikoto region. The survey was conducted with 47 respondents who were traditional healers possessing the requisite knowledge or expertise in order to inform the objectives of the study. The exercise returned a high average consensus factor (0.75) as a result of the summary of the research instruments rubric. The high consensus factor meant that the respondents from various different independent areas of the Oshikoto region were mostly in agreement of what

constituted treatment for certain selected ailments. From the high consensus factor, the conclusion was that since the respondents were in unison that *Pergularia daemis* and *Tragia okanyna* for instance, were effective in treating swelling, snake bites and dizziness, the plants were worth examining for bioactivity. Additional related findings are that 'plants which are used in repetitive fashion are more likely to be biologically active.'(ibid) This result opens up the bioactive compounds to further research which will further help to isolate the active ingredients and this is usually done by big companies with vested interests. In such a scenario, it is important to guard against over-exploitation of the plants as they may become extinct. Thus the author moves to explain that:

> Traditional medical knowledge of medical knowledge of medicinal plants and use by indigenous healers are only useful for conservation of cultural traditions and biodiversity but also for community healthcare and drug development in the present and the future (Cheikhyoussef, 2011).

Furthermore, not so much of a determining factor in preservation and conservation of medicinal genetic resources, the study also unearths other factors such as IK and gender, IK and age, occupation and source of income, as well as the rituals for practising as a traditional healer. The preparation method of the medicines also held information pertaining to preservation of the medicines as it was found that some medicines were used fresh while others were used dry. Those that were used dry - the main motive was that the herbs or roots were dried for future use as a way to preserve them from spoilage, or just the best form with which to extract the best medicinal value. What is more in congruence with the present research is the following conclusion:

> This traditional knowledge on the indigenous uses of the medicinal plants could boost new innovations in the pharmaceutical industry and have many beneficial applications such as new

medicinal trails for some diseases like: malaria, Tuberculosis and AIDS, of which will develop the health care sector in Namibia.(ibid)

In view of the foregoing, it is more apt to point out that the Namibian research still has left some questions unanswered. While the author goes to town about preserving and conserving the medicinal plants, what still remains untouched is how these plants are protected from extinction in the most traditional or indigenous ways. Points discussed include threats and conservation status; date/season of collection as well as preparation methods. However the work still fails to expressly zero in on the traditional methods that are used in protecting and preserving these medicinal resources from plunder and depletion and to what extent they still do such practices. The example used of the medicinal plant *Protea gaguedi* which occurred naturally along the Okavango region (north between Botswana and Namibia), but now extinct due to veld fires and over-harvesting, still did not bring in the methods that are employed to avert such disasters in future. Hence the present study will investigate this anomaly with the Barolong tribe and unearth the solutions in their raw form.

From another perspective, 'Understanding the Relationship between Indigenous (Traditional) Knowledge (IKS) and Access to Genetic Resources and Benefit Sharing', is the title of the paper from African Journal of Biotechnology. The authors, Chimwamurombe, Mapaure and Claasen (2010) analyse issues that in part, form the line of argument bearing similarities with that in the researcher's work. Most importantly the paper dissects how 'indigenous communities co-existed with their natural biological resources for millennia'. The success of this ability to coexist was made possible by a great deal of indigenous and home-grown conservation methods that have carried the balance of nature up to-date. The authors identify the failure of international instruments to address local problems as caused by the different

levels of readiness by the SADC countries to domesticate the instruments. Further, the spirit with which the CBD and ABS protocols were conceived to address some of these issues continues to fall short because they lack that local ability to address the uniqueness and diversity of IKS. This is despite the fact that all the countries in the SADC region have some form of allegiance to these international regimes. To this, the solution offered in part by the authors is stakeholder participation and inclusion. At the same time with that, they say, developing countries should develop enabling regulatory environments, similar to what WIPO encourages. These would be stimulated by a change in approach to adopt an interactive and bottom-up participatory way of doing things. The example of *morama* bean that originates in Botswana, was also used as a possible panacea to food insecurity and malnutrition. While the bean had been patented outside the region, it still stands to hold promise if all the channels that employ ABS/Nagoya protocol as well as the CBD are followed to the letter. The *morama* example here not only validates the precarious nature of intellectual property protection for indigenous knowledge; it also highlights the medicinal properties of indigenous foods.

The work by the above authors was concluded with some unanswered questions. To paraphrase it, they ask if local communities would be able to benefit if their knowledge if patented outside their locale; and if patenting is a reward for the luckiest person to file their patent first, even despite the fact that they stole the idea from a far-flung community elsewhere. These rhetorical questions are themselves what constitutes a gap in knowledge, which is incidentally what this work is attempting to seal with well researched answers. The authors also admit that this is a sticky issue, whose answers are 'still being developed.' It is then reassuring to state that by the end of this research, most of these answers would have been answered. They fall within the parameters of this research work.

The following review looks into the commercial value of the Barolong knowledge, and how it could be widely applied. This is because the main benefit in protecting the knowledge derives from economic rights. Commercialization of IKS is now the norm and the new yardstick with which to measure the value of the knowledge. This has been reported earlier to go contrary and *ultra vires* to the ethos of communal and collective knowledge. In spite of that reality, we find ourselves grappled with this new order in the now global village. The assets tangible and intangible assets of the indigenous people now hold the key to better health and health equity for all. To that end, the position of this paper is that while helping others, these resources should also benefit their rightful owners. The knowledge of the indigenous peoples would then be guided by the Natural Rights Theory and the Exchange of Secrets Theory. All knowledge is valuable, but medicinal knowledge is even more economically valuable because of its life-saving and valorisation potential. The paper by David Orozco and Latha Poonamallee titled 'The Role of Commercialization of Indigenous Knowledge' highlights this notion by referring to the knowledge as 'intellectual capital'. The line of thought of the authors is that through the prism of Stakeholder Theory, indigenous knowledge has certain attributes of intellectual capital and therefore indigenous knowledge stakeholders could manage to sustain competitive advantage, albeit in an ethical manner. They also draw a link between ethical foundations that gird indigenous knowledge and intellectual property, as well as pointing out the legal and strategic issues in as far as IKS is concerned. They point that these issues are quite intertwined. The gap that this work does not fill is that commercializing indigenous knowledge as an exclusive commodity departs from the very soul of the epistemological grounding of IKS. Indeed as the Brazil traditional leaders reported to WIPO: '…the knowledge is collective and is not a commodity that maybe commercialised as any good in the market.' Further, to deal with

protecting knowledge solely by trading it for monetary gain will not bring the most sought after effectiveness of the protection. Instead it would only exacerbate the situation, as global commerce is what is allegedly causing the current problems to begin with. On that score this research will aptly and understandingly stitch all the related issues together holistically to balance all the competing factors for the benefit of Barolong and the various affected groupings at large.

c) Objective 3: To establish the efficiency and effectiveness of current policies, legislations and enforcement systems on the use and management of traditional medicinal resources in Botswana.

Based on review of literature thus far, there is a critical lack of information on protection of knowledge on the environment and traditional medicine. When it comes to the topical area of enforcement and indeed enforceability, only WIPO texts address the area. It is this lack of problematizing protection of knowledge on the environment and traditional medicine that may have led to this sparseness of apposite literature. Historically, most of the works done tend to be position papers that have not been research validated. In addition, in studies that have been carried out the methodologies used do not involve indigenous people or local communities in the research enterprise. Therefore there is a chasm on this dimension which has not been filled. No immediately available study has been conducted in Botswana and South Africa to document protection of knowledge on the environment and traditional medicine to gain an in-depth understanding of how it could be done. Without taking anything away from IP experts in the SADC region, their invaluable work still missed to draw a link through environmental protection, traditional medicine and IP. Saurombe (2013) touts a harmonised regional protection system – a very novel analysis that suggests countries working as a united front. His

paper though, still lacks the specificity and a fuller articulation on traditional medicinal knowledge, environmental conservation and commercialization. It fails to also capture that IKS tends to be developed in a way that is closely intertwined to the immediate environment in which traditional communities live, to the extent that it responds to the changing situations of that community. Then again, any regional attempts to protect IKS afforded under national laws or policies may not apply to countries or other regions. This is the sole motivation why an international legal instrument is being worked out by the various indigenous local communities and governments around the world.

Alves and Rosa (2005) in the paper titled 'Why study the use of animal products in traditional medicines?' which was published in the Journal of Ethno-biology and Ethno-medicine documented the use of animal products in traditional medicines in relation to ecology and indigenous knowledge. Protection of the knowledge or the lack thereof is what still constitutes the knowledge gap. In this work, this vital aspect was not discussed. The work opens the insight into the many reasons why studies on the use of animals, integrally or in parts, as medicines and their implications should be carried out and recorded. It also delves into the several approaches to be considered, concerning the ecological, cultural (traditional knowledge), economical, and sanitary aspects of what the authors term zootherapy. According to the paper, medicinal animals have always been important resources linking indigenous people to the environment and their use promotes the traditional lore related to them. As one of the few that deal extensively with traditional medicine derived from animals (fauna) it further notes that:

> There is an increased interest in the knowledge that traditional populations possess on the use of animals for medicinal purposes, partly because the empirical basis developed throughout

> centuries may have, in many cases, scientific corroboration; but above all due to the historical, economical, sociological, anthropological, and environmental aspects of such a practice. (ibid)

Alves and Rosa take up the baton in continuing to harp on the issues of protecting the indigenous resources by way of going back to the indigenous drawing board. For centuries, they note, 'healers and indigenous people have been collecting medicines from local plants and animals without threatening the population dynamics of the species because of the low level of harvesting'. They further remind us that medicinal folklore over the years has proved to be an invaluable guide to the screening of important modern drugs such as digitoxin, reserpine, tubocurarine, ephedrine, etc; and that loss of medicinal flora would have impact on the development of modern medicine that have been discovered by following leads from the indigenous peoples. It is in view of the foregoing that the need to document the traditional knowledge of Barolong might be considered together with a mixed bag of other possible solutions. This is mainly because the Barolong and a majority of other affected communities in the region and elsewhere are rapidly losing their socioeconomic and cultural characteristics together with their assets.

At international norm-setting policy level, the WHO traditional medicine strategy 2002-2005 primarily focused on equitable use; and went as far as making a case for protection. It remains unclear on how protection and enforceability of traditional medicines rights could be done. For this reason, Verma (2004) posits that 'for a holistic protection of TK, measures maybe conceived at both the international and national levels'. The international level comes in to address the aforementioned globalization of IKS as well as the fact that WIPO, through IGC come in from a norm-making international level. The end-result would be a well-coordinated ecosystem in which the left hand always knows what the right hand is doing.

Martin Bobrow and Sandy Thomas wrote a paper titled 'Patents in a Genetic Age'. The paper looks at the pros and cons of patents within the context of policy that governs the development of healthcare products and conventional drugs. Most of these health products and drugs are derivatives of traditional medicines. The authors Bobrow and Thomas (2001) agree that the patent system has been a force for good that encouraged innovation and stimulated research that produced the drugs that have changed the face of modern medicine.

Conversely the authors argue that the patent system is always undermined by policy failures in different countries. The argument is that legislative interventions have lagged behind innovation and developments within the patent system. It would appear that patents have changed from solely focusing on conventional medicine to now encompassing new areas such as traditional medicine and new biological molecules containing genetic information. This according to the duo has opened an avenue to endless legal challenges that have morphed to become a barrier to the progress of innovation and applying the fruits of medical and biotechnological research. This is a result of the fact that litigations in the field are an arduously slow, lengthy and costly process. Policy makers therefore are fingered as the 'villains of the piece' as they have done little to 'produce a coherent policy framework'. This refers to all the levels at which policy around the discipline of intellectual property evolves: international agreements such as WHO, CBD and WTO-TRIPS, regional and national legislation which includes patent offices and also through the courts.

In recommending targets for reform Bobrow and Sandy assess the inherent complexities in trying to reform the patent system itself. This starts with, first and foremost, determining whether patents are really the necessary and fitting system for safeguarding and stimulating

healthcare innovation, of which traditional medicine is a vital component. In the final analysis, the informed conclusion goes thus:

> 'In arguing for change, we acknowledge that the patent system has, on the whole, worked well. But it has now moved into very different territory without appropriate policy guidance. The system does not need a complete overhaul. But it does need more than tinkering. In particular, it needs to adjust the stringency of the definitions of inventiveness and utility required for a patent. Rigorous attention to such detail could greatly improve the system without altering its fundamental role in innovation' (Bobrow & Sandy, ibid)

To the degree that the preceding work dovetails with this research, it is abundantly clear that the common objective of both is to look for a working solution. However, my research goes a step further to address this matter in relation to purely traditional medicine. Traditional medicine is not restricted only to patents, as it were. The solution this research is seeking to identify or compose anew is unorthodox in the sense that IKS itself is not a western phenomenon which can be addressed by Western-born imposed solutions which were used long before IKS took centre stage in global discussions. While this research does not disregard patent system as completely alien to IK, the overarching and underlying idea is to find the solution from among the very people who are the producers and custodians of the knowledge. The intervention could come from the very locale of Barolong, but it could also extend across the region for the reason that the knowledge is not governed by geographical country borders. The logic is that the solution will take into consideration all the facets that are vital and integral to the topical issue. Most of these issues are geographical, spiritual and faith-based. The quote from the WIPO Report discussed in Chapter 1 page 2, concisely summed up this multiple-helix holistic interdependence: 'Intertwined within practical solutions, traditional knowledge often

transmits the history, beliefs, aesthetics, ethics, and traditions of a particular people…' (WIPO Report, 2001)

So far as that is concerned, it is compelling to reason that this research will fill in the gap as described just above. Who else would be better placed to protect the assets of a collective group than the man who evolved with them, who talks to them and one that has learnt to differentiate and interact with them at metaphysical levels? The aboriginal communities look at this natural resources and the land they reside in, as their distinct identity. It is on that premise that the WIPO Report has broadened the definitional boundary to include '… the inheritance from the past and from nature, such as human remains, the natural features of the landscape, and naturally occurring species of plant and animals with which a people has long been connected' (WIPO Report, ibid).

Further afield into Africa, the setting is Nigeria. 'Integrating Traditional Medicine Practice into the Formal Healthcare Delivery System in the New Millennium – The Nigerian Approach: A Review' is a paper by Egharebva, Ibrahim, Kassam & Kunle (2015). This paper goes more than just integration of the traditional into the formal. It constitutes a very critical pillar of what this current research is all about, being sustainability and conservation of the very raw materials feeding traditional medicine. The school of thought here is that any loss of traditional knowledge and resources has impact on the development of modern medicine. It is a very informative piece of work, delving deeper into forms of traditional medicine practices in Nigeria as well as challenges of integration and their suggested solutions. On ownership issues, Egharebva et al., state that 'currently, traditional or indigenous knowledge has little or no national protection as do other intellectual properties…' In consistence with this present research, the authors continue to rightly observe that 'the challenge of ensuring protection or

getting benefits to property right owners … are yet to be totally solved.' At this juncture it is fitting to point out that Egharebva et al., share the same sentiments that have necessitated this particular research. The fact that a problem is yet to be solved, as they state, is a knowledge gap in itself. By way of suggesting a solution, the paper looks to a 'traditional medicine specific IPR policy' to be developed, as guaranteeing adequate protection. This is an untested proposition. In fact countries where there is an IKS policy such as South Africa are still squealing under the weight of knowledge theft and misappropriation. This solution would set us back to the problem of different knowledge systems. Questions would still linger. Would IP rights, a product of Western research, be appropriate to deal with problems of the indigenous people? 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*.

Normally, the IP system that is developed for IKS should really be indigenous for it to begin to deal with the indigenous problems. 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 consist 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 emphasis is that indigenous knowledge is culture specific, integrative and synergistic and therefore must be viewed holistically.

In line with the self-same hegemonic thinking, it has been observed that some methodologies do not treat values and belief systems of communities as an integral part of research but as 'barriers to research or exotic customs with which researchers need to be familiar in order to carry out work without causing offence' (Smith, 1999). Intellectual property methods and laws are a foreign concept to the Barolong of Botswana. Thus the need to decolonise research methodologies would open doors to acknowledging and appreciating the explanations and positions of other realities. It also eliminates the perceived competing positions between the perceived two knowledge systems – the Euro-western and others.

This knowledge gap is what this research is seeking to address: going to the bottom of the issue, contacting the knowledge holders and local communities, as well involving them in seeking a working solution that they understand would move to address the gap in question. Needless to say, a well research solution is far more practical and effective than just an academic one.

Closer to home, Sackey (2008) of the African Intellectual Property Organization (ARIPO), explores the intersection between modern science and traditional knowledge. He importantly observes that while the efficacy of traditional medicines has not been well documented, it has been tested over time and a lot of empirical knowledge has been accumulated in various local communities, and then orally transmitted. But the study falls short on issues of enforceability.

His position paper titled: 'Intellectual Property Approaches to the Protection of Traditional Knowledge in the African Region' has detailed in full measure why traditional medicine should be identified, protected and promoted. It is the lack of a clear position on enforcement that has in fact given rise to jurisdictional problems of intellectual property. As a fact, enforcement finds relevance in both customary law and common law. This means that it could still be an integral part of IKS governance.

d. Objective 4: To examine compatibility with international standards.

The advent of globalisation among other factors has forced the world to become a global village. Upon this premise issues such as the commercialization of traditional medicine has to be done on a firm basis that takes into consideration that international outlook. This is done as a way to address the international dimension of world trade through treaties and conventions. This has become the norm starting from policy formulation that considers matters of broader public interest. International trade has found a new ally in IP. Trade is traditional medicine and traditional genetic resources are of territory here. It would be remiss of this study to ignore that while IP law has a national and an international side; it is statute-based and therefore applies within a particular jurisdiction. The conventions and treaties constitute much of the international IP law. As a result, there has been a measure of international conformity between laws and instruments such as the TRIPS agreement.

At the International Workshop on Traditional Knowledge held at Panama City on September 21-23, 2005, several countries presented their position paper regarding the status with their TK legislations. This workshop was organised by the United Nations' Department of Economic

and Social Affairs for the Secretariat on the Permanent Forum on Indigenous Issues. It was at this workshop that some countries of the South American origin had some highly educative presentations. Their background issues were similar to those experienced by indigenous communities worldwide, let alone in southern Africa. They collectively felt that at an international norm-setting level the intellectual property laws fail to protect indigenous peoples. The patent system, they maintained, continues 'to favour the patents of multination companies which illegally use Indigenous Peoples traditional knowledge and biodiversity…' Effectively, they posit that governments that accede to the patent law in its current form are committed to protecting interests of big companies which benefit from the destruction of biodiversity and ecological habitat, as against the CBD prescripts.

The South American bloc, albeit individually, present a ground-breaking solution to their problem of knowledge protection. Ecuador amended its Political Constitution to include 'the recognition of collective intellectual property of traditional knowledge, its importance, use and development pursuant to the provisions of Law.' What precipitated this action was the grounds and realization that according to the nation of Ecuador, bio-piracy was an attempt against the sovereignty of Ecuador, as well as its fellow nations. The same solution was applied by Venezuela which changed its constitution - Chapter VIII - pertaining to the Rights on Indigenous Peoples. Section 124 of the said chapter states that:

> 'The collective intellectual property of collective benefits is warranted and protected. The registration of patents based on these resources and on traditional knowledge, technology and innovations of Indigenous Peoples is forbidden. Any activity related to genetic resources and knowledge associated to them shall yield collective benefits. Patent registration on these resources and traditional knowledge is forbidden' (Venezuela Constitution Cap VIII Sec 124).

This position by the countries of Ecuador and Venezuela could be copied by other countries in the bid to close gaps in the TK laws. Other laws that followed to buttress the constitution were also enacted and promulgated. Most of them were *sui generis.* For instance in Ecuador, a new law was passed such that 'the recognition of collective rights which consequently recognize that traditional knowledge is of collective use and origin, cannot be owned by only one person, and has neither a date of birth nor death'. The gist of this prescript is that the indigenous people as a collective are the owners of their knowledge. The vast majority of other affected countries are still lagging behind. However, this positive action by South America, which is largely in the same grouping with most developing African countries, was seen as one way in which the developing world could contribute to internal standards and law that could be applied across the world. This is in total agreement with the present research, which mainly believes that the Barolong situation could introduce a solution that might be deemed attractive by the rest of the international audience.

From the same collective of countries, Panama also enacted Law 20 into its legal instruments as part of the *sui generis* intervention. The law is known as the Special Intellectual Property Regime Governing the Collective Rights of Indigenous People, for the Protection and Defense of their Traditional Knowledge, and Other Provisions. As a first law to deal with the prevention of the disappearance of Panama traditional knowledge (including medicine) it was also regarded as a noble effort that could encourage other countries facing the same plight to take a step in dealing with the problem. This law was an initiative of indigenous authorities and experts from the country, under the auspices of other national institutions such as the Ministry of Commerce and Industry, the House of Representatives, as well as international institutions

like the IP mother body WIPO. As mentioned earlier, WIPO has stated its commitment to help countries strengthen their internal laws towards the protection of their intellectual property.

The Ecuadorian and Venezuelan interventions still fall short of the aim of the present research because they do not put emphasis on the conservation of the very resources they seek to protect. Protection and conservation are two different approaches. One cannot protect that which has not been conserved from possible extinction. Another issue that does not come out quite clearly is the involvement of the common people in coming up with the solution. The people have to own the solution because it impacts them directly. Any intervention that may be imposed on the people by their government might not yield the desired results. 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, only 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 other problem here is that these laws are too general as they apply the same approach across all manner of traditional knowledge. Traditional medicine is a huge area on its own, so it needs solutions that afford it some degree of specificity. That would also allow the intersections from biotechnology and WHO to also occupy its space.

According to Emeka Amechi (ibid) the clamour for protection of indigenous knowledge that relates to medicinal plants in the form of internationally recognised protection rights is well in order. He maintains that international standards should be the basis of a protection system. This is necessitated by the fact that in the globalised economy, 'the conventional IP system is the primary and formal mechanism for the protection of rights over knowledge' (Amechi, ibid). He dissects the prospect of traditional healers' protection of their indigenous medicinal knowledge through the patent intellectual property regime. The first position is that promoting patent rights over traditional medicinal knowledge holders will provide an important vehicle for augmenting the benefits and stimuli that are holder communities need to feel protected. Following in the footsteps of Hans Ullrich, in 'Traditional Knowledge, Biodiversity, Benefit-Sharing and the Patent System: Romantics v. Economics?' he agrees that the patent regime is 'internationally the most homogeneous, and systematically the most clearly structured field of IPRs' (Ullrich, 2005) The author of Traditional Knowledge Relating to Medical Uses of Plants and the Patent Regime in South Africa, further points out that the patent regime:

> '... offers the most effective avenue for protecting TKMUP and other biodiversity-based TK within the current IP system. Presently, due to the fact that a significant number of patent applications concern inventions which are in some way related to TKMUP, a widespread debate is raging around the relationship between patents and TKMUP as well as other biodiversity-based TK' (ibid p.70).

The raging debate referred to above is indeed still raging. It forms part of what this research sets out to investigate. Hand in hand with that, Amechi counterbalances his argument that the raging debate is centred around the ills that are brought to the fore by using the patent system as the overarching panacea to misappropriation and bio-piracy of traditional knowledge. This is to

cast aspersions on the effectiveness of the conventional patent international system as a solution to the prevailing problem under investigation herein. Amechi further hones in his position thus:

> 'Critics questioning the compatibility of using the patent system in the protection of TKMUP based their argument on the grounds of inter alia the collective ownership structure of TKMUP and other biodiversity-based TK as against patent law treatment of inventiveness as an achievement of individuals; difficulty of providing evidence of a single act of discovery (novelty and non-obviousness);compliance with technical patent specifications; and prohibitive cost of the application and enforcement of patents. At the other side of the spectrum are those who oppose patentability of TKMUP on the ground that it is already 'state of the art' and hence, patenting TKMUP and other biodiversity-based TK would amount to removing what is now in the public domain from that domain.' (ibid p.70)

The patent system is an inflexible protective system in as far as IKS and genetic resources are concerned because it puts forward steps that are conditions for patentability namely novelty, non-obviousness and industrial applicability. In principle, naturally occurring genetic resources existing in their natural environment, or related traditional knowledge, do not constitute patentable subject matter in themselves. They do not meet the above basic criteria of patentability, particularly novelty and non-obviousness. Not only that, the patent system also works in sharp contrast with the secretive traditional knowledge by promoting full disclosure of the invention or innovation. Notably, some elements of traditional knowledge are by their very nature a generic public good. This places some TK outside the purview of patentability, as they are thus rendered state of the art. Further, a patent owner is generally given a limited term of protection of at least 20 years depending on their jurisdiction. Non-obvious means that the invention or innovation has to show that the owner made an inventive step in coming up with it. With regards to traditional medicinal knowledge, this might sound possible as it is generally

what international corporations that ship knowledge away from Africa do. They could tweak the composition of an already known medicinal product, or just isolate the active ingredient from the mother plant and claim a new patentable matter. As such, determining the inventive step in traditional medicine or practice however, may mean several actions such as: whether the indigenous knowledge is the actual inventive step; whether the innovation uses the knowledge or even whether the innovation is merely based on the communally held knowledge.

It is against this background that this paper is still wanting. By his own admission, the author admits the imperfections of the patent system, and its little suitability in as far as IKS is concerned. The paper indeed academically explores the link that binds the elements on traditional medicine such as the holder community, the leadership, the government, the doctors, benefit-sharing and others vis-a-vis intellectual property. On that score it is in step with my research. It further drills down on the applicability of internationally accepted principle of law as well as other instruments and protocols that justify compatibility with international standards. In a parting shot that further underlines that there is indeed a gap in protecting indigenous knowledge and its elements, Amechi further agrees that the efforts of traditional knowledge holder advocates should be focused not only on exploiting the current patent system despite the imperfections. He further advises on exploring further avenues within the system to protect traditional medicinal knowledge. The aforementioned 'imperfections' at the bone of contention here, and as highlighted elsewhere in this paper; they constitute a gap in knowledge that continues to elude reasonable minds to-date.

Perhaps the most reliable literature from which to seek guidance is from countries that are a bit advanced in solving problems that are of similar roots to ours. The work of Daniel Robinson titled 'Legal Geographies of Intellectual Property, 'Traditional' Knowledge and Biodiversity:

Experiencing Conventions, Laws, Customary Law, and Karma' in Thailand, indeed carries the DNA of this research. The author appreciates a lot of issues that influence the discourse of traditional medicine in its holistic nature. He explores the presence and influence of customary laws relating to indigenous knowledge of plants in Thailand. With admirable aplomb, the author further scrutinises the impact and importance of 'global and national frameworks of intellectual property laws that have a privatising effect of knowledge under the rubric of discovery.' Robinson (2013) further suggests credibly, that the possibility of injury to traditional healers remains 'considerable', though he quickly surmises that the Nagoya Protocol could partially soothe some of the ills. His insight into the legal geographies, moral priorities of property rights and the belief in the first connection principle enriches the intellectual debate of IKS and intellectual property. The first connection principle says that the first person connected to an object that has economic value is entitled to a property right in that object or activity. This is in perfect tandem with the private property right theory discussed under IP theories above.

But what does Robinson miss to do in filling the gap under discussion? First he does little to recognise that the considerable injury to the traditional healers that he refers to is more deep-rooted and holistic in the African context. Dovetailing international laws into perfect harmony, alone, does not address the Barolong problem. In fact it is the customary law in the African or more fittingly local context that might be carrying the solution to the problem.

While Robinson admits that 'jurisdiction reflects the socio-legal creation of spatial units, scales, or communities for regulation', he also concludes by quoting Chiba (2002) that state-based regulatory boundary-making may dismiss the heterogeneity of social grouping.

e. How could the stated problem be averted (what solution, model or arrangement could be used to the benefit of all parties?)

Different authors, civic organizations and movements agree that indigenous knowledge is still bare and unprotected, and that something needs to be done about it. It is merely the important issue of context that still eludes reasonable minds to come up with a system that could be scaled up to the rest of the world. It is then critical to still emphasize the uniqueness of the knowledge and its varying outlook from community to community.

Johanna Gibson, the author of the book titled 'Intellectual Property, International Trade and Protection of Traditional Knowledge' continues to address the challenge in the same manner. Although he clearly and ably unpacks the concept of 'community'; its resources as intellectual property and the international interventions available for use, he still comes across as one that wants to solve the community's problem without involving the same community. The sentiment is picked from the support of international interventions, which up to now have not been able to resolve the snag. This is despite his faith in the international IP systems, which faith is further conflated with all other discussions in the book to describe the international system as 'efficient', not much has been achieved so far.

It is also important to note that the author is agreeable in more other discussions that he makes. He discredits the same international system by saying when it is applied '...frequently without concern for the need to achieve effective recognition of communities themselves to manage resources internally, including accessing commercialisation of those resources' (Gibson, 2016). The author is clearly a proponent of most of what this current research deals with. It is thus gratifying to discover that credible authors are beginning to go in the direction of pragmatism.

A related study bearing a similar methodology, investigates the role of traditional ecological knowledge in ecosystem services management on four rural communities in Northern Ghana. Motivated by the 'growing interest in the role of traditional ecological knowledge (TEK) practices and systems of local communities in ensuring the sustainable utilization and management of ecosystems services,' Boafo et al (2016) apply mixed method research to examine perceptions held by rural households in the region towards the value of TEK managing the ecosystem. Effectively the authors are discounting the effectiveness of IKS by saying that not everybody who knows about the traditional methods applied to balance the ecosystem follows the customary rules. While this is to say indigenous methods are not all that effective, which might be true, the argument still follows the usual line that scholars adopt, of over-generalizing phenomena. As usual with IK, what obtains in one community cannot be used as a template to apply across the rest. And it would be unreasonable to assume that 100% of the community are homogeneous. The respect of customs and rituals; taboos and totems; as well as well as other tribal rules and regulation should not be seen as disciplinary limits and bounds that entrap the community collectively. They are largely followed on a voluntary basis as a tested method of collective good. This notion disregards that in any study sample, there are always outliers.

Against the backdrop of these studies the researcher proposes to address the last research question after all the data is analysed, with the hope of yielding a complete informed picture of the subject matter. To that end, this research question will be answered at the end of the study, and it would come as a clear recommendation that is worthy of being the final solution. The research question will not be addressed like the other previous four, which are treated as independent chapters hereafter.

2.6 EPISTEMOLOGICAL UNDERPINNINGS

Chilisa (2015) writes of challenging what she calls 'deficit thinking'. In her universally acclaimed work 'Indigenous Research Methodologies' she denounces this deficit thinking and pathological descriptions of the formerly colonized indigenous peoples of various parts of the world, especially Africa. At best, she espouses that researchers who conduct research on indigenous people should not conduct it by way of studying subjects. It should be done simply to understand and be able to just describe human nature; hence the journey to reconstruct a novel body of knowledge that seeks to transform this injustice into hope and change for the formerly oppressed people. It thus follows that the works of such seasoned researchers as well as their theories have their grounding on IKS. It advances forth the basic tenet of *Ubuntu* to promote respect among all human beings without exception.

This present research also embarks on the same quest. Its foundations are purely informed by indigenous knowledge systems as an independent epistemology. It is participatory, which was earlier described as the quest to 'research with' rather than to 'research on' the people. Informed through and through by appreciative enquiry, it advances the notion that knowledge is relational and truth is objectively informed by the set of multiple relations that each people have between themselves and the universe.

The literature review was also conducted with careful selection of previous works that relate to indigenous methodologies and research partners. The fact that an indigenous group that feels hard-done by people regarded as aliens to the group's territory is partnering in this research seeks to yield restorative justice. The underpinnings on this work are girded by respective representation and treat all findings as multiple socially constructed realities. From exhausting

the reviewed literature it is safe to surmise that the contribution of this work in the IKS epistemology is novel and demand-driven as it brings a solution that would not only assist Barolong, but could be broadened to other indigenous people.

The techniques of gathering data also speak to the emerging nature of this research as opposed to regular academic research that has always looked askance at other people's traditions and ways of life, specifically with an express prior attitude of contempt and doubt. This research appreciates that not all knowledge is written down; hence the language framework considerations. Talk stories and uncodified information is valuable and highly applicable. These talk stories, riddles and descriptions of cryptic phenomena are well accepted and respected as indeed they constitute what are essentially the primary sources. When data is collected right from source, nothing could come as close to the veracity of that data, which further validates that data that is not written down but shared verbally is more precious.

Lastly, the present study positions itself within the domain if indigenous knowledge systems and paradigm as informed by relational ontologies, epistemologies and axiology. It is guided by the associated assumptions on the nature of knowledge, reality and values in the postcolonial era. The following table (Table 4) summarizes the beliefs as outlined above, which are associated with the indigenous research paradigm as the overarching tenet of this study on the Barolong community.

Table 4: Beliefs Associated with the Indigenous Research Paradigm (Adapted from Chilisa, 2015)

Descriptor	Indigenous Research Paradigm
Rationale for research	To challenge deficit thinking and reconstruct the body of knowledge that carries hopes and promotes transformation and social change among the historically oppressed
Philosophical Underpinnings	Informed by IKS, critical theory, feminist theories and postcolonial discourses, among others
Ontological Assumptions	Socially constructed multiple realities shaped by sets of multiple connections between humans and their environments, and ancestors
Positioning Values in Research Process	Research guided by relational accountabilities promoting rights of the researched, reciprocal representation, self-determinism and appreciative enquiry
Nature of Knowledge	Relational, in consistence with all IKS discourse knowledge
What is Truth/What Counts as Truth?	Truth is informed by sets of multiple relations with the universe, the cosmos and the immediate environment
Methodology	Participatory methodologies as well as transformative research approaches that draw from IKS and do not see people as study object
Data-gathering Techniques	Using language frameworks, talk stories, culturally sensitive techniques, interviews, questionnaires, (empirical) observations, traditional teachings, revelations, etc,.

2.7 CHAPTER CONCLUSION

The above literature review has surveyed scholarly articles, and the other sources relevant to this work and particular issue. The reviewed studies generally employed more or less the same methodology at this research. The review has provided a description, summary, and critical evaluation of these works in relation to the research problem being investigated. In principle, a

literature review provides an overview of sources explored while researching the topic. To that end this chapter has fairly demonstrated how this research fits within the larger field of indigenous knowledge systems, especially traditional medicine and intellectual property. It is for that reason that the topic is worth investigating in a bid to close the revealed knowledge gap as well as to offer solutions to a problem that faces a community and affects its lives, livelihood and fortunes. The solution refers to effective measures to safeguard and protect, as well as to seek recourse against infringers. As discussed, legal rights lack real value if they are not enforceable. A well balanced IP ecosystem should indeed help to stem violations and ensure that the rightful owners of the IP and the society at large benefits. In the final analysis, the effective system should also be able to stop and restore the loss of traditional culture and heritage, over and above the loss of biodiversity and genetic resources.

The conceptual issues provided some of the contemporary operational definitions, variables and constructs within the confines of the topic. This is quite necessary as the topic under investigation cuts a multidisciplinary line across various subjects of study. It is therefore in order that the gamut from traditional law, contemporary medicine, intellectual property law as well as innovation and commercialization is all covered.

Under the theoretical framework a number of theories that shape the study were suggested. These are largely IP theories which situate the study under investigation within their confines. In the end a hybrid theory emerged from two fused theories. Constructionism was also used to demonstrate how knowledge is constructed and how that forms the basis of the lives of indigenous peoples, who use language to construct their realities.

The actual review of literature was subtitled as the thematic review. That part of the chapter further revealed that for several countries around the world, different policy and legislative instruments for various countries have either been revised or changed in order to be able to coordinate and regulate IKS issues better. Regionally, the process to fully accommodate IKS to the hilt is still an on-going process, with different countries showing different levels of readiness and responsiveness. For instance, Botswana and Namibia are in the process of developing their IKS policies, while South Africa has its policy just completed and disseminated.

After the review of the above research work by researchers of note, it has become evident that indeed the present research is still well in order and that it is necessary that it be pursued. It was further found in this chapter that the previous research studies that have been reviewed so far either lacked specificity on traditional medicine, electing to generalise it as traditional or indigenous knowledge. Traditional medicine then picked interest from WHO first, only to be later recognised by WIPO; all the time being a new area. Others completely omitted the objective that highlights conservation of the genetic resources that yield traditional medicine. Conservation of the resources is another vital hallmark of this research because, from the author's personal experience, the forefathers have employed indigenous conservational methods to perpetuate the species and ensure continuity over several generations.

The rest of the publications also did not include another paramount part of this research – benefit sharing. In order for the ecosystem to be comprehensive and inclusive, it should speak to benefit-sharing because at the end of the day, the message is clear that the people shall benefit from the resources of their land, their naturally owned resources, the resources that they and their generations have applied creative skills to ensure that they do not disappear due to reckless and selfish use.

The President of the International Congress and Convention Association (ICCA) consortium, Taghi Farvar while speaking to journalists at the United Nations 13th Conference of Parties to the Convention on Biological Diversity (CBD) held in Cancun from December 2-18, 2016, Mexico, noted that 90 per cent of biological diversity in Africa, Asia and Latin America are being protected by the indigenous people and local communities. The ICCA consortium as an organisation exists to protect the indigenous people and their local territories towards their sustainable livelihoods and respect of their collective rights. Citing a study that was conducted in 2003, he declared that 90% of the attention should be focused on the indigenous people and the local communities, whose role is essentially '… conserving elephants to ants in their territories.' In further denouncing the interests of governments, and promoting the cause of indigenous groups with regards to expert resource conservation, Farvar spoke that:

> *'Governments started this business a little over 100 years ago, indigenous people's and traditional local communities have been in the business of conserving nature for thousands of years, I know in my case, my grand-ancestors were conserving nature before they even defended from the tree. There has to be far more attention paid to the role of indigenous people's and of local communities in conserving nature, they are the ones who are conserving nature all over the world... The indigenous people, not government agencies, have knowledge on effective means of conserving biodiversity'*

Equally important, it is pertinent to cast light on why the literature review did not take into much consideration the Case Study research design as befitting the Barolong case. Robert K. Yin's famous book titled Case Study Research: Design and Methods, 4-th edition (Yin, 2009) positions a case study as an in-depth study of a particular situation rather than a sweeping statistical survey. The feeling in the present research was that the Barolong case is presentative of a whole

swathe of other indigenous groups around the world. It was therefore prudent to use a design that did not appear to reflect a solution that would assist Barolong alone, but one that would yield a conceptual framework that could be applied across various settings.

It is from that exciting point of departure therefore, that the present study would attempt to address the aforesaid knowledge gap in this nascent discourse. The following chapter will then discuss the methods of investigation for the study. 'Methods of Investigation' will deal with IKS-contextual methods of inquiry. These methods are the backbone of the research design, as they will identify and investigate relevant themes that inform design development. The methods discussed as follows, are an integral anchor of this research, without which answers to the problem would remain unattainable.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION OF RESEARCH PARADIGM

After exploring the theories that speak to indigenous knowledge, it is imperative to move into the research methodology – moving from theory to practice. This study is rooted within an interpretative qualitative research methodology. There is a reason for that. The limitation with quantitative research in this instance is that it fails to appreciate the challenges experienced by persons practising 'unorthodox' medicine. Quantitative aspects were only restricted to sample size and demographics, where it would not have to capture and appreciate the fluid nature, and the constant flux of, the cultural/traditional issues. Since contextual issues such as socio-cultural factors were difficult to discern quantitatively, the method would be wont to producing 'distorted findings' (Oliver, 1999; Oliver, 2002).

The qualitative method was deemed the most fitting because it would provide in-depth data for understanding indigenous knowledge systems especially in probing for the sustainable use of traditional medicines at various community levels. As the instruments show, data were collected and stratified according to household level, intellectual organics, practitioners of indigenous medicines and community traditional and civic leaders. The data will also reveal if there exist a relationship between IK and gender; IK and age of a practitioner; IK and the occupation of the practitioner; as well specialization. The qualitative approach was sufficiently flexible and linked the researcher and the participants of the study directly; as well as being technically appropriate. Employing the qualitative research approach enabled the researcher to do more probing for more information in order to understand the phenomenon in its global aspect. The approach also unearths latent leads that may otherwise have been left out of the

founding questionnaire and other instruments. Incidentally, more factual data comes from probing after the direct answer was given.

In order to understand how the studied communities were sustainably using their resources without depletion during pre-colonial times, it was quite in order to understand the subjective nature of their varied experiences and pick a pattern or patterns with the help of certain tools. The ontological assumption associated with this qualitatively based indigenous research paradigm is that the socially constructed multiple realties are shaped by the set of multiple connections that human beings have with the environment, the cosmos, the living, and the non-living (Chilisa, 2015). On that basis, the best strategy with TK holders was to interact with them and develop subjective and multiple meanings of their environment. This was done from the lens of the TK holders who are normally referred to as the 'researched' as being participants. This is done without trying to achieve objectivity as viewed through the eye of the researcher because religiosity and spirituality in traditional medicine could best be understood in a real-life context (Guba & Lincoln 2005).

In this 'researching with' as opposed to 'researching for' (Barnes, 2001; Fine, 1994; Oliver, 1992a; Oliver, 2002b; Walmsley, 2001), the result is relevant findings that would properly inform policy and practice. Data that were collected in the form of words, cultural nuances, gestures, jokes, pantomimes, conversational gambits as well as document analysis, tends to probe beneath bare surfaces of these dynamic issues. This is the process that informs participatory research.

This chapter describes the general research design used in the study; the location or research sites; the sample technique and the methods and strategies used to collect the data. Also

described are the research instruments used in data analysis; the data collection procedures; the composition of the research team; and ethical considerations of the research. The chapter also takes an analytical look at the regulatory frameworks and systems that guide traditional medicines under the auspices of customary law.

3.2 RESEARCH DESIGN AND APPROACH

This study utilized multiple cross site case-study research designs with a focus on intra-community cross-border traditional knowledge. A case study design was well suited for traditional knowledge and local knowledge because it empirically investigated the phenomenon in the context in which it existed, unlike a survey, for instance. Context-bound issues such as traditional knowledge are favourably studied in their distinctiveness using a case study. Defining a case study might simultaneously explain its choice. According to Yin (1984), a case study is an 'empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used'. Zainal (2007) adds that the method enables a researcher to closely examine the data within a specific context, mostly a small geographical area or a very limited number of individuals as the subjects of study. This paradigm is therefore fitting in this regard further because the number of respondents is limited for reasons that traditional healers just like medical doctors typically occur in less number per community. Besides, IK is a living phenomenon so it is important that it is investigated in this manner.

The central epistemological foundation of this study holds that local knowledge be investigated in its local context. As such, through a case study, the researcher was able to understand the contextual factors that shape the phenomenon under investigation. Through the use of multi-

focus methods of data the validity and reliability of the data from the contrived focus groups would be cross-checked - and a global picture emerged. This is called triangulation, and because it allows interdependent parts to be studied, it leads to in-depth understanding of patterns, commonalities and differences.

In applying triangulation, the researcher is merely introducing an outcome validation system. Triangulation is not to be confused or mixed up with mixed method research. Prominent researchers such as Ngulube (2013) have gone to great lengths highlighting this difference between triangulation and mixed method research by stating that among other reasons mixed method research offers 'the ability to answer research questions that the other methodologies cannot, and it offers the researcher the possibility of simultaneously developing and verifying theory in the same study.' Triangulation simply checks an answer. It does not produce the answer like mixed method research. To this end, Ngulube & Ngulube (2014) aver that 'the concern of methodological triangulation is validation and not development...more of a measurement technique than a research design.'

The focus groups were largely co-determined by the traditional house hierarchy, or the *dikgosi* and the lower-ranked *dikgosana*. These people were the custodians of all manner of property that belonged to their people – be it indigenous knowledge or intellectual property of their tribes. They understood procedure and how to enforce it. They were the gatekeepers through whom all enquiries were routed.

Polycarp Amechi notes that issues of access, use and transmission of all forms of traditional knowledge relating to medicinal uses of plants are usually regulated by the traditional

communal governance system administered by the village elders, or chief priest. He further observes that:

> Such governance system is backed by prescribed rules and protocols as well as sanctions for infringements in order to ensure that that healing knowledge is used properly for the benefit of the community. In certain rare instances … community control and management thereof may be limited to divinely rule, which is the admonition by the chief priest or elders that any misuse would be severely punished by spiritual powers such as the gods or ancestors. (Amechi, 2015)

The case study research design here investigates the relationship between Barolong and their land. Specifically it investigates how the tribe managed to hold everything together through successive generations without losing any resource to human greed and recklessness as exemplified by biopiracy. The case study ties well with the constructionist epistemology whose yardstick is the indigenous ways of knowing and knowledge construction. Each of the two villages in the Barolong district that are studied constitutes a case. Each case subsequently has multiple documented perspectives, some of which evolved during the interviews. These include traditional leadership according to its hierarchy, traditional doctors, national policy, outsiders, charlatans, etc,. Coupled with the other designs, the data is further triangulated.

In this regard, the starting point was to interview small groups of people at the *dikgotla* or different wards in the different villages. To manage the process better to save time, a request was made to have all the involved people meet at the *kgotla*. By way of the said triangulation, purposive sampling was then employed towards the few intellectual organics and traditional healers that were individually approached for more rigour. These were from different adjacent villages which could be seen to constitute the environs of the larger village. The gate keepers then led the researcher to more practitioners, experts and other point persons. The inherent

advantage was that being referred from one group to the other eliminated the secrecy and introduced openness in the research because it felt more secure to operate from the assurance of a credible referee. This was compelled by that knowledge holders have taken to guarding and protecting their highly expert knowledge by simply refusing to divulge it.

Other aspects of the research took into account the issues that followed hereafter such as location, sampling techniques, data collection strategies and others. The outcome yielded completeness, gave convincing data and unveiled any irregularities that may otherwise reveal a different perspective (Mitchell 1986, Duffy 1985).

3.3 STUDY SITE

Communities that were historically rich in diversity and traditional knowledge (hence the choice of Barolong in the Botswana side) were helpful in the study. To bolster the study, and highlight the power of indigenous knowledge in the face of the new world order the Barolong also exist in the South African side of the border. In fact the same tribe continue to interact across the border as if there is no border at all. Their leadership normally stays on one side while still holding authority and influence on the other side of the border. Both sides have always remained loyal to their leadership regardless of which side of the border they reside.

The Barolong district exact location is shown in the map in Figure 5 below. While it may not reveal much, it is important to note yet again that the Barolong tribe comfortably straddle the border and maintain their common heritage and ways of life, forcing the governments of both countries to allow them flexibilities in relating with their relatives across. Past studies show that the introduction of the borderline has not had any impact on how the tribe interacts cross-

border. If anything only the attitude of the youth towards TK has changed as the youth tend to look down upon the knowledge.

These communities and areas under investigation were carefully chosen – by virtue of their constant adherence to their age-old cultural practices as well as richness in cultural diversity. Additionally, they are those that were endowed with a wealth of heritage; and they had known how to protect it effectively way before the advent of colonialism, globalization and WIPO. Most of these people were traced to the southern part of Botswana and north-western part of South Africa.

At an international level, the African Regional Intellectual Property Organization (ARIPO), having taken the lead in formalizing IKS studies and being the granary of regional instruments and protocols in TK, set the tone for the study. Some of the experts were interviewed at ARIPO. These were the link to WIPO, the global IP authority. The headquarters of ARIPO is in Harare, Zimbabwe.

The following two maps assist to locate the study area against the backdrop of the continent of Africa, Figure 3; and the country Botswana, Figure 4. As discussed above, Figure 5 locates the exact location of study within the Barolong District.

Figure 3: Map of Africa Locating Botswana (in green) (Source: Google Maps)

Figure 4: Map of Botswana Locating the Barolong District (in red) (Source: Google Maps)

Figure 5: Map of the Barolong Sub-District in Botswana (Source: Google Maps)

The land of Barolong is in the Southern District of Botswana, as shown in the map above (Figure 1c), just on the north and to the northwest of (and indeed closer to) Mahikeng North West Province, South Africa. The Barolong are the same tribe with the Barolong in South Africa who happen to be divided by the border between Botswana and South Africa. Needless to say, the borders were a retrofit, which means that they came after the people, hence dividing them asunder.

The study sites were where all the aforementioned experts were resident. The choice of sites was largely dictated by the local traditional authorities. It was difficult to cast anything in stone in as far as snowball sampling was concerned because it was largely self-deterministic. At a

general level though, the sites where the Barolong reside, were targets for the sole justification that they were of diverse cultures yet rich in various forms of traditional knowledge, especially medicinal knowledge.

Relevant trusts and cooperatives also acted as sites to be researched, as they formed a consolidation of on-the-ground experts. Thusano Lefatsheng, Tshole Trust, and other trusts that were owned by local communities were also sites of interest. In Botswana we had Dingaka Association which was the strategic and central regulatory authority of traditional practitioners. The CIPA (Companies and Intellectual Property Authority) under the Ministry of Investment, Trade and Industry was the body that helped the country to domesticate international instruments that are relevant to IKS and IP at large. CIPA houses that office that is on the ground with IKS issues as they happen. They were very helpful in the study.

Regionally, the Indigenous Peoples' of Africa Coordinating Committee (IPACC), which is a membership organization comprising of over 20 African countries, promotes African indigenous peoples rights and participation in environmental conservation, among other duties. IPACC's vast footprint means they have a bird's view of the effective methods of environmental conservation applied by different indigenous peoples of its membership. With a membership network spanning across all the cardinal points of Africa, their expertise in championing the rights of the indigenous people are unquestionable. Examples of the aboriginal groupings under their wing include the Pygmies of the Great Lakes; the Maasai and Mursi of East Africa; the Venda, the Khoe-San and the Xhosa of southern Africa; the Mbororo and the Tuareg of West Africa; and many others.

3.4 POPULATION TARGET

The population target of this study is primarily Barolong of Botswana in the Southern District (Province). It is estimated at 6362, according to the national population census of 2011. The tribal grouping extends way into South Africa and divided by the border, with the headquarters as Mafikeng in South Africa and Goodhope in Botswana. Studying the whole community and disregarding the border would pose a challenge, and this becomes one of the problems that the political dispensations brought – dividing a unit group. It is quite uncommon that people of related tribal connections span several international boundaries in Africa as a whole. The same goes to other indigenous communities around the world such as the Inuit of the Arctic origin. This is what lends more credence to the fact that indigenous knowledge is place-specific and highly independent from the relatively new geographic borders.

The key participants were Barolong communities involved in medicinal traditional knowledge systems, policy-makers and the relevant legislature tasked with crafting laws that give rise to strategies, policies and plans to salvage traditional knowledge. Of paramount importance was the traditional leadership of Barolong, who acted as both the repositories of knowledge as well as channels to the real experts of the field. Organic intellectuals and those connected to the expert field of traditional medicine were also roped in to corroborate the data and offer more linkages of the knowledge to the new world order. The population target and sampling do not necessarily represent the majority – a departure from the norm which is however very appropriate for this study because it involves experts that are naturally few in each region. That said, the choice of Barolong was also partly informed by their well-known displeasure with the way the political system seem bent on dispossessing them of their heritage, let alone their medicines by opening them up to all and sundry. They feel that the government trivialises their knowledge.

3.5 SAMPLING SIZE AND TECHNIQUE

A purposive sampling strategy was used as it targeted certain communities and certain gate-keepers within the communities that proved instrumental in the study. It was such an advantage for the researcher to have had close ties, and grew side-by-side with the San themselves who are widely regarded as the first people of the Kalahari a vast land that spans the whole of southern Africa. It was also beneficial that he was part of a Southern African Development Community (SADC) group of experts involved in coming up with a solution as a regional bloc, to protect the disappearing resources in the region. As such, purposive sampling worked in this regard because it was based on primary knowledge of the underlying purpose of the study, as well as the population under study. The traditional leadership which was generally well known but few in numbers were selected purposively as well. There were only a handful of these experts interviewed in all the traditional settings.

Specifically, Expert Purpose Sampling in this regard is appropriate. Traditional knowledge practitioners who were also generally known and naturally few were interviewed as experts. They were selected purposively or as a team of experts. This was further justified as it is informed by personal knowledge of those that hold the answers as alluded above. Most significantly, the study was steering clear of subjectivity because while the researcher knew some of the experts to approach, he did not know the answers they would proffer. The expertise of knowledge holders, be it traditional doctors or organic intellectuals, constituted the basis of the study. The same applied to the choice of cases to be studied.

Significant others included NGOs, ministries such as those that house IP issues (Ministry of Investment, Trade and Industry) and as health (Ministry of Health and Wellness) and cultural

issues ministries (Ministry of Youth, Sports and Culture). Other relevant government and professional agencies were identified as the need arose. Community members were included as beneficiaries of whole exercise. They also formed the population from which the focus group was selected.

It was therefore intended that 10-15 relevant knowledge holders, traditional healers and intellectual organics would be interviewed at each site, in Barolong cluster of villages. Relevant non-governmental organizations (NGOs) were also included to help with the study. An immediate example is an organization in Botswana called Thusano Lefatsheng. This NGO is doing a lot of work in natural resource management for example with the devil's claw medicinal plan locally known as *sengaparile*. Incidentally, this was one of the plants whose issue of bio-piracy was at hand. That means at Barolong District at a village or called Goodhope 10-15 people were interviewed. Most importantly, this exercise was unconventional as it took into account issues such as traditional authority structure, as they played a critical role in the success or failure of the project. Each area was evaluated on a case-by-case basis, as is the structure of the different traditional settings and their interconnections.

The overarching idea during the vast expanse of the study was that any study that sought to help solve people's problems and yet excludes them in finding the solution failed to even scratch the surface. This informed the belief that the knowledge holders or holder communities would come up with their own methods in solving their own problems. They understood their own social problems and cultural experiences, and as such were better placed to interrogate any arising issues. Their approaches were always different from those that were applied by Euro-centric or Western thinkers, as the latter were very mechanical in approach. While these outsiders were undoubtedly methodical, they were still *cut-and-dry* in their approach, in

relation to African formal axiology and ontologies. What's more, these were parties who once viewed traditional medicinal knowledge as witchcraft and sorcery. The former (locals) were influenced by a host of factors that talked to the holistic and systematic nature of the problem. For instance, they would refer to the gods, the state of body health, the ancestors, the galaxy, the supernatural, etc. Obviously, this was a far cry from what the intellectual property regime would be able to deal with, let alone take into consideration. And this research was highly in order because the researchers tried as much as possible not to be guided by IP or any Western influence in carrying out the study. Moreover, attendant confidentiality and ethics were observed at all times.

3.6 DATA COLLECTION TOOLS

The researcher utilised multiple data collection tools such as one-on-one semi-structured interviews, focus group interviews and documents analysis to collect data for the study. The use of a single data collection tool was found to be wanting and fraught with limitations especially for a study that has so many fronts such as this one. In order to address these limitations the multiple tools were used on the basis of complementarity. Additionally, Ngulube (2013) supports this approach as recognition of the complexity of current research issues, warranting multifaceted research designs and methods.

The researcher's major consideration when deciding on the tools was to ascertain the approach that will best answer the research questions in line with what the research exercise sets out to achieve. As a guide, the mantra was that wrong tools yield wrong results. For instance, in-depth interviews were critical in this study as they proved to be knowledge transmission conduits. To that end, the tools were also varied according to the research objectives, as indeed an each associated research question calls for a tool that would answer it better. Objective 2 and Research

Question 2 are best dealt with by a research questionnaire, hence Annexure 1 attached at the end of this document was used. Similarly Annexure 2 was used for Document Analysis that was carried out for Research Question or Objective 3. A semi-structured interview tool was used for Objective and Research Question 4.

3.7 DATA COLLECTION STRATEGIES

Multiple methods of data collection which were all innate features of qualitative research were employed to get a much bigger picture of reality as much as possible (Guba, 1990; Maykut & Morehouse, 2003). It had to be pointed out that no plant or any samples was collected from the research subjects. Their input was sourced by way of ideas, solutions and methodologies. This was a project that mainly looks into and examines policies to try and rectify a problem. Data were collected using the following methods.

3.7.1 *Kgotla* focus group discussions

These were more fitting for a community setting because the researchers interacted with many people at one fell swoop. The focus group dealt with a wider constituency. The exercise was done according to focus group discussion guidelines, taking into consideration the rules and protocols of the *kgotla* system. The focus group conversations were used to collect data on knowledge, values and beliefs, and practices of traditional medicine protection as perceived by the participants. In this method participants provided information on the main themes as they perceived them happening in their communities. They were not required to provide individual level information. Three focus group discussions were conducted, two at the village kgotla with up to 5 participants. The wider constituency of participants comprised of a small number of

people including both gender and all groups of interest in the study. As explained above, the village gatekeepers organised the focus group participants, as they were the ones well versed with the various people of useful interests in the study. Questionnaires designed to the traditional healers and other relevant knowledgeable respondents about medicinal plants knowledge would mainly be focused on common local name of the plant, knowledge about past and present conservational methods, mode of preparation and preservation, parts of the plants used as well as the methods of their preparation and administration. Also investigated were the procurement method, place of collection and habitats, threats and conservation status, time of day/season of collection and types of diseases these medicinal plants heal. Despite this research area being expert, the researcher made a conscious effort to include different shades of groups

3.7.2 In-depth Interviews

These were semi-structured one-on-one interviews totalling 8, investigating the themes that are mainly dealing with people of the same expertise, as in this case traditional doctors and intellectual organics of their ilk. Experts and scholars, as well as policymakers fell in this category. The interviews were also used to collect individual demographic data from all the participants as well as to probe for their individual level knowledge, values and beliefs, occupations and practices regarding traditional medicines use, preparation and source conservation. The in-depth interview participants were selected based on the belief by the researcher that they were knowledgeable in intellectual property, traditional knowledge or the general topic under investigation. For this group of participants followed that the sample size be smaller than would otherwise be required for a conventional survey method. There were questionnaires issued to the respondents which, over and above demographic data, will also

probe for further information that may not be written down in the paper. This was largely determined by how certain previous questions were answered. Demographic data was highly critical in this regard because answers about the age of the respondents revealed the age group that mainly practice and use traditional medicine. The rationale was to validate the notion that this knowledge was learned over a slow, long period of time, as patience and perseverance are what makes up the crucible of expertise. To that end, Boyde and Neale (2006) suggestively point that 'in-depth interviews should be used in place of focus groups if the potential participants may not be included or comfortable talking openly in a group, or when one wants to distinguish individual (as opposed to group) opinions about the program.' Appended at the end of this document, see Annexure 2, is the in-depth interview instrument.

The instrument for each group was selected consistent with the format that other refereed authors followed. These authors in fact led to the emergence of terms such as multi-method research, nested analysis, mixing, blending, combining and integrating in dealing with both research perspectives to appropriately capture the essence of combining research instruments and methodologies.

3.7.3 Semi-structured Questionnaire

The semi-structured questionnaire is one tool that is suitable for this research study. It is naturally a combination of both structured and unstructured formats in one interview (Dikko, 2016). The consideration stems from the fact that interviewing village elders, full of wisdom as they are, yet not used to limitations offered by structured methods, has to offer them space to air their views. This understanding is borne out of the fact that the knowledge they possess, being not codified, is best transmitted, shared and indeed transferred to successive generations

through talk stories. Thus it is not unusual for an elder to answer even a structured question by starting to tell a story first; the story would then later be deductively connected to the actual answer to the question. A semi-structured questionnaire therefore is the favourite to adopt a middle ground as the interviewer does have a sequence of questions to be asked during interview but has considerably more freedom to change the sequence, wordings and time allocated to each question based on the needs of each separate interview (Robson, 2002). Most of the in-depth interviews stated above in fact used the guidelines of the semi-structured questionnaire. A sizeable number of 10 - 15 participants responded to the questionnaire. For the foregoing purpose, the researcher designed this questionnaire tool specifically for, and linked to this group of participants. The semi-structured questionnaire is appended at the end of this work as Annexure 2.

3.7.3 Document Analysis

WIPO instruments and other policy and legislative instruments such as the Act that governs intellectual property and traditional knowledge matters in Botswana as well as the indigenous knowledge policy itself would be analysed for suitability or the lack thereof. Certain regional blocs such as Common Market for Eastern and Southern Africa (COMESA) and SADC which are also doing some work to promote the value of IKS and related technologies do not form part of the document analysis because their mandate is not focused on the issue of intellectual property and traditional knowledge.

A form of qualitative research enquiry, document analysis is essentially used to interpret public records and personal documents to give voice and meaning around an assessment topic (Bowen, 2009). In this instance the method is used to evaluate policy and legal instruments

according to whether they indeed address the topical issue of indigenous knowledge systems. The method is also used to point out gaps in the instrument, known as policy silences and policy gaps. It also determines the strengths of the instrument as well as its prominent voices or the actual intended audience. All in all the document analysis is used here within the confines of qualitative content analysis, just more expansive and on a macro level of policy instruments.

The Act is known as the Botswana Industrial Property Act of 2010. The Botswana Indigenous Knowledge Policy has just been conceived and it will be years before it sees the light of day. However, the final draft was handy in this regard. Currently, the Industrial Property Act of Botswana covers traditional knowledge, and indeed it was a document of interest. Relevant international protocols, agreements, conventions and treaties were also analysed for purposes of checking if they added relevant pieces of information, especially with regards to conformity with the international norms (norm-setting). These international instruments were always in the process of harmonizing the disparate IP laws of different countries. They also provide for minimum levels of protections. WTO and WHO, whose interest in this matter cannot be overemphasized, provided pieces of guiding and norm-setting instruments for the purpose of international standards. Other pertinent customary codes that legislate around traditional medicine were also examined. It would also be remiss of this project if it overlooked the pivotal roles of the CBD and Nagoya Protocol.

The regional IK instrument, the Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore is the latest instalment in the war against the IK villains. The Swakopmund Protocol was adopted by the African Regional Intellectual Property Organization in August 2010. The instrument is underpinned by the principle that the

knowledge, resources and cultural heritage of local communities are the result of tested practices of past generations – a creative genius worthy of intellectual property status. These resources are held in trust by Barolong custodians today for future generations. Hence the Protocol was also a document of interest, in the same value in which it was referred to as 'a significant milestone in the evolution of intellectual property' by the Director General of WIPO, Dr Francis Gurry in Geneva, Switzerland. The Harare Protocol however is more inclined to the classical industrial property matter such as patents, utility models and industrial design. For that reason, it will not constitute the substantive document analysis. The same applies to The International Union for the Protection of New Varieties of Plants or UPOV documents. UPOV deals specifically with new plant varieties. UPOV documents would be of immense interest in the event the researchers become interested in improving the medicinal plant varieties from the indigenous landraces. That dimension falls outside the ambit of this research. However it will be considered to ensure that all bases with regards to beneficiation of Barolong resources are covered.

3.7.5 The *Mmogo* Method

The *Mmogo* method was highly likely fit in the setting because it is an unstructured visual data gathering method that assists interviewees to recount their experiences and make sense of their environment. The visual data was photographed as visual data while the discussions are recorded (Chilisa, 2012). In this way, credibility of the findings of the study was enhanced (Maykurt & Moorehouse, 2003). Furthermore it helped the researcher to cross check data at various stages. Known as a visual projective research data-gathering method (Roos, 2008;

2012), this method was advantageous especially to the vast majority traditional medicine practitioners, some of whom could not read and write. They were accorded the liberty to narrate their visual experiences and present data of the environment that they grew in, which data became so genuine and contextually grounded. The *Mmogo* data collection strategy here was in agreement with the theoretical framework as discussed above. Another advantage of the *Mmogo* method was that it made it possible to obtain insights in settings in which participants spoke a different language from the researcher, for example, to learn about coping strategies of Setswana-speaking older persons who were dealing with drought as a slow-onset disaster (Roos, Chigeza, & Van Niekerk, 2010); it helped the elderly organic intellectuals and traditional healers to narrate how their practices survived through such lived disasters as droughts, a period during which medicinal plants would have been in short supply.

3.7.6 Primary Sources

For the larger part primary sources of data or first-hand evidence were the mainstay of the study. Most indigenous knowledge is not written down. In fact it cannot be relied upon when written down. This is because the knowledge is based predominantly on primary sources. The sources included oral histories; intellectual organics guided narrations as well as the corps of experts such as traditional doctors which are all largely verbal. Written sources such as memoirs and other personal records were hard to come by possibly due to the secretive nature of traditional medicinal knowledge. Having come across experts who were more than willing to share their knowledge, it was hoped that these memoirs could be sourced where available. However only verbal narratives were sourced from the traditional healers and other relevant people as determined by the traditional authority

With regards to the international contributed from an exterior outlook, organizations such as WTO, SADC, WIPO, WHO, etc., provide rich sources of primary and contemporary data. This is found in their report

3.7.7 Secondary Sources

Secondary sources were insufficient. The sources that were looked at as secondary sources were those that interpreted the information collected. They were evaluated and critiqued by the primary sources. Such auxiliaries were articles found in scholarly journals. Government reports, especially in Botswana and South Africa where traditional medicine was in the mainstream, were considered. ARIPO and SADC were the first ports of call for all the collated data on IKS in the region; and possibly WIPO at an international norm-setting level. Other sources of information were those international non-governmental organizations that stood for the collective rights of indigenous groups. For instance, the ICCA consortium, which sought to ensure that the indigenous people were not suffocated by the forces of development and civilization that were evidently destructive of nature, culture and communities throughout the world, has some informative pieces of information that are highly informative. The WHO Assembly Reports on Traditional Medicine, TRIPS Agreement, Botswana IKS Policy, and other non-governmental organizations had some useful guidelines that informed and shaped good policy.

3.8 DATA ANALYSIS

Data on this study were expected to be voluminous. A befitting method to deal with these data for this study was Constant Comparative method. Maykut and Morehouse (ibid) find that:

'words are the way that most people come to understand their situations; we create our world with words; we explain ourselves with words; we defend and hide ourselves with words'. They posit that the task of the researcher is to find patterns within those words and to present those patterns for others to inspect while at the same time staying as close to the construction of the world as the participants originally experienced it.

With Constant Comparative, the researcher had the latitude to continuously categorise data into manageable and discernible blocks. For instance, it emerged from the data the average age of practice, the dominant gender in practice and so forth. These blocks were evaluated as either obtaining from the participants' language and custom as well as being significant to the main focus of the project. The researcher then reconstructed how the subjects related their experiences while delving into theoretical insights of the social processes at play in the study site. To that end, Taylor and Bogdan (1984) summarise that '...in the constant comparative method the researcher simultaneously codes and analyses data in order to develop concepts; by continually comparing specific incidents in the data, the researcher refines these concepts, identifies their properties, explores their relationships to one another, and integrates them into a coherent explanatory model'.

On certain types of data, that bears the objective, systematic and qualitative description of the manifest in the communications between the researcher and the respondent, the method called Content Analysis was be used. It sufficiently deals with the interpretation of the hidden content of texts which are the statements and descriptions reported during interviews. The interview texts, observation notes and conversations constituted the units of analysis for the study. During content analysis, the transcribed verbatim interview reports were read several times to check for correctness and to capture the overall picture in the texts.

The analysis process started with the identification of meaning units. Each meaning unit was abridged and coded; therefore meanings were extracted and used in a descriptive way. The codes were then grouped and compared to show how they relate to each other based on their similarities and differences. The product was now a matrix built for each theme, which was a process comprising of putting similar statements, repetitions, typologies or categories, metaphors and analogies under each theme together.

3.9 ETHICAL CONSIDERATIONS

This loosely refers to norms of conduct that distinguish and recommend right from wrong in the case of research. As a fundamental tenet of research, the integrity and wellbeing of those assisting in research should be respected. Although this work did not involve human subjects in the strictest sense, there were ample community consultations in line with prior informed consent (PIC) by the community in line with the contextual relevance of ethics. This helped to safeguard the researched from any kind of social and psychological harm, as well as hurting the very core wellbeing of the community that this research sets out to protect. What was more beneficial was that the researcher spoke the same language with the community and further conformed to certain unwritten nuances including proper decorum and dress code. This further gave the authorities the confidence that indeed the researcher was well-suited to conduct the research with them, thus facilitating to get consent and buy-in.

These considerations evolved with moral development. It was important not to mistake them for common sense because people are diverse, and what is acceptable in one part of Botswana may not necessarily be acceptable in the other parts. For the purpose of this study, key ethical considerations to observe were that:

- Academic research ethics requirements; IKS ethics and protocol requirements; and university requirements as spelt out in the handbook, will be fully adhered to.
- Prior informed consent, which was emphasised elsewhere in this research as a necessity and an emerging international social research requirement, was sought through traditional leadership at all sites.
- There was emphasis on the confidentiality of respondents; and no harm whatsoever arose from anyone participating in the research. Notably, no samples were collected from the participants.
- Participants were not coerced to take part in the study, they were to do it of their own volition; and they would be notified as such.
- Quality, integrity, impartiality and independence of the research were emphasised.
- The findings of the study were reported in detail in a balanced way, so that the seemingly negative and positive information emerging out of the findings of the study was reported without pulling punches.

The foregoing is in perfect resonance with an age-old philosophy. Immanuel Kant, in Guthrie (2004), has cautioned in his work titled Categorical Imperative against treating oneself or another human being always as an end and never merely or only as a means. His thinking requires that a human research subject, in this case the Barolong tribe of Botswana be expected to obtain some direct benefit from the investigation, or, if not, at least to waive such benefit on the basis of a free and informed consent. While this notion is in agreement with the grain of this research as

explained elsewhere above, Kant simplified it and termed it the 'principle of respect for persons.' The following chapters would interrogate in detail the research questions of this study.

3.10 RESEARCH VALIDATION AND TRUSTWORTHINESS

As a component of enhancing the credibility of the study, specific pre-testing of the instruments (questionnaire) was initiated via peer reviews with two work colleagues; themselves seasoned researchers in the Centre for Scientific Research, Indigenous Knowledge and Innovation (CesrIKi), and then the adjunct supervisor who is a professor of pharmacognosy. CesrIKi is a department of the University of Botswana which is an interdisciplinary and science focused research centre embracing the basic and applied sciences of IK. The semi-structured interview guide and focus group interview guide were also subjected to the same test. The importance of this exercise derives from its ability to weed out questions that are ambiguous, repetitive or bias-laden to the interviewees. This process of trying out the instrument unearthed errors that were detrimental to the part of, or the whole exercise. The next pilot sample was drawn from a couple of point persons in the research sites who would not be part of the study, yet knowledgeable to, and perturbed by the subject matter. As the subjects filled out the questionnaire while (thinking out loud), instructive cues such as the time taken to complete the process, comments as to ambiguity will surface. The researcher took notes of what the subjects would have problems with, and then implemented the improvements into the instrument. In principle, the pilot participants did not take part in the main exercise, as they were privy to it already.

Furthermore, the validation and trustworthiness of qualitative enquiry such as this is always a necessity that underscores the dependability and accuracy of final results. Conversely

validation and trustworthiness are always an indictment on the data collection processes. Elo, et al (2016) argues in concurrence that '...it is often difficult to evaluate the trustworthiness of qualitative content analysis studies because of defective data collection method description and/or analysis description.' It is thus highly encouraged to subject all the process and phases of a qualitative investigation to intense scrutiny so as to avoid a last minute upset. Piloting of the research instruments lends credence to the study as a way to crosscheck if the results are valid and trustworthy.

Central to qualitative research is that the researcher is an instrument of data collection. Naturally, the researcher will bring baggage to the study, which has effects on the site, and this poses a threat to validity. Maykut and Morehouse (2003) call for 'increasing trustworthiness of the research' so that the findings of the study can be credible. In striving for the 'study's credibility, dependability and conformability,' Elo (2014) emphasizes that researchers must ensure that those participating in research are identified and described accurately, including correct information on the sample size. The researcher can [further] minimize threats to validity by taking several measures in the process of data collection which act as validity checks (Chilisa & Preece, 2005). Triangulation is one such measure, in this particular case it was used as a validation strategy to cross check emerging themes. The use of a multiple methods of data collection, including observations, one-on-one semi-structured interviews, document analysis, and focus group discussions was an attempt to mitigate researcher bias and improve the validity of data collection process and the data collected during that process. The researcher employed an 'audit trail' so as to improve goodness of conclusions as suggested by Miles, Huberman, & Saldaña (2013). The researcher's background was part of the process of ensuring plausibility. Reflexivity on the part of the researcher enhanced trustworthiness on the findings of the study.

The researcher prolonged the data collection period in the field persistently collecting data. This involved observations on knowledge holders; picking up conversations with elders, listening to the radio for programs that involve culture and traditional knowledge; attending cultural event and visiting museums. This process enabled the researcher to gain in-depth understanding over the generally long time associated with learning indigenous knowledge systems in general. Creswell (2003) on prolonged time in the field writes that it helps the researcher to '...convey detail about the site and the people that lends credibility to the narrative account'.

The findings of the study were reported in detail in a balanced way, which is to report negative and positive information emerging out of the findings of the study. After preliminary findings, a 'member check' exercise was carried out that allowed the participants to go through transcribed transcripts and preliminary themes. This strategy built into research findings credibility in the interpretation as well as key conclusions of the study. This detail could not be taken lightly considering that the potential consumers of the findings of this study range from the line ministries at a national level to international audience. The findings are meant to generate the raw material for policy and regulatory systems that Botswana should pursue to make IP work for the citizens.

3.11 DATA COLLECTION ACCORDING TO RESEARCH OBJECTIVES

In keeping with the bid to have each objective stand alone, data collection is divided according to the respective chapter objectives. This means each objective has its own design and methodology. The activities of the data collection are, therefore, undertaken according to Objectives 1, 2, 3 and 4 respectively as effected in the subsequent Chapters 4, 5, 6 and 7. Objective 5 is conspicuously absent here because it is dealt with quite differently. It is the result

of a cumulative build-up of information derived from the data of each of the four preceding chapters. This process will be clearly demonstrated in the upcoming chapters 4-7.

Another rationale for this is to maintain quality control that high quality qualitative research is maintained at all times. This is usually determined by whether the research is dependable with replicable findings; and whether the findings can be applied to other settings and groups, or transferable . These two factors are very crucial because if the study has to come up with a conceptual model, then the model should be able to assist other groups equally affected by a similar problem, whether in Botswana or elsewhere.

Further qualities that are expected from applying this quality rigour are confirmability. This, according to how it is discussed by Cope (2014) means that the researcher can demonstrate that the views represent the studied group. Credibility and authenticity are also flagship traits that give strength to a research enquiry. The questions that follow this are whether the data is true and whether it reflects the views of the studied groups. This means data has to be interpreted accordingly. This underlines the importance of the voices of the community and fully supports the tenet that the researched groups should ultimately be partners in research as opposed to mere objects of research

Lastly, the authenticity of a research study manifests in its ability to convey a message. Can the readers understand the feelings, emotions and the communication of the research participants? When the Barolong plead that they implore government to protect their heritage, does the message come out clearly to the intended audience? It is the foregoing qualities that hold the trump card to this research bringing its impact to bear.

3.12 CHAPTER CONCLUSION

This chapter, constituting the research methodology of the entire empirical research, marked the transition from theory to practice, constituting the activities and strategies that would be employed to research the enquiry. The research design and approach were discussed, and indeed the chapter achieved its intended purpose of investigating the research question according to the data collection tools and strategies for the population sample. The chapter explored and employed unique methods of investigation befitting the unique epistemology that IKS is.

The research design in totality was a considered choice in consonance with the evolution of IKS research as a systematic enquiry that finally engages the people as partners in research. The population target also took into consideration that in most case indigenous people spot distinct characteristics that differentiate them from other segments of people that make up a national population. The Barolong have always had such a distinct character that identifies them as a single people, hence the study site. Despite inter-marriages and other life exigencies they have managed to maintain their heritage and links to their natural places of origin.

The data collection strategies were also well discussed together with the all-important ethical considerations, research validity and research. In conclusion the methods of investigation and methodologies were indeed adequate and in concert with the epistemological underpinnings of the study. Despite intellectual property being traditionally a legal discipline, the study was designed not to presuppose legal research, let alone a social research investigation.

The following chapter would then present the actual findings as revealed by the application of the methodology. The findings are presented according to the research questions as dealt with according the just discussed methods.

CHAPTER 4: EVALUATION OF THE INTERNATIONAL INSTRUMENTS AND STANDARDS APPLICABLE TO THE PROTECTION OF THE INTELLECTUAL PROPERTY RIGHTS (IPR) OF BAROLONG TRADITIONAL MEDICINE PRACTITIONERS

4.1 INTRODUCTION

The previous chapter discussed the methodology of the research. The methodology was laid down with regards to the nature of the research, taking into consideration the population under study, the tools and the strategies to be employed, among others. As a refresher, the purpose of this study is to analyse protection system of intellectual property rights of Barolong traditional medicine practitioners in Botswana. It further examines the compatibility of the Barolong protection system with international standards. The norm is that in exercising their right to self-determination Barolong should be in consistence and in conformity to international law.

In this particular chapter, the results of the data from empirical research of this study are analysed and aggregated. In order to achieve the objective of this chapter as stated above, the results are divided according to the objectives and research questions of the study. In other words the presentation of findings will be done according to the research questions that were posed at the beginning of the work, by way of answering those questions. There are four research questions in the study. The first objective is addressed by an exhaustive document analysis while the other three are dealt with by the questionnaire research instruments, from which a descriptive analysis of the results will be extracted. Each research question constitutes a standalone chapter which is semi-independent from the other chapters and the rest of the work. The rationale is that each chapter could be published on its own notwithstanding that it is still part of the broader

study. But needless to say the chapters still constitute cohesive and integrative components of a continuous piece of work.

4.2 THEORETICAL UNDERPINNINGS OF THE CHAPTER TOPIC

Since the past couple of revolutions the evaluation of policies and systems became an increasingly key issue, not only as an essential part of the management process but also because tremendous amounts of capital are invested. Thus this topic is motivated by the eagerness of this research to determine whether the investment that came with foreign-based policies has been worthwhile. Angell and Smithson (1991, p.189) posit that '...evaluation provides the crucial feedback function, helping to prevent the repetition of the same costly errors; and so the organization learns'.

This, over and above the rationale to be guided by what works effectively for one, partly presents a strong argument for the evaluation of the international instruments that we have adopted as a yardstick to carry out our activities, against the possible merits of other alternative proposals as the study shall determine. Results-based indicators of this evaluation strive for more precise measures of the performance and impact of these international standards, with regards to the realities, benefits and future prospects of Barolong traditional medicine practitioners.

According to Theories of Change (Smith, 2005) it is in order that to improve a system, it is best to prove that it does not effectively serve its purpose. This is done through efforts that encourage critical thinking to then reflect about the route of change, and the involved activities through to intended results, with a focus to achieve the outcomes of improvement.

This section is mainly to analyse the documents and legislative pieces that have a bearing on the traditional medicine protection system of the Barolong within the context of international guidelines and standards. This research question is hinged on the first research objective: To evaluate the efficacy and shortcomings of relevant international organizations' instruments (e.g. WIPO, WTO, WHO) and standards in protecting African traditional medicinal plants. Most of these organizations are inter-governmental, having presence in each country; hence their regional or local offices will act at the points of information. Document analysis is valuable for collecting qualitative data. Due to the wide variation in documents, some minor modifications may be needed when applying the developed methodology to other types of document sources. The result analysis of this chapter links with the next chapter by way of a comparative approach between the modern systems and the indigenous ways of protection.

The format used here is to analyse the selected documents according to the objectives of the document; its prominent voices, its silences and its failures as juxtaposed to its objectives and the interests of indigenous people. Qualitative research software such as NVivo 8 shall be helpful in analysing document content and manipulating data, however an element of researcher interpretation still exists. Bowen (2009, p27) highlights and promotes the function of documents as a data source in qualitative research, defining it as 'a systematic procedure for reviewing or evaluating documents—both printed and electronic (computer-based and Internet-transmitted) material.'

The following policy documents and instruments are some of those that would be analysed for applicability, relevance and consistency in dealing with the problem under investigation. These are not exhaustive, they were selected based on the fact that they are most relevant to this study.

As explained earlier, documents such as the Harare Protocol will not form part of the study in a bid to limit the study to its IKS confines.

- WIPO Texts on TK
- WHO Traditional Medicine Strategies and World Health Assembly (WHA) Resolution on Traditional Medicine (WHA62.13)
- United Nations Declaration on the Rights of Indigenous Peoples
- CBD and Nagoya Protocol
- Swakopmund Protocol

4.3 METHODS TO ACHIEVE THE OBJECTIVES OF THIS CHAPTER

The method employed here is the Document Analysis as discussed above. Document Analysis, also known as Documentary Analysis is a social research data collection method and research tool mainly applied with qualitative research. It is the method of choice here because the first research questions deal with international documents that relate to the IP rights of Barolong as an indigenous group of their land. Moreover, it considers the various procedures involved in analysing and interpreting data generated from the examination of policy documents and records relevant to a particular study. In other words, documentary work involves reading lots of written material. The focus of the analysis should be a critical examination as opposed to a mere description of the documents analysed. The analysis should address questions about the purpose of the document; how it is contributing, or how it will contribute to the topic under discussion. In this regard, the analysis also acts to find gaps in the documents as they may also amount to gaps in the literature in general. Quite unlike literature review though, document analysis is a post-

structural deconstruction of a given policy or instrument under review. Literature review on the other hand is just a systematic review of studies with the bid to identify knowledge gaps within them. Generally, the document analysis method is more of a desktop research as most of the information is available from the internet. Even though the documents exist in hard copy, it is convenient to use digital copies for this particular investigation. The following section looks at the various policies or instruments under review, starting with WIPO texts on Traditional Knowledge.

4.4 THE FINDINGS OF THE RESEARCH

4.4.1 WIPO Texts on TK Instrument

The WIPO texts dealing with TK are spearheaded by the WIPO Intern-governmental Committee. Established in 2000, the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) is a forum where member states of the organization discuss the intellectual property issues that arise in the context of access to genetic resources and benefit-sharing as well as the protection of traditional knowledge which includes traditional medicine – exactly what constitutes the topic under investigation for the Barolong tribe of Botswana. The IGC holds formal negotiations with the objective of reaching an agreement on one or more international legal instruments that would ensure the effective protection of traditional medicine among other IKS. Such an instrument or instruments could range from a recommendation to WIPO members to adopt a formal treaty that would bind countries choosing to ratify it. The origins and history of the IGC were discussed earlier. According to WIPO, this initiative was conceived as part of a larger and structured endeavour by WIPO to move towards a modern, responsive IP system that could recognise non-Western forms

of creativity and innovation, be comprehensive in terms of beneficiaries, and be fully consistent with developmental and environmental goals. The composition of the forum is somewhat diverse, including relevant intergovernmental organizations such as the secretariats of the Convention on Biological Diversity (to be discussed later), the World Trade Organization, the United Nations Edcuational, Scientific and Cultural Organization (UNESCO) and the United Nations Food and Agriculture Organization and numerous accredited non-governmental organizations. Indigenous and local communities in particular would then be able to participate, express their views and have their voices heard in the IGC decision-making process, in accordance with the 2007 UN Declaration on the Rights of Indigenous Peoples (to be discussed later), rightfully so because the outcome of the IGC proceedings would affect their rights and livelihoods. As such, representatives for the various indigenous groups are welcome to attend the proceedings of IGC at WIPO.

Work within the intellectual property global village on the protection of IKS dates long back and is still continuing. This has emanated from traditional medicine being seen as worthy of IP protection, especially since the deregulation of the world trading systems and globalization were making the medicine as a raw material increasingly vulnerable to exploitation and misappropriation by those outside the locales of its origin. In particular, the rise of biotechnology highlighted the potential economic value of traditional medicine. Governments and consumers are now more interested not just in herbal medicines, but they are starting to regard it as a complimentary form of medicine. As a result, knowledge holding communities appealed to WIPO to help prevent rampant misappropriation and promote fair benefit sharing between the rightful owners of these biodiversity-rich areas and those with the modern technologies to access and use them.

In April 2001, a fast-track accreditation procedure was put in place to register almost 300 ad hoc accredited observers, many of whom were representing indigenous and local communities. The IGC decided in 2004 that its sessions should be preceded by panel presentations chaired by and composed of representatives of indigenous and local communities, whose participation is funded by WIPO. Among other practical measures to enhance participation, which include briefings, consultative processes and logistical support, one of the most important was the creation in 2005 of the WIPO Voluntary Fund for accredited indigenous and local communities, designed to finance their participation. A large number of representatives of various indigenous and local communities have since been funded through this mechanism. However, the participation of indigenous peoples at the forum has become compromised as the voluntary fund allowing the organisation to invite indigenous people's representatives is running dry with no immediate prospects of funding to keep the work going. As it is, this will have adverse implications for the very people whom the IGC is trying to help, if the people fail to attend the proceedings that discuss their issues. Currently, the debate is still on-going.

4.4.1.1 Policy Objectives

As lifted directly from the draft IGC article, the objectives of the IGC are as follows:

1. To provide Indigenous [Peoples] and [local communities] [and nations] / [beneficiaries] with the [legislative, policy [and]/[or] administrative]/[and practical/appropriate] means, [including effective and accessible enforcement measures/sanctions, remedies and exercise of rights], to: (a) [prevent] the [misappropriation and misuse/offensive and derogatory use] of their traditional cultural expressions [and adaptations thereof]; (b) [control ways in which their traditional cultural expressions [and adaptations thereof] are used beyond the traditional and customary

context [and promote the equitable sharing of benefits arising from their use], as necessary;] (c) [promote [the equitable compensation]/[sharing of benefits] arising from their use with prior informed consent or approval and involvement]/[fair and equitable compensation], as necessary; and] (d) encourage [and protect] [tradition-based] creation and [innovation].

2. [To [prevent/preclude] the [grant], exercise and [enforcement] of intellectual property rights [acquired by unauthorized parties/inappropriately acquired] over traditional cultural expressions [and their adaptations]].

3. [To promote/facilitate intellectual and artistic freedom, research [or other fair] practices and cultural exchange [based on mutually agreed terms which are fair and equitable [and subject to the prior informed consent or approval and involvement of] Indigenous [Peoples], [local communities] and [nations/beneficiaries.]]

4. To [secure/recognize] rights [already acquired by third parties] and [secure/provide for] legal certainty [and a rich and accessible public domain].]

4.4.1.2 Policy Silence

The founding mandate of the IGC in 2000 left open what tangible outcomes might arise from its work opting to regard the forum as a 'forum for discussion.' Subsequently, and formalized in 2009, the IGC worked towards the adoption of an international legal instrument or instruments. In the meantime, however, it can claim some important achievements. According to WIPO, the following could be listed as the achievements of the IGC to date, which when examined closely, are not really achievements; a reaction to further silences of the policy:

- Inclusion and consultation: the IGC has established new benchmarks for inclusion and consultation;
- Clarity and understanding: age-old IP terms, such as 'protection,' 'originality,' 'novelty' and the 'public domain' are being re-thought;
- Content and context: the IGC is considering innovative and sui generis (special, specific) approaches. Through coordinating closely with other relevant forums, its work has re-energized WIPO's engagement with the rest of the United Nations system and other intergovernmental bodies.
- Surveys of national experiences

A casual examination of the above 'achievements' reveals that they are just previous silences of policy which are being looked at critically with the plan to action them. They are just a stop-gap measure to deal with what the policy failed to articulate in the first place.

4.4.1.3 Prominent Voices

In what could also be referred to as policy contradictions, the proceedings of the IGC do not reflect a fair representative composition. The most prominent voice still remains the voice of the very parties that the policy is trying to exclude and regulate – the developed world. Countries such as the United States participate under the veil of indigenous peoples and tribes of the country, which is a bit disingenuous. The document submitted at the last meeting of March 2017 by the delegation from the US amounted to an insult to the genuinely aggrieved indigenous peoples, most of whom are from Africa and the developing world. In what looked like the bid to debase the spirit of the proceedings, the US submitted for protection consideration a discussion paper enunciating articles such as Santa Claus, bagpipes, pizza, popcorn, barbecue and others.

The fact of the matter is that the voices of the indigenous people are still drowning from the overriding participations by members from the developed world. This is despite text from the preamble of the draft IGC instrument which says that the IGC work is 'guided by the aspirations [and expectations] expressed directly by Indigenous [Peoples], [local communities] [and nations] / beneficiaries…' It is against this background that the representatives of the American tribes together with members from least developed and developing countries spoke against the IGC coming up with 'an instrument that lumps together a cultural heritage of American Indian Nations with the 'hip hop' culture that is emerging in the US as popular culture.' The forum that was conceived specifically to address the plight of previously short-changed local and indigenous communities was now being commandeered once again by the developed world. This marks a disturbing contradiction which brings into sharp contrast the overall effectiveness, or the lack thereof of the final instrument. Without a doubt the prominent voices in the solution-seeking exercise are the same voices that have always instigated, stood aside and watched while the resources were shipped out without due care to natural resource depletion potential and benefit-sharing considerations.

4.4.1.4 Policy Failures

In the words of one of the participants of the IGC in March 2017:

> *'In over 16 years and 30 sessions of the IGC there has never been a formal consultation with the indigenous nations of the US, in the US' - Professor Rebecca Tsosie (IPWatch, 02/03/2017).*

An almost similar report has been rendered almost three years prior, still at the IGC and it said:

'The last World Intellectual Property Organization meeting before the annual general assembly in September ended today, meeting the same fate as many others this year (and since 2001). The committee addressing the protection of genetic resources and traditional knowledge could not agree on recommendations to be transmitted to the General Assembly... ' (*IPWatch*, 9/7/2014)

4.4.2 WHO TRADITIONAL MEDICINE STRATEGY 2014-2023

The Sixty-second World Health Assembly (WHA62.13), following the WHO Congress on Traditional Medicine held in November 2008, in Beijing, China where it adopted the Beijing Declaration on Traditional Medicine, came as an appraisal of the first Traditional Medicine Strategy 2002-2005. It urged member states to allow an enabling environment, legislative and otherwise, to adopt traditional medicine. The assembly also requested the Director-General of WHO to strengthen member cooperation and offer policy guidance towards the implementation of the global traditional medicine strategy.

The WHO reports that over 80% of the world population relies on traditional medicine either as a primary first line of defence, or as a complimentary intervention (WHO 2002, 2008; Kasilo *et al.* 2010). In many other cases, traditional medicine is resorted to as a referral intervention. There is also a general resurgence in the use of simple herbal concoctions to boost health. The renaissance is global and emerging. In order to meet this new demand, and in response to Resolution WHA62.13 on TM, WHO recently updated the objectives of the Traditional Medicine Programme. The new strategy 2014-2023 is a sequel and expansion to the first strategy (2002-2005). The new WHO strategy has two key goals namely to support Member States in harnessing the potential contribution of traditional medicine to health, wellness and people-centred health care and to promote the safe and effective use of traditional medicine through the

regulation of products, practices and practitioners. These goals will be reached by implementing three strategic objectives: building the knowledge base and formulating national policies; strengthening safety, quality and effectiveness through regulation; and, lastly promoting universal health coverage by integrating traditional medicinal services and self-health care into national health systems. The organization reports that since the launch of the first strategy (2002–2005), there has been significant and steady progress in implementing, regulating and managing traditional medicines in most regions of the world. This is influenced by the reason that in some countries, traditional medicine is the primary source of healthcare; it is used due to cultural and historical influences; and it is used as complementary therapy. (WHO traditional medicine strategy: 2014-2023 Report). The organization further reports that the market is substantial for traditional medicine.

4.4.2.1 Policy Objectives

With regards to the Traditional Medicine Strategy of 2014-2023 as a policy, its main aim is to integrate traditional medicine within national health care systems where feasible, by developing and implementing national traditional policies and programmes. For safety, efficacy and quality the policy seeks to promote the safety, efficacy and quality of TM by expanding the knowledge base, and providing guidance on regulatory and quality assurance standards. It also deals with the issue of access by seeking to increase the availability and affordability of traditional medicine, with an emphasis on access for poor populations. Lastly with regards to rational use the instrument seeks to promote therapeutically sound use of appropriate traditional medicine by practitioners and consumers. All in all the new strategy is an incremental step from the first strategy and other subsequent strategies that came in between.

4.4.2.2 Prominent Voices

As a strategy that tries to lump together issues of the whole world, this new traditional medicine strategy is bound to overlook certain intricacies and nuances that are localised to the most far flung districts or some LDCs and low income countries. This is because traditional medicines practice is not a regulated enterprise in countries such as Botswana. The traditional healers within the Barolong for instance are still largely unaware of any government regulation, except to be guided by the traditional ethics of the profession. Therefore the practice as regarded by the strategy is thus not universal to the extent that it can be regarded in the same way it is done in a country like Mexico, for instance. Elsewhere in its text, the report rightfully observes that: 'Many countries have their own traditional or indigenous forms of healing which are firmly rooted in their culture and history' (ibid p. 25). In the whole strategy, there is nowhere in the text where traditional medicine from Africa is mentioned in specific terms. WHO reports that in some universities in West Africa, Democratic Republic of Congo, South Africa and Tanzania, curricula for traditional pharmacy and medical students have been incorporated. WHO supports such countries in moving towards quality training by publishing for them a series of training guidelines and benchmarks. What the WHO strategy text states and refers to repeatedly is herbal medicine and other traditional practices, yet mainly from the developed and developing world. Ayurveda, Yoga, Naturopathy, Unani Medicine, Siddha and Homeopathy are featured vividly even though they are only intellectual property of powerful countries such as India. Others from China such as acupuncture and massaging enjoy prominence at the expense of African IKS such as *thobega* (bone-setting), and other well-known products and practices. The likes of *hoodia, kgengwe* (citron melon), *sengaparile* (devil's claw), and others of local relevance are somewhat side-lined or overlooked. It is practices such as anthroposophic medicine, chiropractic,

homeopathy, naturopathy and osteopathy that are reported to be 'in extensive use.' Paradoxically, a casual question to someone in Botswana about practices or medicine in extensive use might elicit the answer *monepenepe* (Cassia abbrivata) the all-powerful indigenous medicine. This would be in complete divergence from the spirit of the strategy, which also buttresses that the strategy was not inclusive enough.

This latest strategy reviews the potential contribution traditional medicine can make to general health and wellbeing, but it does not really pay particular attention to health service delivery and public health equity in the developing world. While it establishes priority actions for the period towards 2023 it has indeed left communities like Barolong of Botswana way behind. These communities are still grappling with conforming to the first strategy of 2002-2005, that is if they have ever known about it. This strategy is an effective and proactive response to the World Health Assembly Resolution on traditional medicine which encourages Member States to consider traditional medicine as an important part of the health system. But the spirit of the text clearly talks to countries such as China, India, and Brazil while clearly doing little for the real global South. The WHO reported progress is hard to discern in southern Africa.

4.4.2.3 Policy Silence

While the policy does refer to intellectual property as a consideration, it does not place much premium on it. It only states that traditional medicine should be accorded intellectual property protection without elaborating, especially considering that intellectual property is still a novel and esoteric area. This silence strikes at the very nerve of the current research as it is trying to address the very problem of effective IP protection or the lack thereof. It is this selective justice that gives the impression that the least developed countries and Africa in general are not treated

as equal partners. This is against the backdrop of Africa's biodiversity being fuel to a lot of medications of the world, yet missing out on potential protective issues that would promote the continent as the source. The geographical indication, indications of source and appellations of origin are some of the highly relevant protective measures that would advance the interest of Botswana as the supplier of quality exports of medicinal raw products. Even though it is implicit that Botswana is a member of the World Health Organization, it would have been essentially encouraging to see that some of her medications that make it to the world pharmacies be mentioned at the hallowed books of the organization. The policy is therefore eerily silent on these medicines whose source of origin is totally disregarded while the beneficiaries at the end of the value chain reap staggering benefits. The silence emboldens the Big Pharma and other foreign multinational entities to continue mining and exporting the African medicinal flora unsustainably and at no benefit to the original owners of the knowledge. Such actions pay little attention to the preservation and conservation of the environment in avoidance of deforestation and desertification that could be occasioned by indiscriminate harvesting. For instance, the devil's claw (*sengaparile*) of Botswana is exported and commercialised by a German phyto-pharmaceutical company which sees no obligation to pay any royalties to the Government and/or people of Botswana despite the fact that they continue buying the harvested plant from the locals for a paltry fee.

Furthermore the policy remains silent on how it would effectively encourage respective nations to adopt the new strategy. It has left that to the members to do on their own. This is notwithstanding the fact that different member states have different domestic legislations, approaches, national capacities and delivery models related to primary health care. The first step therefore would have been for WHO to ensure that member governments commit to enacting

laws regarding the use and practice of traditional medicines and herbs. Due to these variances in domestic legislations, a minimum standard that resembles that of WTO-TRIPS would be quite handy. Such an enabling environment conducive to various stakeholders to shape the way forward would facilitate an Act of parliament and the establishment of a regulatory institution whose task would be to document traditional medicines and herbs; register and license traditional practitioners, as well as monitor the exportation of these products. WHO could also, in consultation with other stakeholders, assist Botswana and other low income countries to commit to spinning out industry partnerships or house a government parastatal that would assist to process, package and distribute traditional medicines for domestic and international markets. This would be done within the Access and Benefit Sharing (ABS) parameters of the Convention on Biological Diversity (CBD). The hope is that these would bring with them sound business practices, so that these communities enjoy maximum return-on-investment. In the grand scheme of things, this would contribute to the national GDP of Botswana.

4.4.2.4 Policy Failures

The policy has not dealt with the thorny issue that is being addressed by this very research: it does not articulate in clear terms how IP protection will be modified to deal with the rampant biopiracy and misappropriation of Barolong traditional medicine. While it states in one sentence that IP should be accorded to the indigenous peoples, it does not say how, the very question that would act as the novel and inventive step in changing the status quo. 'It is important to balance the need to protect the intellectual property rights of indigenous peoples and local communities and their health care heritage while ensuring access to T&CM and fostering research, development and innovation', the report simply says.

Another failure is the lack of problematizing sustainable harvesting methods. The medicinal fauna is finite and fast running out due to overharvesting for foreign commerce. In the case of sengaparile (*Harpagophytum)*, Cole and Bustan (2008) report that:

> 'In 2002, the peak year of export, 1,018 tonnes of dried tubers were exported, mainly from Namibia, representing the harvest of 50 million plants. Under such rates of wild-harvest, devil's claw survival is significantly endangered. In 2001, devil's claw sales in Germany were estimated at € 30 M while the Namibian income from devil's claw export that year was only € 2.7 M. With the considerable formal and informal network of middlemen, the harvesters' income remains extremely dull' (Cole & Bustan, 2008, p.1).

The plant occurs mainly in the arid conditions of the Kalahari Desert straddling Botswana and Namibia. It is also found to a lesser degree in South Africa and Zimbabwe. It constitutes indigenous knowledge of the area communities – their intellectual property. This is so because they had been using it way before it was discovered by the commercial-minded foreigners. It is reported to effectively treat degenerative rheumatoid arthritis, osteoarthritis, tendonitis, kidney inflammation and heart diseases. It is also reported to possess analgesic and anti-inflammatory properties of compounds found in its tubers. The above statistics highlight the problem of little intellectual property protection, reckless and unsustainable harvesting, illicit trade, little and skewed benefit-sharing as well as exploitation that may occasion extinction. The trade is more illicit in the sense that there are more middlemen in the equation, who gather the harvests from Botswana and sell them in Namibia. As they are exported to Europe, they are all assumed to be from Namibia.

On that note, *sengaparile* has since been slated to be protected as an endangered species on Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) at CITES COP11 in April, 2000 in Nairobi, Kenya. The move has not been effected due to fierce opposition from the local communities. It is still in the pipeline. The anticipated problem is that listing *sengaparile* would also exclude these communities from eking out a livelihood from selling it.

4.4.3 SWAKOPMUND PROTOCOL

The Swakopmund Protocol on the protection of traditional knowledge and expressions of folklore is one of the five treaties that have been midwifed by the African Regional Intellectual Property Organization (ARIPO). It was adopted on August 9, 2010 at Swakopmund in the Republic of Namibia; and came into force about 5 years later on May 11, 2015 with Botswana as one of the first batch of countries to ratify it.

By virtue of being within the framework of ARIPO, the Swakopmund Protocol is by far the most regionally relevant instrument in so far as the topical issue of Barolong traditional medicine protection is concerned. Countries can use and refine the protocol as a minimum standard upon which to develop legislation to protect indigenous knowledge and indigenous knowledge systems. This has set the ball rolling for Botswana, which is in the process of coming up with its Indigenous Knowledge Systems Policy. The protocol grants exclusive rights to communities to authorise the exploitation of their traditional knowledge and to prevent exploitation without their prior informed consent.

4.4.3.1 Policy Objectives

According to Section 1 of its text, the purpose of the Protocol is stated as follows:

> '(a) to protect traditional knowledge holders against any infringement of their rights as recognized by this Protocol; and (b) to protect expressions of folklore against misappropriation, misuse and unlawful exploitation beyond their traditional context' (Swakopmund Protocol, s.1).

The Protocol further avers that it shall not limit the very diverse holistic conceptions of indigenous knowledge systems or cultural and artistic expressions in the traditional context. It further states that it should be interpreted and enforced 'taking into account the dynamic and evolving nature of traditional knowledge and the characteristic of traditional knowledge systems as frameworks of ongoing innovation.' (ibid, s. 1.2)

Dissected further, the Swakopmund Protocol will have the following effect:

a. It will enable the knowledge holders and local communities in the Member States to register trans-boundary traditional knowledge and expressions of folklore with ARIPO;
b. The knowledge holders and local communities Member States will also be able to deposit for record purposes their knowledge and expressions of folklore in their territories. This can be done through the national IP offices of the Member States;
c. The knowledge holders and local communities Member States will be able to license their traditional knowledge and expressions of folklore lodged at ARIPO towards obtaining equitable benefits arising from the commercial use of such knowledge and folklore as well as fees from such licenses;

d. The knowledge holders and local communities in the Member States shall be accorded the means to use the alternative dispute settlement procedures at ARIPO to settle disputes arising from traditional knowledge and expressions of folklore shared by different communities across national boundaries as the need arise;
e. It will enable ARIPO to establish databases on codified and non-codified traditional knowledge and expressions of folklore. The information in the databases will only be used upon prior informed consent from the knowledge holders. The consultation of the databases will also generate income for the member states.

4.4.3.2 Prominent Voices

As a regional intervention meant for the ARIPO region, the Protocol does not have any other prominent voices except for the region. The Protocol is specific and to the point. It addresses only traditional knowledge and expressions of folklore. The prominent voices that the policy addresses are of mainly the knowledge holders. These are the people whom the instrument was designed for. It is also notable that the Protocol emphasizes that it recognises 'group or individual creativity' of those it seeks to protect. Of particular importance and prominence here is the group creativity, which goes in consistence with the nature of the communal knowledge that characterises traditional knowledge.

4.4.3.3 Policy Silences

The Protocol is conspicuous in its silence towards trans-boundary traditional knowledge and folklore that involves countries that share boundaries with, but are themselves not, member states of ARIPO. This phenomenon is underscored by the absence of South Africa from the membership of ARIPO, while the country falls squarely within the ARIPO region. South Africa

is actually a neighbour to six member states of the regional organization. These are: Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe. By being members of ARIPO, these countries are under obligation to accede to the Swakopmund Protocol's procedures. On the hand, South Africa is not under such obligation, which leaves in limbo the objective to register trans-boundary traditional knowledge and expressions of folklore with ARIPO for the said countries. The Protocol is silent on this operational anomaly.

The Swakopmund Protocol is also silent on traditional leadership systems and structures. An instrument that deals with indigenous knowledge systems and disregards the very gatekeepers responsible for managing the resources and systems is not yet comprehensive. In attempting to position the African ways of knowing by moving them from the peripheries of discourse to the centre, the process should not leave out major stakeholders such as the leadership of the very knowledge holder communities. In the words of one knowledge holder from the Lehurutshe in Northwest Province of South Africa: 'A Chief needs the doctor and the doctor also needs the chief in discharging their respective mandates.' Loosely translated this statement means according to Setswana culture, that the chief always needs his power and authority to be strengthened and his stature aggrandized. This has always been the preserve of traditional doctors or healers who also doubled up as personal physicians for the chief. Their interventions ward off troubles and neutralize enemies. Likewise, the doctor would not be able to practice without the blessing of the community leadership. For all their powers, traditional doctors need the blessing of the chief to operate. It is a symbiosis. It is on that score that the policy should have included the leadership, as they are the ones sitting at the apex of the traditional and customary hierarchy. Instead, the Swakopmund protocol elevates legal protection at the expense of traditional law and leadership:

> 'Emphasizing that legal protection must be tailored to the specific characteristics of traditional knowledge and expressions of folklore … their link to a community's cultural and social identity, integrity, beliefs, spirituality and values, and their constantly evolving character within the community concerned.' (ibid, p.5)

To that end, the customary custodians of this knowledge should be recognised and incorporated into the Protocol. They are always the first port of call and they possess the full history and evolution of their biological assets. They know the land and they control its flora and fauna. To them, the analogy of a taxi driver who has a mental map of his area of operation fits well. What's more? In the southern African setting, one cannot enquire about the knowledge of the bio-cultural heritage without going through the leadership. Such is the hierarchy that governs how everything traditional and customary has evolved up to this point. Is has been shown that any endeavour that omits them in their area of expertise is bound to fail, as they are the ones enforcing the traditional code of ethics.

4.4.3.4 Policy Failure

It would be too soon to authoritatively judge failures that might be occasioned by the Swakopmund Protocol - it is only into its second year in force. While it might have teething problems, that should be normal phenomenon, especially as member countries are depositing their instruments of accession or ratification in fits and starts. For now, the jury is still out regarding the uptake and domestication of the ARIPO Swakopmund Protocol on protection of traditional knowledge and expressions of folklore.

With regards to its structural integrity, the protocol states that it shall not be interpreted as limiting the diverse holistic nature of the knowledge. In what constitutes a glaring failure

Swakopmund Protocol does not recognise that the knowledge that the communities hold is linked to their biological resources. In the indigenous outlook, knowledge and biological resources are intertwined and cannot be divorced apart. According to WIPO, traditional knowledge always goes together with expressions of folklore as well as genetic resources (biological resources). For the reason that traditional knowledge and genetic resources are often used together, it is fitting to state that the Protocol fails to recognise the enormous contribution of communities to conserving and improving genetic resources, and their close dependence on these resources. Of note though, the instrument recognizes '...the contributions made by such communities to the conservation of the environment...' as well as the worrisome erosion of the knowledge itself.

Lastly the Protocol blends the functionalities of two other important instruments: the Convention on Biological Diversity (CBD) and the 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. CBD promotes and espouses 'fair and equitable sharing of the benefits arising out of the utilization of genetic resources'; while the Nagoya Protocol influence encourages that the protection accorded to the knowledge holders shall include the 'fair and equitable sharing of benefits arising from the commercial or industrial use of their knowledge, to be determined by mutual agreement between the parties.' Articles 15 (Access to Genetic Resources) and 8(j) (Traditional Knowledge) of CBD and its three objectives are thus sufficiently covered in the Swakopmund Protocol, a regional instrument that collectivizes the common concerns of its members.

It would also be remiss not to refer to the United Nations Declaration on the Rights of Indigenous Peoples which affirms the rights of all indigenous peoples in the world as well as

urging States to offer them the right to self-determination. The declaration has indeed set the tone for these near-forgotten groupings whose rights are trampled with every day from the examples that we see and hear of. Article 43 of the instrument emphasizes that the rights recognized in the declaration 'constitute the minimum standards for the survival, dignity and well-being of the indigenous peoples of the world'; as well as the 'right to maintain, control, protect and develop their cultural heritage, traditional knowledge.' In the same spirit with this research, the Declaration has generalized the IP issues of the indigenous peoples in Article 31 to say that:

> 'Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.' (ibid, Art. 31)

Still under the UN Declaration on the Rights of Indigenous People, there is the Permanent Forum on Indigenous Issues, with its specialized agencies that together promote respect for the full application of the provisions of the Declaration and follow up the effectiveness of the same. Despite their cultural differences, the UN appreciates that indigenous persons from around the world share common problems related to the protection of their rights as distinct peoples. It is on that exciting note that the international community, having been sensitized by all these initiatives, is now starting to recognize that special measures are required to protect the rights of these peoples so as to help them maintain their distinct cultures and way of life.

4.5 ANALYSIS AND CONCLUSIONS FROM RESEARCH FINDINGS

4.5.1 WIPO Texts on TK

This chapter has examined the current international instruments for protection of traditional medicinal knowledge. Their relevance to the local setting, as well as practical and effective use were put under the spotlight to analyse whether they achieve their stated objectives within the local national context of Barolong tribe in Botswana.

The investigation has found that the international leadership by WIPO, which specifically created the IGC to tackle the issue of protection of traditional knowledge in its entirety, is glaringly and admittedly wanting. After years and years of meetings, there is still no end in sight to the long wait. The following excerpt, adapted from the report on the fifty- seventh series of meetings of the WIPO assemblies in Geneva, Switzerland, held during the period of October 2 to 11, 2017, does not offer hope in the immediate future:

> In addition, member states agreed on a renewed two-year mandate for negotiations on intellectual property and traditional knowledge, folklore and genetic resources, as well as the work plan for the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore for the biennium.

This admission of a problem that is far from being solved makes a strong case for this particular research. The IGC has failed to come up with a solution, over and above the fact that it has misplaced prominent voices that do not really take the interests of Barolong into consideration.

The above excerpts, together with the situation obtaining from IGC paint the picture of a glaring policy failure. After 16 years of many man-hours, consultations and representations, there has

been nothing to take out of the IGC in solution to the problem of lack of effective protection of Barolong and other indigenous groupings of the world who share common troubles. In terms of the specificity of the instrument on traditional medicine, this is indeed yet another sticky issue that is not well addressed. While traditional medicine might still fall under the banner of traditional knowledge, it becomes a bit confusing when within the context of the text, only traditional cultural expressions assumes prominence. This could be partly what makes the policy to fail when it comes to traditional medicine as a troubled front.

It is also apt to point out that this is not an all-out denunciation of the IGC text considering that it is still work in progress. It is in order to monitor and evaluate if the work is still aligned to the overall objectives of serving the interests of the indigenes. The indicators so far point to an unfavourable outcome already with regards to the plight of the knowledge holder groups. These folks continue to lose their assets with each day that elapses without effective protection mechanism. According to the concerns raised in the excerpts above WIPO still has not even scratched the surface in dealing with the problem of Barolong and others. After 16 years of meeting, there still have not been terms of reference drawn.

4.5.2 WHO Traditional Medicine Strategies

On the whole, if the intervention by WHO had considered some of these sticky issues that have always troubled indigenous people of Botswana, the traditional medicine strategy would yield some positive results. Unlike the 2002-2005 strategy the 2014-2023 strategy overlooks issues of given regional diversity in the use and role of traditional medicine, whether it is used as complementary or alternative medicine. This means it overlooks possible modifications that may

be necessary to take account of variations at respective local and regional levels. Painting everybody with the same brush might not be a good idea, in the final analysis.

The latest WHO Traditional Medicine Strategy's blanket approach to the issue that needs a singularly holistic approach on a case by case basis also fails in its trajectory. The Strategy, structurally designed to have relevance to the whole world will never be expected to seamlessly work for Barolong, let alone Botswana or Latvia as two diverse nations. Would the same strategy be applied and be expected to address the interests of the Maori and the Barolong in the like manner? For all its beautiful objectives, the achievement thereof remains a far-fetched pipedream. As observed earlier, the preceding Strategy (2002-2005) was alive to issues of regional diversity, in stark contrast to this current one (2014-2023).

4.5.3 Swakopmund Protocol

The Swakopmund Protocol was also seen to have structurally defective applicability as it fails to capture a very important issue that it professes to deal with: trans-boundary traditional knowledge. Its fine work is going to be hampered by the fact that a country like South Africa, extending from its central geographical position like an octopus into the borders of six other countries, is not affected by the directives of the ARIPO Swakopmund Protocol.

All in all, this chapter has found that what is available on the shelf today is not able to cure the problem under investigation. Bio-piracy of the Barolong communal resources is still the norm. The local laws, which are also largely imported, are not able to deal with the problem. It is the hope that the subsequent chapters of this work will come up with a home-grown solution that will deal with the problem. It is at this point relevant to state that what Swakopmund Protocol

has called sui generis interventions, might be used as a way to re-institutionalise the indigenous ways of knowing. Chapter 5, which follows next, presents findings on Barolong traditional solutions to the problem under investigation.

CHAPTER 5: APPLICATION OF INDIGENOUS KNOWLEDGE BY BAROLONG TRADITIONAL MEDICINE PRACTITIONERS TO PROTECT THEIR IPR AND PRESERVE THEIR MEDICINE

5.1 INTRODUCTION

This chapter explores Objective 2 of the study: Investigating How Barolong Communities And Their Traditional Healers Have Been Applying Indigenous Knowledge For Protecting And Preserving Their Medicinal Resources From Plunder And Depletion. The Barolong sayings such us '*se monate se ingwaelwa*' (problems are best solved by their owners) and '*ga eke e imelwa ke morwalo ele way one*' (your own load cannot weigh you down) capture a sense of independence in being able to solve their own problem. They convey a message that these people have developed ways of dealing with their problem in their own special way.

In discussion herein are the methodology, response rate, data collection exercise as well as stating, discussing and analyzing the results. This is where most of the answers of this study will emerge, as it further examines the old way of doing things vis-a-vis the new way in a comparative fashion. The chapter presents and analyses the findings of the study. Where possible, quotations that capture responses of participants are reproduced virtually verbatim. Analysis and presentation of the findings are presented research question by research question.

Chapter 5 focuses on the broader theme protection, preservation and conservation of traditional medicinal resources by Barolong communities while chapter 4 and 6 present data analysis based on the research questions 1, 2 and 4 as indicated in chapter 1. In this chapter, data were analysed using ATLAS TI Version 7. Figure 1.0 presents the broader theme as stated above, along with

its subthemes namely: knowledge about traditional medicines, social construction of traditional medicines, preservation, protection and conservation of traditional medicinal resources.

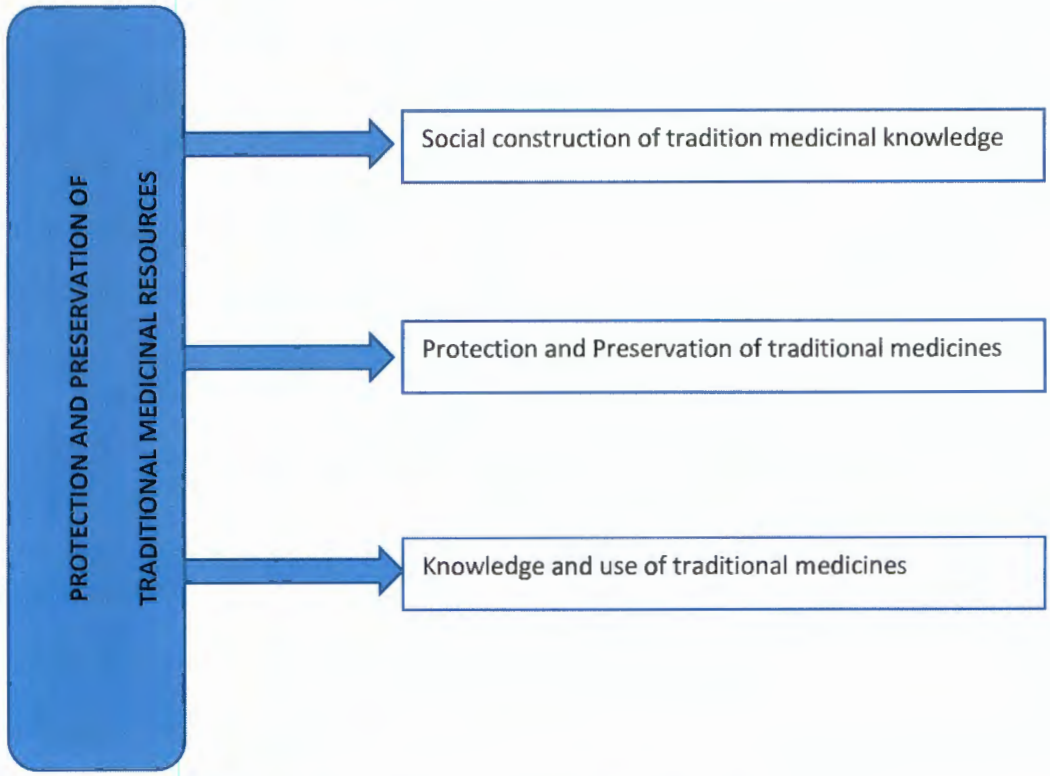

Figure 6: Broader theme and the subthemes of the chapter study

Data collection for this objective involved one-on-one interactions with local community leadership and traditional healers as well as interaction with a focus group of organic intellectuals. The venue of data collection was at the Barolong Kgotla in a village called Goodhope. The researcher went through the traditional administrative structures that led to meeting the paramount tribal leader, the Kgosi of the Barolong. After introductions and explanations of the matter at hand and the nature of the research, the Kgosi was very happy with the research. He shared the same sentiments and concurred that indeed the advent of the erosion of traditional values in general was a worrisome scourge. As anticipated he organized the

relevant contact persons that he deemed vital to the study to meet with, and be the resource persons for the researcher. The village Goodhope is the paramount seat of administration for all the Barolong groupings in Botswana and South Africa

The fundamental goal of this chapter is in the words quoted from the Bible in Jeremiah 6:16, 'to go back to the crossroads and look; ask for the ancient paths, ask where the good way is, and walk in it, and you will find rest for your souls'. Investigating the history and the methods used by the Barolong and their traditional healers, ages ago to protect their medicinal resources from being plundered to extinction forms the mainstay of this study. This is so because once the study determines that those methods worked well and were efficient for resource conservation, it would only be sound to revert to the methods. It would then follow to scale up the application of the traditional methods to national and possibly regional practice. The objective of this particular investigation was accomplished, judging from the ensemble of knowledgeable elders who participated to impart their invaluable knowledge. After the third participant, a pattern began to emerge, and it never changed until the end of the fieldwork.

5.2 THEORETICAL UNDERPINNING OF CHAPTER TOPIC

For the purpose of this chapter, the hybrid of postmodernism and interpretivism shall be discussed. Under the constructivist ontology there is no single reality or truth. Co-applied together with the subjectivist paradigm the view result assumes the view that all knowledge is purely a matter of perspective. Additionally, as referred earlier (in Chapter 3) with regards to the broader study, the social constructionist theory which undergird the enquiry complements the hybrid, although it does so while emphasising more on the subjective interaction between

participant and researcher. Interpretivism seeks to unearth deep insight into the responses of participant while so as to make sense of them.

Perspectives within the comparative evaluation of two knowledge systems becomes necessary and the knowledge systems hold diametrically opposed views which are basically distinguished by the question of perspective. While the West does not consider protection of traditional medicine within the indigenous knowledge perspective, the Barolong hold a different view. In the same vein, the theoretical perspective of an interpretive design is of the view that reality needs to be interpreted. This choice of thought then informs the techniques of enquiry that help achieve the objectives as discussed in the following methods section.

5.3 APPLICABLE RESEARCH METHODS

The methodology for this objective was interviews as described earlier. The interactions were facilitated by the questionnaire labelled as Annexure 1. The Expert Purpose Sampling strategy that was employed proved to be a boon to the study as the primary sources who could answer the interview questions were carefully selected by the Kgosi and generally fewer than expected. The participants contributed immensely to answering the questions that were constructed for both the kgotla focus group discussion and the semi-structured one-on-one in-depth interviews. During the exercise and meetings, some field notes were jotted down. Observations that provided a descriptive account of the exercise were also prepared where necessary. It is important to note that these notes and observations do not offer conclusive explanations to the results. The interpretation and evaluation of the results still rests with the researcher, who would then make sense of the data through different explorations.

To a lesser extent, the Mmogo method was also used but only during the interview with the first traditional healer. Generally, traditional healers are averse to pictures being taken or recordings made due to the secrecy that is associated with their rituals. It is important to point out that the first traditional healer was recommended by the *kgosi* as a trusted doctor who could easily deal with the expert matters that relate to traditional medicine. The Mmogo method was roped in for this case as the visual animated gesticulations of the doctor were regarded to be crucial to making sense of some of his reactions. It should be underlined that no samples were collected from the respondents. The study was mainly concerned with the coming up with effective methods to protect the very samples of medicines and related knowledge for sustainability, enforceability and benefit to the rightful owners.

5.4 RESPONSE RATE

The question of response rate in this regard might seem like a misplaced one because the Expert Purposive Sampling strategy by its nature does not rely on large numbers of respondents. It relies on quality rather than quantity. It targets the people who hold the answer to the problem no matter how few they are. In any case, as a rule of thumb no community could have a large number of traditional healers. They are always one or two per community, and they are well known by the community. For that reason, in the village setting, it had always been difficult for impostors to take a chance with traditional leadership structures.

For that reason, upon selecting the right choice of respondents, the *kgosi* specified and selected two of his trusted lieutenants, who would then rope in two more of their trusted people to form the focus group of four organic intellectuals. As the discussion continued, one elder excused himself. Towards the end another elder left as it was now getting dark for his failing eyesight.

That left the initial two men originally selected by the *kgosi* to complete the full length of the discussion. At all times the *kgosi* was himself part of the focus group in principle. He did not attend the deliberations per se, but was quick to point out that should anything need his input, he was certainly at our disposal at all times material. He would then be excused to carry out other pressing matters of tribal and national eminence. In honour of and in consistence with the pledge made beforehand, names of the respondents would not be revealed. The presentation of results would go by pseudonyms. This is to maintain the tenet of confidentiality. The respondents were promised confidentiality as a pre-requisite for their participation in the study.

When it came to the selection of the specialist of traditional medicine-men, the one doctor that was selected as the doyen of medicine for the Barolong was more than willing to help participate in the study. For purposes of this research he is called Galephirimi. The two headmen or *dikgosana*, accompanied the researcher and research assistant a good distance to the home of the traditional healer. The input of the singular participant was also highly instructive and highly invaluable. The research group was introduced to the healer by the village leadership, whereupon the researchers introduced themselves and the study they were conducting. The doctor was just proud to impart his deep knowledge.

On that score, the response rate here is not in the easily quantifiable terms. However, the input and contribution was more than the research bargained for. It revealed an interesting front, that research is about understanding an experience and gaining insight. It is not necessarily a question of strength-in-numbers at all times.

The other expert who participated was a man who doubles as both a traditional healer and an academic professor in a reputable national university. He is referred here as Mahatshehatshe. His input also brought unexpected richness into the research. The study would not be complete

without the input of this respondent. A professor of pharmacognosy by profession, and a rare expert indeed in that area, the respondent's daily job is to subject traditional medicine to scientific examination. He refines it by isolating and extracting active components that do the actual healing process. This is not unusual, as a large number of common medicines found in pharmacies of orthodox medicine are derived from natural products that were originally identified by indigenous people as shown in Table 1 of Chapter 1. Kumar and Taroi (2004) observe that firms such as Merck, Novartis, Glaxo, Sankyo, and Smith Kline Beecham are investing considerable amount of resources in the search for drugs and related processes of study, further demonstrating that the bioprospecting potential of biodiversity is substantial. In the same vein, they conclude: 'The search process is essentially through a mechanism where prior scientific information from the locals and the ethno-botanical knowledge of the indigenous peoples are incorporated' (ibid, 2004).

To have identified someone with such capabilities that bridge traditional and orthodox medicines was the ace in the sleeve for this study. A university dean by profession, looking around in his office one is enthused by all manner of traditional medicines lying around. Experiment paraphernalia are also lying around typifying a chemical laboratory. Although not from the Barolong, his answers to the questionnaire were in consistence with answers of the first traditional doctor of the Barolong. His responses represented the national outlook, which include the Barolong.

Generally the response rate was satisfactory and the diversity of the respondents brought in a positive spin that was not anticipated which set the tone of the exercise on a sure and informed course. Incidentally, the *dikgosana* and the traditional healer are folks that also double as

knowledge holders, possessing deep expertise in matters that could best be described as nation builders.

5.5 DATA COLLECTION

The main data collection instrument used at this particular interaction was an interview questionnaire. Some field notes and observations that provided a descriptive account of the exercise were also prepared where necessary. In any case whatsoever, the notes and observations still do not provide explanations, which required a further investigative step. The questionnaire used in interacting with the respondents was divided into sections that made it easy to segment the crucial data presentation. The segments are socio-demographic information of the respondents; health issues in the community; knowledge and use of indigenous medicine; indigenous medicines conservation; and values and beliefs related to indigenous medicine. This segmentation properly feeds into the main theme of the study, to be discussed further in Chapter 6. It is pertinent to point out that while the data collection methods may look informal to some, the methods could best be described in this study as indigenous data collection methods. This makes them look non-conformist.

The respondents and participants were identified formally by discussing with the tribal leadership, whereupon the leadership would informally identify the people with IK and send the research team to them without first seeking their permission. The choice of experts with the knowledge system moves to disaggregate the knowledge according to its segments as understood by its owners. Further, the sampling method proved to be highly effective because the authorities pointed the study to participants with the knowledge in their localities with clear reference to the focus of the study: traditional medicine. Most fittingly the interviews were also conducted with

participants in their working environments so as to promote and not deviate from the daily traditional setting.

The biographic information of the respondents in this study includes the following: gender, age, rank in community, type of employment, marital status, religion, age and years of experience practising medicine in the case of traditional healers. This is supported by Pfeiffer and Butz (2005) who report that such biographic information about the respondents has a bearing on ethno-biological knowledge and practice. Respondents had to answer the questions under each of the above sections. This was done at the behest of the chief of the tribe. It was done at the main kgotla. The research team had to drive outside the village to go and administer a questionnaire with the tribal traditional healer. The choice of the healer came as the consensus choice between the village leadership, acting out of positive insider knowledge. As it was, he would be the most reliable respondent to help the study achieve its objectives. The whole exercise entailed interviews and observations where necessary. The interview with the traditional healer was an informal interaction at his farm around a fire inside a traditional outhouse.

5.6 FINDINGS OF THE RESEARCH

5.6.1 Socio-biographic Information

The biographic data of the instruments exhibited a marked sway of the age on knowledge holders in the Barolong area. Most of the respondents, either chosen by the kgosi or his deputies, were over the age of 60. These include the kgosi himself and the dikgosana, his deputies. This lends credence to Cheikhyoussef, et al (2011) who observes that 'Indigenous knowledge (IK) is acquired through time in which it takes for the traditional healers to acquire the indigenous

knowledge'. This is also to consider the cumulative time that is takes for a people to build the knowledge of successive generations of practitioners. On that account it is apparent and goes without saying that the ripe age of all the respondents is itself testimony that the knowledge has been developed and refined over a long period of time. This effectively makes it tough for fraudsters and unknown new entrants to penetrate and freeride; and then claim to have the expertise. It may also mean that over the many years the real experts continue to win the confidence of their people as they practice under the microscopic and watchful eye of the community. The recognition goes beyond the community, as patients from across the country and even from other countries do tend to go for a healer who is far away, and belonging to another tribe or nation as the case may be. That way a traditional healer who does not heal his patients to their satisfaction, or who does not have impact by the power of his works in the community is setting oneself up for a quick failure. When Galephirimi narrated the rituals and rigors of going through the training to be a healer, his testimony only underscores and highlights the seriousness of the occupation. It also qualifies indigenous knowledge medicine practice, without the normal textbooks and rulebooks of medicine, as an independent knowledge system that is self-sustaining, well-regulated and highly credible.

The gender of respondents is predominantly and homogenously male. In any other research than indigenous, this would constitute the so-called gender imbalance. Although gender is not within the province of this study as such, Pfeiffer (2005) cautions against the cultural naiveté among Western academicians studying other societies, which he determine that it '...can lead to narrow assumptions about men's or women's roles in those societies.' In independent concurrence, Slatter (1984) describes this *misinformation* as ''cultural blindspots'' that develop because researchers literally do not witness men and/or women involved in certain activities because they

do not expect to see such involvement. On that note, it would indeed be an ill-informed conclusion to suggest that women are not involved in traditional medicine, as their involvement could simply be happening in other areas of traditional medicine such as midwifery, fontanelle healing, navel healing and other interventions. Specializations according to gender also differ according to tribal persuasions. Likewise, certain tribes and groups are ruled by females while others maintain the male aristocracy. The issue remains inconclusive with the Barolong as it was not under investigation. Additionally the sample size would not allow or empower this study to arrive at a conclusion on gender balance/imbalance.

Lastly the respondents were in a rural setting far removed from town or city life. Other than that traditional leadership is nowadays formal employment, most of the respondents are in the informal sector characterised by subsistence farming. 100% of the respondents are married. They all have a Christian religious background. The oldest traditional healer is over 80 years of age and has been practising medicine for over 40 years. Each one produced documentation and membership certificates that speak for their authenticity in the field. There are different types of traditional medicine and the certificates also offer that information. Also tendered is the year in which one was inducted into the esteemed club. In the following instalment the findings pertaining to the research questions are presented. Ronald Chenail (1995) helps to provide a format that is followed in the exercise. The presentation is approached according to the significance of the themes or categories that emerged from analysis of the data

5.6.2 Health Issues in the Community

Barolong health issues are investigated in this section to unearth a number of critical pointers that speak to the popularity of traditional medicine in comparison with other medicinal

knowledge systems. All the respondents answered the questions in this section. However, expert medical information was the preserve of the traditional healers. The leadership league was candid and frank enough to admit that they would not delve into some questions that needed deep expertise, suggesting that they would lead the researchers to the rightful people.

The respondents were asked to identify the root causes of common ailments in the community. They also dealt with their perceived causes of the diseases as well as the most commonly affected groups. This line of questioning prepared the background for identifying where the community sought help for health care services. The narrative would then shed light on whether traditional healers are still relevant in the community of Barolong or not. Beyond relevance, the impact of traditional medicine in the community would also emerge. The impact would then be examined side-by-side with the government health services.

The respondents all emphasized the importance of traditional medicine in a rural setup such as that of Barolong communities. The focus group and the traditional healers were unanimous that while government services such as clinics and hospitals are highly popular, traditional medicine is still regarded as the first line of defense for most people. Interestingly, the study finds that traditional medicine is also the last line of defense for those who start off with government health services. Galephirimi suggests that the people might be amenable to traditional medicine after being disillusioned by the detached quick service rendered by clinics and hospitals. This is corroborated by the World Health Organization (WHO) by stating that the ratio of traditional healers to population in Africa is 1:500 whereas the ratio of medical doctors to population is 1:40 000. At any rate, the ratios of client to doctor determine the quality of service. 'For millions of people in rural areas, native healers therefore remain their health providers', (WHO Traditional Medicine Strategy, 2014).

Mahatshehatshe has gone to town in identifying traditional medicine from his experience as a referral service used mostly by those who have lost faith with government services. The researchers took this admission to mean that people who were affected by incurable diseases, especially those in the sunsets of their lives, resorted to traditional medicine for a last ditch attempt at recovery. From the interviews, it is quite apparent that Barolong community is a cohesive group of people quite alive to the existence of traditional medicine. It is still part and parcel of their existence and wellbeing.

In what looked like meeting of the minds, the two experts were independently consensual that most of the diseases or ailments affecting the Barolong, and indeed the nation at large, were non-communicable diseases. The causes of these diseases were attributed to the recklessness that goes with the excapades of young-blood. Galephirimi emphasised that the youth of nowadays do not exercise restraint in a lot of actions associated with fun, including food and drink as well as diet that they ingest. This is exacerbated by the lifestyles of excesses that they live. Similarly Mahatshehatshe was more is definitive, yet in agreement by listing diseases such as sugar diabetes, hypertension, kidney diseases and others as the most common they deal with. Improved lifestyles, he noted bring with them all these stresses as more cars mean people stop exercising, processed foods lead to obesity, and so forth.

5.6.3 Knowledge and Use of Indigenous Medicine

This section of the investigation was the reserve of the traditional healers. Even the focus group members all passed it up to the specialists, citing that they did not want to burn their fingers in such expert matters that they are not quite privy to. Quizzed on whether the community at large was generally conversant with traditional medicine, all the respondents answered in the

affirmative. The specialists were quick to point out that even those members of the society that publicly speak against traditional medicine actually consult with traditional doctors in utmost secrecy.

Both the interviewed traditional doctors regarded themselves as herbalists as their area of specialization. Spiritualism, Magic, Medicine man/woman, Healer, Midwife and other specialties did not feature in the interviews. This distinction might constitute the act of splitting hairs, as Gehman (2005) posits that there is no adequate English translation for the African doctor dealing with traditional problems. The herbalists, it emerged were inherently diagnosis specialists as well. Galephirimi described how he uses his pieces of bones (*ditaola*) to diagnose, seek guidance, and then be able to help his patients from the results of the diagnosis. It also emerged that these *ditaola* always maintain a constant number (6) regardless of where the traditional healer originates from. They are usually going by the names *moremogolo, sejaro, kgadi, kgatshane, motlhalaakgama* and *tlhakoyaphala*. To delimit the ambit, one could deduce that this is a Southern-African phenomenon. Each of these bones has a name as shown, and the names are common among all the Batswana and Nguni groups in Southern Africa. Galephirimi also mentions that in his study visits across southern Africa, he has come across those using 8 bones; like a complex algorithm, Galephirimi admits that he gave up on learning the 8 bones due to their complexity. The 8 bones require extraordinary expertise, concentration and active multitasking, that all go with interpreting the simultaneous messages they transmit. This is testimony that the trade is indeed an organized enterprise that bears similarities and refers to a common unwritten rulebook across areas of the southern African region. It would be safe to assume that traditional medicine is governed by rules that all the new entrants are drilled into following. In fact

Galephirime shared how he went through that rite of passage to be admitted into the hall of authorized traditional healers.

The questionnaire further found that the main sources of indigenous medicines are natural plants of the Barolong region. The focus group only talked about plants as the source of these healing resources. This understanding is generally common among Batswana, as they believe that a connection exists between man and earth. It thus follows that the overwhelming feeling is that medicines should come from earth/ground. Animal products did not originally feature in this study, if not at all with the focus group and Galephirimi. However, when probed further on whether animal products do not contribute to the pool of traditional medicine, Mahatshehatshe acquiesced that they did. He was quick to add that in most cases the animal products are also used as preservatives of medicines as well as facilitators of medicine absorbency in the body:

> '...the python fat is used as a vehicle used to transport medicine because certain medicines can only cross the plasma membrane when they are dissolved in lipids to transport organic substances that are in the plant material that would otherwise not be drawn by the fats; python fats contain the fatty acids which draw medicine from the blood. I also use donkey faces to extract anti-asthmatic preparations, donkey urine and donkey skin for inflammatory conditions and reducing fever' (Mahatshehatshe).

In forward linkage the question of whether the traditional medicines themselves are effective was addressed. Galephirimi was highly emphatic that there is no doubt about it – traditional medicine works and it is effective. He also emphasized that those who do not take the issued instructions of dosage seriously do so at their peril. These are the malcontents who are likely to denounce the efficacy traditional medicine. He further gave an enlightening and incisive example of how

disregarding the dosage instructions might be detrimental. Most patients especially those who consult with the doctors after failing everywhere else have a tendency of overdosing traditional medicine with the hope of a quick recovery. This is worsened by the thinking that as plant extract, traditional medicine is not a potent chemical poison. Quite unfortunately, the converse is always the result. He explains that the human body is never ready for dealing with assault of large amounts of medicine. The body, he says needs to be trained to receive the medicine by starting with little prescribed quantities until the dosage is finished.

The other side of the coin is that the doctor dispensing the medicine is himself not only qualified to do that, but also sanitized. This type of medicine depends a lot on spiritual sterility. Any kind of contamination and pollution would render the healing exercise pointless. Galephirimi talks about this hygiene by disqualifying certain indulgences such as sex, alcohol and other common vices that are generally associated with obvious sin. Any doctor who tries to help a patient in such a compromised state is wasting time as it would never work.

The other question dealt with the knowledge and use of traditional medicines. Knowledge and use of these medicines is also tied to their efficacy and preservation. Unlike chemically composed medicines, traditional medicines are preserved in the simplest way of cutting and drying them. Mahatshehat she went on to unpack the scientific rationale behind drying medicines. Drying is meant to evaporate off the water from the medicines as in most cases it is water that facilitates the growth of molds or fungus. Grinding the dried medicines to powder form was the most effective way as the medicines lasted for a long time without being spoiled.

The study found that the socioeconomic groups mostly using indigenous medicines could only be determined by the type of ailments presented. Galephirimi laments that the youth are reckless and does not exercise discipline and restraint towards sexual conduct. To that end, he points out

that in most cases; young people come in droves mostly for help to address sexually transmitted diseases. Some youth consult the doctor when they are facing criminal charges. In this case they approach the traditional practitioner to help them win court cases. The older generations on the other hand seek help mostly in non-communicable diseases and general wellbeing. The cited ailments include sugar diabetes, high blood pressure and impotence.

Mahatshehatshe observes an emerging trend in the use of traditional medicine by different socio-economic groups of the society. The people in rural areas were forced to use traditional medicine because most of them cannot afford orthodox medicine. That notwithstanding, the trend is changing: the middle class of the society is turning its hope towards traditional medicine as it is giving up hope on the orthodox medicine. After all, these are all indigenous people, and to that end it would be safe to assume that they all use traditional medicine.

Probed on whether indigenous medicines are still readily available for harvest in their area all the respondents were quick to immediately point out that the year 2017 was a bumper harvest for traditional medicines as they largely depend on rain to grow abundantly in the wild. The answer would have been different, had it been posed in the erstwhile years when drought was declared nationally. *Pula kana ke kgosi ya dilo tsotlhe* (rain is the source of all life) were the words of an elder who spoke leaving the interview session in the typical Tswana parting shot. In fact the national motto 'Pula' aptly sums that rain is the source of life for Batswana. Hence the benefits naturally enjoined on the nation from rains in the form of food, shelter, medicine and other health products.

The last offering on why the medicinal plants could be dwindling in other years was attributed to rampant harvesting. In most cases this is done by people who invade the area from other places. These people go directly to harvesting without first finding out the modus operandi of the

Barolong, who are well concerned about overharvesting. The sad reality however is that these invaders seem to be relying on the law of the country that says all the natural resources of the country at large are for all who live in the country. This national law does not segment the regions according to tribal affiliations. It is then inevitable that other people who do not care much about preserving the resources for future generations would come to ransack them in 'large sacks', in the words of most of the respondents.

At this juncture the emerging pattern becomes recognizable. Issues of communal intellectual property start to ring a bell. From the resigned tones of their voices, one could see the issue is a sore source of despair and desperation. This is tying back to the very significance of this study. How best these people's property could be protected to benefit them. How could the protection system be enforced to stem the tide of dispossession and expropriation by the *uitlanders*? And does the protection system consider the international implications occasioned by globalization and the new economic set up of the world?

The contribution of Mahatshehatshe revealed that indigenous medicines are now scarcely found because the custodians of the knowledge have died without transferring the skills to the generations that followed them. Knowledge is slowly dying off in that area of medicine, with a few street hawkers being mainly the people that still peddle in the medicine. These people still deal in traditional medicine by selling it for survival. Generally there is scarcity occasioned by the dwindling knowledge in the area

5.6.4 Conservation of Indigenous Medicines

What specific ways are used to ensure that the medicinal plants are not over-harvested? This question was posed to the respondents as the one that was thought to carry the answer and the

promise for a substitute system. Indeed it did, because the answers provided an insight into how indigenous groups still possess the genius to be completely self-contained and self-sustaining. Left to their devices, Barolong possess the life skills that could help them balance their ecosystem and hold it together.

The focus group shared that one of the conservation methods widely practiced by Barolong is done at the point of harvesting. They stated that when they harvest their medicines they make sure that they do not uproot the whole plant system. They know which part of the root to leave in the soil to ensure that the plant regrows. However, the other people who are alien to the area would never know how to preserve medicinal plants the way the Barolong tribe practice. This leaves the area parched as plants are not allowed to regrow.

Mahatshehatshe imparted several indigenous ways in which Batswana in general protect their traditional medicinal plants from extinction due to overharvesting. These methods were not a blanket approach; they were used on a case-by-case basis whereby different plants were protected with different protective methods. It appeared that over the years, Batswana in general have devised tried and tested methods to stop the extinction of these resources on its tracks. One plant is not supposed to be harvested from the east side while the other should never be harvested in winter. Harvesting a plant on one side was only meant to preserve it to avoid its disappearance. Similarly, some plants are to be harvested on a certain season and not to be harvested on the other seasons. This was meant to ensure after careful observation that the plant could regroup, regrow and recover when it is winter. It could also be that after learning from a long observation, certain plants could never recover when harvested in winter.

Mahatshehatshe continues to share that formal medicine has started recognizing the value of traditional medicine to the point of now borrowing from it. The orthodox approach for solving

HIV prevalence in sub-Saharan Africa now recognizes the practice that was employed by indigenous groups. They recognize the value of male circumcision in reducing HIV prevalence. According to Ministry of Health in Botswana, male circumcision reduces the occurrence of HIV infection by up to 60%.

The Doctor further shares some of the indigenous knowledge that was used to curb rampant harvesting of medicinal plants. The following, he proffers, were some of the methods used to perpetuate species of plants:

- It was an omen to harvest a medicinal plant that has never flowered or produced seeds.
- No harvesting of medicinal plants during hot midday.
- Some plants should only be harvested when it is raining.
- Never cut roots from a tree that oozes gums because the tree is already crying/hurt.

Mahatshehatshe further advises on the specific and most effective ways that were used by the indigenous people of Botswana generally to curb over-harvesting. When harvesting from a small community of plants, known as a clan, you remove the old plants and not the young fresh ones which will be able to regenerate. For a big plant it was advisable to take only part of the plant and not cut the whole plants. This means cutting only the important parts of the plants, not the entire plant. The people had already identified plants whose roots and leaves possessed similar medicinal properties and components to the point that they would avoid harvesting the roots. They would resort to taking from the leaves for medicine as both roots and leaves express the same type of active principles. In situ conservation was also another way that the species were helped to proliferate. This was a way of domesticating the plants from the native wild to the

botanical gardens. Other than botanical gardens some communities would cultivate medicines in backyard gardens. Instead of the commonplace vegetables in the backyard gardens, a nursery of medicines would be gardened.

These rules were mainly used to govern how the communities dealt with their environment sustainably. The rules were meant not to be questioned. They were deliberately crafted in a scaremongering fashion so as to deal effectively with curious and questioning children who naturally demand explanations that make sense to them. That way the younger generations, who were largely warming up to civilization had to be shepherded into compliance by these unchallengeable rules for their own good and for the good of posterity. The plan worked for generations.

Moving from conservation to preservation of the actual medicine, the process becomes interesting and quite a skillful art. Respondents cite that the preservation type depends on the type of medicine harvested. In the main, most medicines are dried. However, there are medicines that are used fresh. These are especially the leaves and roots. Galephirimi cites that other medicines are boiled in water then the mixture could be taken hot or cold, or even having been left to cool down completely and settle overnight. This is a form of preservation that ensures that the liquid medicine is ingested over a long period of time, just like ordinary medicine from the pharmacy shelf. Some leaves and roots are chewed while fresh while others are ingested dry. All in all it depends on the type of prescription and part of the plant. It also depends on the type, severity and extent of ailment, the respondents say.

Mahatshehatshe unpacked the traditional preservation methods scientifically. He still reiterates that it all goes down to water. Preservation through drying is basically removing water molecules from the plant. He reasons that no dry chemistry can take place in a dry sample. It is the aqueous

solutions that create the problems. Plant resins were also used to preserve and keep away microbes. Also used a lot elsewhere are organic plants like garlic, which act as a good and simple preservative. Most of his (Mahatshehatshe's) medicines are in powder form and they are made into capsules in that form. New preservative have also now emerged, such as freeze drying, which also ensures that water in aqueous form is kept at bay. In that form, the doctor is quick to react in that dry form, the medicines do not lose even a bit of their efficacy. Actually, the presence of water is what creates problems of preservation once the plant has been severed from its mother body.

5.6.5 Values and Beliefs Related To Indigenous Medicine

This last section of the questionnaire delves particularly into the historical journey of traditional medicine. It investigates the past and the present, as well as the processes in between. It also traces back the link between the practices and the traditional believes of Barolong that governed it. This would offer insights into what could have gone wrong, or what could be corrected in the current system that could bring back the nobility into this age-old medical profession.

On the question of the values and beliefs governing indigenous medicine, the focus group was unanimous that a lot has changed since the early days. The values that generally regulate traditional medicine are no longer being followed to the letter. They have been eroded, and the little that is left still undergoes rapid erosion. So much so that even the new regulatory bodies that regulate bongaka are still being ignored, especially by impostors. Gehman (2005) observed that during the heydays of traditional medicine traditional doctors were not merely accepted but highly respected and feared; they were also regarded as friends of the community. Gone are the days when the profession was revered and noble. '*Mongwe le mongwe o itirela ga gagwe'* were

the words of a focus group member, meaning each one is doing his own thing, possibly reacting to the rush of impostors in the field.

Questioned on what the indigenous laws and regulations were, regarding the administration of indigenous medicines, the answer was more curious. The respondents seemed to suggest that the profession in its origin was neither subjected to regulatory controls nor did it inspire scruples that necessitated its policing. It has already been observed that *bogosi* and *bongaka* have always needed each other. Emerging data points to the fact that there might have been a communal separation of powers between the two as far back as then. The new form of separation of powers exists today among the judiciary, the legislature and the executive at government levels. In short, the chiefs never meddled in the affairs of traditional healers. There were also no regulatory bodies that ensured quality control within the *dingaka*. It was a self-regulating system. In that seemingly lackadaisical set-up, incidents of free-riding impostors and charlatans were unheard-of among the Barolong

Mahatshehatshe notes that every community in the whole of Botswana and beyond revolves around traditional medicine. The communities live their lives on traditional medicine and they were built around it. The limitations that some people coming from outside tend to dissuade the locals from using traditional medicine, effectively labeling it as witchcraft. On that score he succinctly underscored that traditional medicinal plants are God-given:

> 'Even us in traditional medicine, we do pray to God we believe in God; these medicines are God-given products. When some people think that when you practice traditional

medicine you practice witchcraft - its way out of thinking because these people come here distorting other people's cultures'

The clash of beliefs between Christianity and indigenous knowledge systems is well documented in the history books of Botswana. Cast in that light, it is quite curious for both traditional practitioners and the focus group to reveal that a lot of Christians and even their leaders do visit them behind the scenes to seek intervention. The very people who preach against traditional medicine in public, Mahatshehatshe emphasised, actually visit these medicine men under the veil of darkness. They always emphasize confidential above everything else when they seek help. This is linked to the question which was posed from the questionnaire, about which medical practice was most preferred by most people. It would appear that those who do not believe in traditional medicine always resort to it as their last line of defence. It is the last resort which in contemporary medical terms is known as referral. Asked to shed light on which ailments if any were likely best dealt with through traditional medicine rather than orthodox, Mahatshehatshe cited non-communicable diseases. Galephirimi gave a clearer perspective that medical conditions that have been worsened by patients' self-denial always land in the province of traditional medicine. He notes that clinics and hospitals normally emphasize dealing with a problem when it is just arising. For instance if its cancer, it should be cured when it is still nascent But because many people start off in denial, the conditions that afflict them always spiral out of control before help is sought. At that point, clinics and hospitals normally fail to help, and that is where most people turn to traditional medicine. *Diphera* is reportedly another condition which can only be dealt with by traditional medicine. This refers to conditions that seem to reject all manner of medicinal intervention, where the condition keeps getting worse even when the patient is going

through treatment. Traditional medicine has always had a niche in dealing with them, according to Galephirimi.

The indigenous laws and regulations regarding the administration of indigenous medicines were also explored, and they are reportedly many, according to the respondents. While they were all traditionally-based, they actually had a lot of science related to them, according to Mahatshehatshe. When the olden people used to say that a plant should not be harvested in the morning from the western side, this was in fact a simplistic way of recognising the science behind it. The radiation and electromagnetic rays from the sun stimulates the DNA in the plants. It stimulates certain regions of DNA called genetic locus. That type of response is that the plant would be protecting itself either from the heat or from the radiation itself. As the sun rotates, the compounds are also rotating.

Galephirimi pointed one of the cardinal laws that regulates the storage of traditional medicine. First he draws the distinction between the two branches of traditional medicines – those for internal use and those for external use. The internal use medicines are for ingestion which could involve vapour inhalation, chewing and spitting or merely swallowing the content. The external use of herbs is for bathing with, immersion and for application. The rule is that these two should never be mixed in the way they are stored. Even when bringing them from harvesting, there are some herbs that should never enter the house or wherever they will be stored through the normal door entrance. They should be tossed into the storage enclosure to avoid desecrating them.

With regards to indigenous legal systems that guide access and use of indigenous medicines, including safety, knowledge transmission, processing and storage among others, Mahatshehatshe noted that there are associations in place to govern that. They guide who should be allowed to practice traditional medicine. Most people selling traditional medicine are mere street hawkers

without knowledge of the medicine, and this is an insult to the practice. Additionally there are laws that are currently being crafted to demand that to practice traditional medicine; one has to have a certificate of practice.

The current attitudes and beliefs of the people are now that orthodox medicine has failed them. According to Mahatshehatshe the people now see the contemporary medicine as causing them side effects as well as adverse effects. Hence the idea is that they should go back to their roots. They also now believe in traditional medicine – that it could be the panacea to solve the problems that the new practice has failed to address.

With regards to what could be done to improve and sustain efficacy and effectiveness of indigenous traditional and Mahatshehatshe maintains that training is the silver bullet. The people need to be trained on the toxicity, handling and extraction process which may leave active ingredients behind. They need to be trained further on safety, preservation dosage forms, and dose. They should also be trained to understand that these medicines are indeed drugs. Last but most important, the professor emphasized that the training should take advantage of knowledge holders while they are still alive. He noted that these elders are dying with their knowledge. Elsewhere in this work, it was noted about the traditional herbalist whom this researcher met in Rwanda. He revealed that he has clear and crisp knowledge of 750 medicinal plants. When such a resources person dies, this could be likened to a library full of books, that is then gutted down by fire.

5.7 ANALYSIS AND CONCLUSIONS

This chapter has successfully managed to unearth new knowledge. In the classical intellectual property discourse, this new knowledge is regarded knowledge in the public domain, which places it fouls of IP prescripts. The investigation took a clear and interesting trajectory as it investigated first things first. The part about health issues in the community set the tone as it picked up the argument exactly where it should have, in order to then comparatively juxtapose and examine the interventions cited. The respondents exhibited an element of unanimity in disclosing the main health problems of the community as well as where the people seek health. The chapter further focused on the broader theme encompassing protection, preservation and conservation of the medicinal resources of the Barolong tribe. The broader theme was further dissected and in the final analysis it gave rise to three sub-themes namely knowledge about traditional medicines, social construction of traditional medicines and lastly the preservation and protection of the traditional medicinal resources. The following is a concluding summary of the issues

5.7.1 Knowledge about Traditional Medicines

Data sets overwhelmingly confirmed that most of Barolong communities were not only aware of indigenous medicines but also utilized these medicines. The findings of the study disaffirmed the researcher's bias that only the old generation were knowledgeable about these medicines. It was interesting to note that the youths were also quite aware of traditional medicines. In some instances owing to the growing shrinking markets that rendered most of the youths jobless, some of the youths were found to be practising as traditional doctors. Youth age bracket often used

traditional medicines for both health and economic reasons. A common thread finding was the use of these medicines to rid the youth of bad luck in preparation for job search as well enhancing their sexual performance. Perhaps a verbatim by one of the traditional doctors could best capture in-depth knowledge about traditional medicines and use among Barolong communities. Bola states, ***'Yes about 80% ...is heavily dependent on traditional medicines, including pastors.'*** It was also found that whereas pastors, for instance, were against the use of traditional medicines by their church members transcripts indicate that these groups of pastors used traditional medicines behind closed doors.

It emerged from the data that people in these localities turned to traditional medicines for treatment of varied non-communicable diseases as well as reproductive health ailments such as infertility. For illustrative reasons, an indigenous medicine often used was *sengaparile*, an indigenous medicine that treats infertility among women. Commenting on the pervasive use of traditional medicines during a focus group discussion, a focus group organic intellectual said,

> 'There is a plant called *sengaparile,* most people in the villages use it so they fall pregnant. You can find that a grown woman of maybe 70 years has fallen pregnant because they used this plant. Most of the traditional medicines are said to have detoxifying agents and once you do that you feel rejuvenated, hence the increased libido. In this region [Barolong communities] most people go for herbs that are used as an aphrodisiac.'

The responses of all the participants were marked by a common denominator that indigenous medicines are very effective. Respondents underscored that adherence to prescription, faith and timely use bolstered the effectiveness of these medicines.

The chapter also managed to give a clear insight into how the indigenous people preserve not only their medicines, but also go an extra inventive step to ensure that the plants which are the source of those medicines are themselves conserved and protected from extinction caused by indiscriminate harvesting. The respondents shared very innovative ways that worked for them to perpetuate the plant species that maintained their health. It was more startling hen the scientist doctor's responses corroborated that in fact some of the actions that were practiced by the older generations have a scientific and practical explanation proved beyond reasonable scientific doubt. Nothing could be more illustrative that somehow, indigenous knowledge is a self-contained organic system that works for its people.

It becomes more revealing to note that there are common values and believes that are related to traditional medicine. While the enterprise is largely unregulated by common law, it is fitting to recognize that in and of itself, it is self-regulating. This was made more evident by the ditaola that assume a uniform form across diverse regions and even across geographical borders. It was also underscored by the fact that *meila ya Setswana* (Tswana taboos) tend to be common across many groupings of Africa.

5.7.2 Social Construction of Indigenous Medicines

Even through traditional medicines were generally described as effective, societal construction of these medicines by some sections of these communities carried descriptors of contempt. These medicines were often described with phrases that degraded their effectiveness as indigenous medicines. Transcripts are awash descriptors such as 'secrecy', 'impure', 'inferior,' 'witchcraft', 'evil' and 'fraud'. Commenting on the use of traditional medicines, Legadima says, '*Sometimes the use of traditional medicines can cause rifts in families because it is a secretive thing...they do*

not know what they are doing.' An interaction of varied factors and/or reasons could be turned to explain why some members of Barolong communities viewed traditional medicines in negative light. Issuance of traditional medicine is not done in the open as compared to western medicine. The process is often shrouded in secrecy coupled with taboos to observe. Unlike western medicines, those involved in issuing traditional medicines are not given platform on an equitable basis with pharmaceutical companies that sell and market western medicines. Following out of this point is the notion that gives prominence that west is the best when it comes to medicines.

This is a power discourse circulating that offers an expansive view why traditional medicines often carry an inferior tag which has maintained inferiority over the western ones. Deeply concerned about subjugation and lack of recognition one of the participants during focus group discussion recommended that, 'if we could integrate western and traditional medicines, our health services would be better.' This strand of the findings received endorsements across all the research sites. Integration of the two medicinal systems was viewed as complementary approach to treatment. Data sets indicated recurrence of lack of progressive ways to recognize traditional medicines instanced by cultural preservation initiatives that did not focus on promoting indigenous medicines. Tladi from the focus group avers, '...because of change and development, even when you take parliament ...in Botswana it's not recognized anymore.' Further compounding this is the fact, unlike in other settings; there is no regulatory framework for indigenous medicinal resources in Botswana. However traditional healers self-regulate by observing certain unwritten rules and code of practice known to them.

5.7.3 Protection of Traditional Medicinal Resources

Concerns about protection of traditional medicinal resources seemed to be patterned and appeared to be a common thread across all Barolong communities. Visibly concerned about extinction of these resources, Tladi a herbalist from the focus group lamented; 'The problem is these sangomas, they take it in large quantities to go and sell and they finish these herbs faster than normal, they do not give them time to grow back and these are disappearing.' Asked about measures in place to curb and/or protect extinction of traditional medicinal resources, none of the herbalists could state a piece of legislation that protects these resources. This strand of the findings was corroborated by one of the policy makers at Companies and Intellectual Property Authority (CIPA) Mbakiso. Commenting of protection of these resources Mbakiso said, 'there is no policy developed that has been put in place per se, or a national policy that has been adopted…' At normative level, Botswana does not have any piece of legislation aimed at protecting indigenous medicinal resources. In the absence of the law and comprehensive domestic policies with clear implementation targets and outcomes, as well as enforcement measures the current arrangement effectively legitimizes biopiracy. This piece will be dealt with sufficiently in Chapter 6.

The issue of biopiracy was highly imminent in Barolong communities and it was acknowledged by all participants. The excerpt below illustrates how biopiracy occurs:

> 'We have people who over harvest these herbs, they bring big sacks to collect these herbs to go and sell. Then we have foreigners who also come to harvest the same herbs also in large quantities, so they don't give the trees time to grow back and that makes them hard to find.'

Whereas there are no legislations protecting traditional medicines, national or whatsoever, herbalists and traditional healers were found to observe a set of customary laws protecting indigenous medicines. These laws exist in an unwritten code well known to the participants of the study. Unlike in other settings where information about traditional medicines is documented, Barolong communities relayed information about these resources by word of mouth passed from one generation to another. Commenting on protection of traditional medicines Mahatshehatse unpacked the various ways in which this could be reduced. He cited the taboos as an effective way of protection that has always worked well before the advent of civilisation.

Mahatshehatshe's response goes beyond that of taboos when it comes to protection of traditional medicines. Unlike other participants his response is couched in scientific ways of knowing. He appeared to be influenced by class and educational attainments. A self-proclaimed traditional healer, he clearly draws the link between western medicine and traditional medicine, while unpacking the seemingly obscure constructs of traditional medicine, and explaining them to make a scientific sense. This is clearly evidenced by the omens and taboos that have been enunciated in the preceding sections of this chapter. The following chapter, Chapter 6, Research Question 3 is dissected. The question attempts to evaluate the efficiency and effectiveness of the current policies, legislations and enforcement systems of traditional medicinal system in Botswana.

CHAPTER 6: APPLICATION OF INDIGENOUS KNOWLEDGE BY BAROLONG TRADITIONAL MEDICINE PRACTITIONERS TO PROTECT THEIR IPR AND PRESERVE THEIR MEDICINE

6.1 INTRODUCTION

Chapter Six looks at how efficient and effective the current policies, legislations and enforcement systems are on the use and management of traditional medicinal resources in Botswana within the Barolong localities. The theme is discussed under the following key subtopics among others: the role of CIPA and ARIPO regarding IKS as well as access and benefit-sharing; does CIPA and ARIPO have the capacity to implement IKS policies; policy targets to ensure provision of IKS in Botswana and lastly conformity of the local situation to international standards.

Analysis of this theme will be prefaced by dissecting key national policy documents that cover components of traditional knowledge namely; Copyright and Neighbouring Rights Act (2000), Industrial Property Act (2010), National Policy on Natural Resource Conservation and Development and the National Policy on Culture. By constantly interrogating these policies the researcher strives to understand how they frame the use and management of traditional medicinal resources in Botswana. This approach enables the researcher to establish the efficiency and effectiveness of these instruments within the context of practice and protection of traditional medicinal resources in Botswana (protection of intellectual property). Beyond the Republic of Botswana, the investigation will also look at the role of the regional body that facilitates the accession of its member states into the regional and international protocols.

6.2 THEORETICAL UNDERPINNINGS OF CHAPTER TOPIC

The indigenous research paradigm, which largely overarches the present study challenges deficit thinking. Inevitably, this paradigm and its ontology, epistemology and axiology inevitably appears to intersect with interpretivism largely due to the views of the two on the multiple social nature of constructed realities. With regards to the epistemology, Chilisa (2015) notes that the researchers within the paradigm uphold that knowledge is true if it can be turned into helpful and effective practice. Neumann (2010) further complements by alluding that theory remains the basic tool to assist researchers in unearthing novel facts, which are then built into theory that can be related to practice. The above analysis takes root from the fact that comparing the two knowledge systems and choosing the one that fits the Botswana, or more precisely the Barolong situation could also be fashioned under the transformative paradigm as it locates values in the research process, meaning that it advances that all research should be guided by respectful representation between the researcher and the 'researched'. All in all the indigenous paradigm is the common denominator. Its relevance to such a study cannot be over-emphasised.

6.3 Applicable Research Methodologies/Methods to Achieve Chapter Objectives

This chapter further deals with data that was collected from 'field' research. Like the previous two chapters it is largely qualitative by design, as it is more informed by primary sources. The methodology is also more grounded on the participatory and transformative IK based research. The data is more of documentary as well as desktop and library sources. To that end the methods applied and used to achieve the objective of the chapter entail interviews with policymakers. This is employed when the study seeks to hear first-hand from those that are directly involved with policy, law and practice in Botswana, especially at the higher echelons of government. The

interview also serve the purpose of complementing the document analysis that has been carried in the relevant pieces of legislations and policy as refer to the chapter topic. According to Chilisa (2015) the interviews themselves constitute the talk stories, language frameworks as well as talk circles befitting the Indigenous Research paradigm, which naturally overarches this research.

6.4 FINDINGS

6.4.1 Botswana Copyright and Neighbouring Rights Act of 2010

The key pieces of legislation included in the Botswana Copyright and Neighbouring Rights Act No.8 of 2000 which covers key areas such as Copyright and Related Rights (also known as Neighbouring Rights), Enforcement of IP and Related Laws, IP Regulatory Body, Traditional Cultural Expressions and others. It is important to dissect the act to examine its efficiency and effectiveness when it comes to protection of traditional medicinal resources. The Act focuses on traditional cultural expressions, specifically expressions of folklore. Expression of folklore (EoF) is defined in the Act as follows:

> 'expression of folklore' means a group-oriented and tradition-based creation of groups or persons reflecting the expectation of the community as an adequate expression of its cultural and social identity, its standards and values as transmitted orally, by imitation or by other means including folktales, folk poetry, and folk riddles; folk songs and instrumental folk music: folk dances and folk plays; productions of folk arts in particular, drawings, paintings, carvings, sculptures, pottery, terra-cotta, mosaic, woodwork, metal-ware, jewellery, handicrafts, costumes, and indigenous textiles.

A fine grain analysis of the Act indicates that Copyright and Neighbouring Rights Act No.8 of 2000 is virtually silent on protection of traditional medicinal resources. The Act is only confined to folklore which is just part of indigenous knowledge. At the heart of this Act is the protection of copyrightable works as well as to stem piracy of the same works. Protection of indigenous medicinal resources is a 'forgotten issue' within the copyright realm, or at least not a consideration. This begs the question: 'but what can be copied of traditional medicine?' Traditional medicine is not only confined to the potions of medicine. When Galephirimi interacted with the researcher, he chanted several verses. His explanation was that the chanting could only be decrypted by another traditional healer. He even made attempts to make a quick call of healers from another neighbouring district, saying that once he belches out the verses, the other doctor will be able to tell us what the message is behind the incantation. As it is, this is part of a healing process. It was not immediately clear if such chanted verses could be copied by any person not privy to traditional medicine, trying to use them to heal. On that score however, it would appear that the Copyright and Neighbouring Rights Act has protected the chantings as expressions of folklore, at least according to how the Act defines EoF. As such the Act protects a little bit of wholesome traditional medicine. It remains unclear how the Act will enforce protection of biopiracy and misappropriation of IKS which is imminent in Barolong communities. The inadequacy of the Copyright and Neighbouring Rights Act No.8 of 2000 has adverse effects on protection of traditional medicinal resources. Following out of this point is a set of contradictory values, which fail to articulate the need for protection of indigenous medicinal resources in the same way as folklore. It remains unclear how Barolong communities will benefit from these medicinal resources in their locality. Compounding this fact is lack of

effective current policies, legislations and enforcement systems on the use and management of traditional medicinal resources in Botswana.

6.4.2 Industrial Property Act of 2010

It is imperative to provide the temporal space and context which shaped the Botswana Industrial Property Act, 2000. The conceptualization of the Act particularly PART XII-Traditional Knowledge and Handicrafts happened on the back of powerful circulating discourses at an international level, to be specific the Nagoya protocol. Part XII sections115-127 of the Act borrowed heavily from the protocol in addressing traditional knowledge, rights and benefit sharing. Section 121 on special rights over traditional knowledge catalogues exclusive rights to the owner of traditional knowledge such as:

> a. where the subject matter of protection is a product, the right to prevent third parties without consent from making, using, stocking, offering for sale, selling, commercializing, importing or exporting the product or any element thereof;
>
> b. where the subject matter of protection is a domesticated animal, cultivated plant or any micro-organism, the right to prevent third parties without consent from reproducing, multiplying or preparing for reproduction through an offer of sale, sale, importing, exporting or any form of commercialization;

On transfer on traditional knowledge section 123 of the Act states that; 'The rights of local communities over registered traditional knowledge under this Act may not be assigned, ceded or transferred in any manner.' Whereas these rights seek to protect the rights of the owners of indigenous knowledge, there is gross omission on how to protect traditional medicinal

resources from eventual extinction occasioned by overharvesting. The Act is characterized by its patent silence on bio-piracy. In fact the Act does not specifically mention traditional medicines. In Botswana, there is no specific legislation that addresses protection of these medicinal resources. While participants of the study in Chapter 5 underscored the importance of traditional herbal medicines to improve health, Botswana has no specific laws on indigenous knowledge systems. This law would institutionalize traditional medicine and highlight the importance of traditional medicine as underscored by the practitioners above. The current situation is such that there are isolated policies on natural resources, such as the National Policy on Natural Resource Conservation and Development and the National Policy on Culture. A document analysis of these key documents provides a lens through which lack of effective legislations on protection of traditional medicines from extinction could be understood. Emphasis is much more on the subject matter rather than protection from extinction as well as bio-piracy (which contributes to bio-piracy).

Botswana alongside other African countries such as South Africa, Zimbabwe, Zambia and others has signed the Nagoya Protocol, an international agreement to combat bio-piracy and give guidance on how to share benefits from national resources equitably and fairly. Very little has been materially done to domesticate the laws of the republic to fit within pertinent international frameworks and conventions such as: Nagoya Protocol and CBD. This is despite the fact that these protocols lay emphasis on the development of national legislations of respective countries to speak to the international instruments. Lack of domestication of laws has adverse effects on protection of traditional medicinal resources. Combating extinction of these resources and combating biopiracy remains elusive. Protection of traditional medicinal resources of Barolong communities is highly marked by a dearth of effective and efficient policies,

legislations and enforcement systems and management of traditional medicinal resources in Botswana. Effective laws are made effective by their enforceability.

6.4.3 Role of CIPA and ARIPO Regarding IKS

The Companies and Intellectual Property Authority was contacted during this study. In government, this is the seat of all intellectual property matters in the country, at least in principle. The interview with CIPA was more enlightening as it shed light on some of the obscurities that arise from what the general public regard as its role. It was important to learn during the interviews that CIPA is only the custodian of the pieces of legislation. They are not necessarily fully involved in the formulation of the Acts that they administer. They only contribute towards the development of the policies. For instance, according to CIPA the Act that takes care of traditional knowledge is the Industrial Property Act of 2010, as stated above

At the moment there is no national policy that has been developed or adopted. The Department of Science and Technology is still working on the IKS Policy. Most essentially, this department does not fall in the same ministry with CIPA. The policy would then be used to guide on how IKS is protected. The role of CIPA is basically to help protect the knowledge by way of dealing directly with individual or communal knowledge holders. That arrangement helps CIPA identify the holders of the knowledge. This also helps in terms of commercialization of the knowledge, so that it would be clear to those who may want to use the knowledge, as well as the benefit sharing arrangement.

6.4.4 How Capacitated is CIPA/ARIPO to Implement IKS Policies

Admittedly, CIPA still does not have capacity to dabble in administering the upcoming IKS policy. As a member of WIPO, CIPA is in contact with the former to seek training and development in the traditional knowledge protection campaign so as to develop the capacity to be able to deal with the WIPO-governed treaty or treaties that relate to traditional knowledge. It is be relevant and fitting to point out here that WIPO is still trying to find its feet with TK as the work by the IGC is still ongoing towards finalization of an effective TK protection system. This puts Botswana and the region in a precarious situation of not knowing what will come out of WIPO consultations and how long it will take for the process to materialize into tangible results. WIPO assistance goes beyond that – they are also assisting Botswana in terms of looking to beef up the current provisions of the Industrial Property Act as it is admittedly still insufficient in its current form to deal with the complexity of TK issues. It also emerged that the real reason countries look up to WIPO is the fact that the organization has capacity and resources that enable it to assist countries. According to the CIPA official who participated in this study, WIPO has undertaken a lot of studies in traditional knowledge that have contributed to the area immensely and positively. The fact that TK has a lot of players and interest groups is what makes it impossible for the WIPO interventions to make everybody happy. This could partially explain the long time taken to conclude the matter, as evidenced in Chapter 1 of this research.

The role of the regional IP body, ARIPO is vastly different from that of the national offices, even though they share mandate similarities. As an intergovernmental organization, ARIPO 'facilitates cooperation among member states in intellectual property matters, with the objective of pooling financial and human resources, and seeking technological advancement for economic, social, technological, scientific and industrial development.' (Lusaka Agreement, 2016).

According to the ARIPO website, the objectives of the Organization, as enshrined in Article III of the Lusaka Agreement of December 9, 1976 which created the Organization, show that, cooperation in industrial property is intended to achieve technological advancement for economic and industrial development of the member states. This cooperation is reflected in the objectives of the Organization which are:

> (a). to promote the harmonization and development of the industrial property laws, and matters related thereto, appropriate to the needs of its members and of the region as a whole;
>
> (b). to foster the establishment of a close relationship between its members in matters relating to industrial property;
>
> (c). to establish such common services or organs as may be necessary or desirable for the co-ordination, harmonization and development of the industrial property activities affecting its members; and others.

Hence with regards to the topical issues of traditional knowledge, ARIPO has come up with the Swakopmund Protocol for its member states. This is meant to help the member states have a common approach towards the protection and administration of traditional knowledge. Discussed elsewhere in this work, Swakopmund Protocol is still relatively new and member states are expected to ratify it in the fullness of time. Different countries are at different stages of readiness to accede to the Protocol, but notably Botswana is among those that have done so. This is evidenced by its current drive to come up with the national IKS Policy.

Furthermore, WIPO is expected to also capacitate both the Industrial Property Act and CIPA with the wherewithal to deal with issues relating to mandatory disclosure where IKS is used.

Prior Informed Consent and Fair and Equitable sharing of benefits arising from TK will also be in the agenda. While CIPA would like to address the gaps occasioned by the lack of these pieces of legislation, they claim to fully understand the fact that other players have to come on board. They cannot go it alone. A case in point is the Department of Environmental Affairs, which is the department that was responsible for signing the Nagoya Protocol. Curiously again, CIPA would like to appear that it is the custodian of all these piecemeal legislations that arise from the protocols signed by the different departments of different ministries within the government of Botswana.

With regards to ARIPO, the office itself is well capacitated to coordinate the Swakopmund Protocol. However, it can only do so much, as individual country jurisdictions have been left to craft their national legislations to incorporate the Protocol in consistence with the ARIPO prototype.

6.4.5 Policy Targets to Ensure Provision of IKS in Botswana

The question on policy targets that have been set to ensure provision of IKS in Botswana was also not sufficiently dealt with as there are really no targets and plans. The CIPA official demurred:

> At the moment the envisaged policy is not yet implemented, the area is not well–structured to enable us to gauge how we are progressing in terms of implementation. With the development of the policy, it will better guide us as…everything is haphazard, everybody is doing different things and therefore the policy is not effective as it is.

The CIPA official concurs with resignation that people's knowledge will continue to be used without the benefits from the knowledge accruing to the knowledge holders. It is also critical that the driving ministry move the process forward speedily, he said.

What policy targets have been set to ensure provision of IKS in Botswana and the region at large? ARIPO's role in this matter is as simple as ensuring that all its 19 members states have signed and ratified the Protocol. From that point of departure, the coordination would become easier as everybody would pull together in the same direction and with a common purpose.

Regarding any other challenges besetting TK protection in Botswana, CIPA observes that as long as there is no single coordinating entity or body to deal with issues relating to IKS, there will always be all manner of challenges. It would appear that all the concerned groups have something positive and beneficial to do on IKS albeit uncoordinated. There is also little awareness on the economic potential of IKS among the communities in Botswana. A lot of training should also be channelled to the indigenous people to sensitize them of the gem they possess in terms of their knowledge. They should be made aware of the many aspects in which their knowledge can benefit them.

As observed earlier, ARIPO's challenges emanate from the fact that as an organization ARIPO cannot force member states to move as fast as practicably possible. For various reasons, some states adopt protocols quickly while others are the last adopters. It all depends on the different socio-political reasons, and systems and structures tasked with the legislative processes. With different levels of readiness for the different states, much of the work towards signing up and acceding is usually left to the national processes.

6.5 ANALYSIS AND CONCLUSIONS

It is imperative to critically analyse the role of CIPA in relation to protection of the country's traditional medicinal resources. CIPA and the government of Botswana appear to be more concerned about classical intellectual property law and practice, the sorts of copyrights and patents as opposed to effective protection of traditional medicines. This is despite the fact that the Copyright Act has minimally incorporated Expressions of Folklore; and the Industrial Property Act has covered Traditional Knowledge. Could this undue influence be from WIPO, the universal regional body, due to its financial muscle? During the interview with one of the policy makers, it emerged from the interview data that CIPA was not yet capacitated to implement any policy on protection of traditional medicinal resources. What is borne out of the corpus of data is that protection of these resources has not been mainstreamed into the country's macro-economic framework. Botswana's position on protection of indigenous knowledge appears to more inclined to, and marked by the language of commercialization instanced by emphasis on royalties rather than protection. Commercialization has always been associated with conventional intellectual property rights – the mainstay of WIPO - as opposed to the communal nature of indigenous knowledge systems.

Overlapping with this factor is the eroded powers of the traditional leadership – the chiefs - who by extension of their powers protected and regulated the use of traditional medicinal resources. This approach systematically allows bio-piracy by powerful and well-resourced actors to take root and fester.

On the other hand, the role of ARIPO is heavily dependent on what the national jurisdictions are capable of doing for themselves. As a regional organization, ARIPO can only do so much by

way of norm-setting, leaving the rest to be taken care of by the national legislation and regulations. It is at this point, after ARIPO has done its part that the work stalls. As it is, different countries have different levels or resources and readiness to adopt internationally approved ordinances. Other countries simply lack the political will to continue. ARIPO would then assist by different awareness raising initiatives geared towards sensitising the general membership population of the advantages and benefits of adopting the various instruments.

In a nutshell this chapter has revealed that the current policies, legislations and enforcement systems and management of traditional medicinal resources are still inadequate to successfully handle the issue the protection of traditional medicinal resources. More work should be done. It should involve the constant handholding of the national House of Chiefs, Parliament, ARIPO and finally the group that consists of WIPO and other international treaties.

In the following chapter (Chapter 7), Research Question 4 will be dealt with in detail. The chapter will pit all the envisaged community level barriers and national legislation and regulation against the international standards for relevance and interoperability.

CHAPTER 7: COMPATIBILITY OF BOTSWANA SYSTEMS OF IPR PROTECTION WITH INTERNATIONAL STANDARDS; TOWARDS DEVELOPING HOMEGROWN PROECTION SYSTEMS IN BOTSWANA

7.1 INTRODUCTION

The previous chapter largely interrogated law and policy that underpin IKS. This chapter would then dwell on practice, especially practice that goes beyond the locale of Barolong. As explained elsewhere in this research, Botswana is not an island. Much as the citizens do clamour for the protection of their resources and knowledge, the kind of protection needed is not one that would mean they use their resources only amongst themselves. The medicinal resources need to be availed to the wider world population. Quite contrary to the common notion that intellectual property protection laws are too restrictively monopolistic, the opposite is true because the same IP allows for compulsory licensing. Compulsory licensing basically forces owners of protected IP to release it to those in need of it. If it is a medicine for example, an IP owner is required by law to avail the IP to other sections of the world that might be in need of it to deal with epidemics. To that end, it was stated earlier about the importance of North-South collaborations especially in the areas of research and genetic resources. This is partly what informs that while we are looking for a solution to assist Barolong, the same solution should not be discordant with the world grain. It should be seen to be compatible with what the rest of the world works with. Indeed the southern African region has been shown to be teeming with natural resources while the West has its their strengths in research as well as the infrastructure to facilitate it. This then explains the need to have systems that are applicable to other worldviews as they facilitate collaborations. The Barolong traditional medicine practitioners would not benefit from their own

resources if they restrict the benefits only to their next of kin, nor are they pleading to be assisted with that kind of protection.

7.2 THEORETICAL UNDERPINNINGS

Post-colonial discourses that advance the study of IKS do so effectively under the indigenous research paradigm. They further do so to reconstruct the body of knowledge that brings hope to the formerly oppressed (Mertens, 2009). Barolong fit this description because even by their own admissions, they continue to lose their resources while they stand aside and watch without questioning – a sign that the current situation deals is oppressive to them. The intervention that such a study brings therefore should also tally with what the transformative design stands for: to destroy myths, empower people and promote the ontologies shaped by human rights and democratic values. That is why from the beginning of the study it was emphasised that researching with would be preferred over researching for.

7.3 APPLICABLE RESEARCH METHODS AND METHODOLOGIES TO THE CHAPTER OBJECTIVES

To evaluate the compatibility of local standards to international standards, one has to inevitably engage in a comparative exercise. Hence the methodologies used to achieve the objectives of this chapter would essentially revolve around comparative research. This methodology aims at comparing research across different cultures or different countries with a view to unearth certain traits under study. For this reason the methodology and related methods are found to be relevant in this regard as the comparison would possibly yield policy change. Different comparative studies are used for comparing different phenomena such as countries, race, regions or stages in

time, among others. Heidenheimer, Heclo & Adams (1983) stand out to be some of the main proponents of Comparative Analysis especially where it leads to policy changes.

7.4 FINDINGS OF THE RESEARCH

The problem of loss of traditional medicinal resources and the associated knowledge is not currently affecting the Barolong alone. The literature review in this study has generously shown that. The problem is international to the extent that it affects almost all indigenous populations of the various parts of the world. This is what has necessitated the whole international community to look for a solution that would supposedly deal with the problem once and for all, while acknowledging that the various groupings are diverse and therefore one size does not fit all. The world is replete with similar issues facing the Quechua and Shipio communities of Peru; the Maasai of Kenya and Tanzania; the Aymara of Bolivia; the Nahua of Mexico, the Pashtun of Afghanistan; the Campas of Brazil; the Shuar of Equador; the Tuareg of African Sahel region, the Maori of New Zealand and many others. Back home the Khoisan communities of Kalahari are also locked in incessant squabbles with the new dispensations of Botswana, South Africa and Namibia.

WIPO studies, in a bid to document their traditional knowledge, find that national laws of countless different states of the world 'do not recognize or establish clear rights in favour of indigenous peoples or local communities over their TK…' (WIPO Consultative Draft, 2012). The study further observes that:

'...it is important to discuss which rights are formally recognized by the State with regard to TK, as not all countries acknowledge (at least expressly) indigenous peoples' or local communities' collective property or other rights over TK'.

It is important at this juncture to draw the link between what is held under the ownership of Barolong, and why it matters to WIPO, UN or the general international audience. As stated earlier in Chapter 1, Africa is generally known to be rich in diversity. This includes the raw materials of medicine, including traditional medicine itself. Africa and other continents that share the riches of nature are generally referred to as the global South. This is opposed to the global North, which is characteristically endowed not with the natural resources but with the soft skills, the research knowledge and the general wherewithal to manage these resources. This includes the technology and the expertise instrumental for beneficial research on the African medicinal and other resources.

The link that emerges here between the South and the North is a typical case of symbiosis. Biological diversity of the whole world is not evenly distributed so that each state could be self-contained. In the same vein, research capability between the South and the North is not evenly distributed. The Organization for Economic Co-operation and Development (OECD) countries and others of the developed global North are well resourced with funding, expertise and research skills, including skills to add value to the riches that the South possess. They have the technological and economic advantage to carry out more research leading to pharmaceuticals that could unburden the world of disease and improve lifestyles. It is on this background that working together and equitably sharing benefits arising from the resources has pointed the way of access and benefit-sharing mechanisms as part of the final solution. This effectively establishes a

healthy relationship between formal and informal knowledge systems; or the bridge between which the knowledge systems could interact.

As the African continent constitutes part of the international research network due to its rich diversity, this results in opportunities to increase its ability to add value to and benefit from its natural resources in consistence with current African Union strategies on the topical issues of scientific and technical capacity, food security, value-adding to raw materials and industrial development. There are also regional initiatives to which Botswana subscribes. By virtue of being a member of the Southern African Development Community (SADC) Botswana is party to the SADC Guidelines and Protocols on Access and Benefit-Sharing of April 2005. Even so, nothing much has come of these innocuous-looking policies to which the country seems to join only for purposes of fitting into the group. Although the SADC strategy looks more relevant to the region, easier and straightforward, fewer countries seem to have reaped immensely from it. Its relevance derives from the fact that it categorized the resources according to, firstly genetic resources relating to food security and human health; and secondly traditional knowledge relating to food security and human health. The appropriateness of the strategy derives from its focus to localize genetic resources into food security as well as human health and wellness. This lies slightly divergent from CBD's access to the resources and sharing of the benefits that accrue from their utilization.

In order for outsiders to access the resources, it is important to look to national legislation as the first point of call. This is more hospitable for researchers coming from outside the community. It is thus critically essential to have in place national legislation that is scalable, allowing international protocols and other pieces of legislation to be carved in. From this standpoint, this chapter examines the Botswana legislation and systems of protection, if at all they are fit for

international purpose. Naturally, the legislation of the country would be solely responsible for providing the information that details the modus operandi and the procedures that govern access to the resources as well as the responsibilities of visiting researchers.

7.4.1 Conformity to International Standards

The admission by a top policy-maker that IKS provisions in Botswana are still characterized by incoherence and lack of coordination made it impossible to delve into whether the (absent) policy conforms to international standards. The policy dealing with IKS has not been put in place. Having observed that, it is important to note that Botswana has signed many international protocols, even ratifying some of them. These were midwifed by international organizations such as WHO, WTO and WIPO. For a country to be a Member State of WIPO means that any final document that relates to traditional medicine or indigenous knowledge in general, should be agreeable to WIPO requirements. The current initiatives are still disorganized and ragtag, and therefore do not conform. While it is important to note that TK is an epistemological knowledge system and a field in its own right, it does not mean that it should not be organized, presentable and cohesive. It however feeds into the emerging quest for non-Eurocentric paradigms.

The position with ARIPO is quite different. The organization has its ducks in a row. With clear autonomy from WIPO, it is still impossible to differentiate the two with regards to how they conduct their affairs. At best, the two entities are cooperating partners, against an erroneously held belief that the former is the extension of the latter. The Swakopmund Protocol with all its gaps is still an organized, well-researched and internationally applicable piece of instrument. The ARIPO official who was contacted for this work is a regular participant in the WIPO IGC,

privy to all the happenings of WIPO. The same official was heavily involved in the drawing up of the Swakopmund Protocol. It is thus appropriate to conclude that efficiency and effectiveness of the current policies; legislations and enforcement systems; and management of traditional medicinal resources in Botswana was well investigated, with the local, regional and international outlook and implications well looked into. All the relevant stakeholders and experts have contributed their valuable input with the zest and zeal of a concerned and solution-seeking lot. Add to that, this issue will be elaborated on in Chapter 7.

7.4.2 Intellectual Property Consideration of Barolong

Botswana and South Africa, across whose borders the Barolong groups live, are members of WIPO. Automatically their IP is a major consideration of WIPO the same way that a Pfizer drug for instance is patented under IP. That kind of equitability is well expressed in WIPO texts However, as highlighted in previous chapters, the WIPO solution to traditional knowledge is still in disarray and under construction, at best. Until such time that WIPO's ducks are in a row with regards to TK and its documentation, then WIPO would be able to reflect on the type of rights that may be specified and apportioned to relevant knowledge, resources and afforded IP-related mechanism such as patents, database protection or copyright as the case may be. At the current moment and in the foreseeable future, discussions on the issue are still raging like an inferno at WIPO. This intervention at the global level however, is highly prejudiced by domestic legislation of each Member States. The laws of Botswana in this instance should be a receptacle to what WIPO brings down. If the laws and the WIPO instrument do not talk to each other, not much would be achieved by way of international protection and the benefits thereof. It would thus be remiss of this chapter not to examine if the current legal and policy set-up of the country is in

lockstep with the international developments. This aspect will be one of the tributaries of the composite solution-seeking investigation that looks for the best protection system for Barolong IP in Botswana, especially their traditional medicine and the associated knowledge.

The international legal standards for access to the Barolong medicinal resources and associated knowledge do not only require prior informed consent of Barolong; the attendant IP issues also have a bearing on the degree to which the mutual interests of both parties are achieved. Beyond the classical IP issues transnational arrangements expand into other IP realms to comprise specific practical IP aspects; the benefit-sharing mechanism; as well the necessity of specific IP dispute settlement apparatus. What underlies the prospect of benefits, at any rate, is whether the resource and knowledge under negotiation between the holder community and the [foreign] researcher will be used for either basic research or applied commercial research.

At its 29th Session in February 2016, the WIPO IGC established that the introduction of new patent disclosure requirements to genetic resources and associated traditional knowledge were partly the answer to the act of according the scientific researchers, commercial enterprises, and civil society, the benefits due to them '…while the rights and interests of bio-diversity rich countries, and indigenous and local communities are observed' (WIPO Publication No. 1047E, 2017).

But what is so patent about Patent Law? The answer in fact lies at the very core and the rationale of patents as we know them today – full disclosure. What is not fully disclosed cannot be patented. WIPO Technical Study No.3 provides that:

> 'To receive and sustain a valid patent applicants may be required to disclose the claimed invention, how to carry it out (including the best known mode), any technology (prior art)

relevant to assessing whether the claimed invention is patentable, the identity of the true inventor, and the legal basis for entitlement to be granted a patent' (ibid).

In broad terms the applicability of full disclosure requirement in TMP and TK circles rests on disclosing any knowledge or resource that is used in the course of developing a certain pharmaceutical, cosmetic or herbal invention; disclosing the actual place and country of origin and lastly undertaking that PIC requirements have been explored and duly followed. If applied to the hilt, this development by WIPO would drastically cut down on issues of misappropriation of the natural resources of indigenous communities without recourse to their well-deserved benefits. In any case whatsoever, with the full disclosure requirement fully in place, it would still be 'not yet *uhuru*' for the local communities. The following section would then discuss other developments in the international stage that need to be localized and domesticated in order to build a robust system of protection. This will also give a clear determination if indeed the Botswana system of IPR protection in the IK sense is compatible.

7.4.3 International Legal Framework

7.4.3.1 The Convention on Biological Diversity (CBD)

Established in 1992 at Rio de Janeiro, Brazil, CBD is one of the international legal frameworks that came as the bridge that linked access to genetic resources to the sharing of benefits that are derived from their utilization. Essentially, CBD recognizes that Botswana as a state has sovereign rights over the genetic resources that are in its jurisdiction, including the Barolong district. This was underscored earlier by the Natural Rights Theory of John Locke. This recognition empowers and looks up to the state to define the approaches and procedures of access to such resources, whether for research purposes or commercial purposes. Way back in

2002, the WSSD introduced an enabling policy environment that highlighted the role of intellectual property in the ratification of CBD and as a result the implementation of CBD's Articles 8, 10 and 15. UNEP and WIPO further refined the modalities of access to resources at Malaysia in 2004 during the Ministerial Meeting of the CoP (Conference of Parties) of the CBD.

CBD does not place the whole responsibility of making it effective only in the shoulders of a Member State or the holder community. Those seeking access and utilization of the resources are also expected to exercise ethical responsibility by:

i. never utilizing the resources before verifying the conditions for their access with the authorities and
ii. understanding the implementation of the ABS provisions in the country that hold the resources of interest to the seekers of access.

A baseline has been set forth with two easy steps. The first is a simple step which in most cases is by way of an administrative permit known as the prior informed consent (PIC), issued by the Member State's National Competent Authority; or in this case the traditional leadership of the local community of Barolong. The second step comprises negotiating the mutually agreed terms (MAT) and drawing a contract which establishes conditions of access and resource utilization. Here again it all boils down to the Member States' regulatory requirements. The lurking question is 'what is the position of Botswana as a bona fide member of the Convention of Biological Diversity international body?'

Studying the membership of CBD, one retrieves the following pertinent information:

> 'Botswana has comprehensive environmental legislation, mainly built around the tourism industry and designed to protect environmental assets. The Environmental Impact

> Assessment Act (2005) makes explicit provisions to ensure that biodiversity issues are addressed in all EIAs. Establishing overarching policy and legislation to address conservation of biodiversity, biosafety, benefit-sharing, genetic resources and invasive species regulation remain a future priority' (CBD website)

The above excerpt explains that although Barolong, by way of their country Botswana, are bound by the requirements of CBD, their compliance to the Convention is not up to scratch. It is still a 'future priority'. In Botswana there is still no 'National Competent Authority' as espoused by the CBD. In the final analysis, the compatibility of Botswana national legal and policy apparatus in the present tense is still in question. It is indeed a priority of the future. Without the national regulations in place, the PIC and MAT still remain a pipedream for Barolong as long as access and benefit sharing are to be viewed through the prism of the sovereign rights of the Member State over its natural resources.

Finally, although CBD is an issue better off tackled as a unit in its entirety despite the fact that biodiversity comes in different forms, the Botswana system has strewn the components of biodiversity across different functional line ministries. For instance the Ministry of Agriculture and Food Security takes care of plant, agricultural and medicinal biodiversity. Different departments within the Ministry of Environment, Wildlife and Tourism also share different aspects as eligible for CBD. For instance Department of Wildlife and National Parks looks after animal biodiversity while Department of Environmental Affairs is regarded as the de facto point of contact for CBD as it deals with what the State regards as classical biodiversity – plants.

All in all the biological resources accessed and the intended purpose of access determines whether and which other institutions across cabinet ministries are involved in the management of

access and benefit sharing. This is an incongruent approach to access and benefit sharing. It flies in the face of centralization and simplicity. It renders what was originally thought out as a problem-solving undertaking into a tedious and convoluted exercise full of policy uncertainties. The institutional framework is incompatible with international standards because it is decentralized and uncoordinated. Not only that, this leads to a situation where the left hand does not know what the right hand is doing.

7.4.3.2 The Nagoya Protocol

The Nagoya Protocol on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, known in short as the Nagoya Protocol, spells out in more detail the measures that its parties should employ to implement the ABS principles. The protocol was adopted by CBD contracting members in 2010 and entered into force October 12, 2014 with fewer ratifications to-date. Like the others previously discussed, Nagoya Protocol is an international framework that should also be implemented at the national level by its parties. Botswana ratified the Nagoya Protocol in February 21, 2013 and acceded October 12, 2014. Like CBD, Nagoya Protocol is housed under the Department of Environmental Affairs, in the Ministry of Environment, Wildlife and Tourism. The road to access was in fits and starts when it commenced: Botswana developed a National Biodiversity Strategy Action Plan between 2002 and 2004 which was revised in 2007 and established some 11 targets, of which none were fully achieved. These challenges would remain as will be discussed in due course.

The Protocol provides for implementing the third objective of the CBD, which is:

> 'the fair and equitable sharing of benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding' (CBD Art. 1).

The Nagoya Protocol basically substantiates the CBD principles in the national legislation of Botswana and other fellow Member States. From practice, countries that have fully enlisted both CBD and Nagoya Protocol evince the transparency that allows environmentally sound research to flourish. The Protocol further affords its contracting parties the necessary legal certainty, security and transparency. For instance, Article 6 of the Protocol links access to genetic resources to the consent of the provider/supplier party, which access would then give rise to the benefit-sharing requirements and obligations.

According to African Union Practical Guidelines for the Coordinated Implementation of the Nagoya Protocol in Africa, the provisions of the Nagoya Protocol were analyzed against the backdrop of The African Common Position for the Negotiations of the International Regime on Access and Benefit Sharing as adopted by the Pan-African Conference of Ministers in charge of ABS which was held March 2010 in Windhoek, Namibia. This further triggered a need for reflection on how Africa could best implement the Protocol in tandem with other relevant regional instruments such as the 2001 African Model Law for the Protection of the Rights of the Local Communities, Farmers and Breeders and for the Regulation of Access to Biological Resources. At a continental level, it is quite impressive to note that the African Union continues to offer 'strategic policy guidance to support the implementation of the Nagoya Protocol in Africa and serve as a basis for the development and regular updating of Practical Guidelines with a view to facilitate and ensure coordination and cooperation in the implementation of the Nagoya

Protocol in Africa' (AU Guidelines, 2015). The spoiler however takes root down to the national level where nations are left to their devices, in consistence with the dictates of national sovereignty.

It is important to note that while the bulk of the regulatory and policy framework is still ongoing, the situation in Botswana moves at snail pace. The institutional framework to regulate ABS and Nagoya Protocol at national level involves the setting up and running of national focal checkpoints which are the first contact points for researchers seeking access to genetic resources; competent national authorities which are responsible for granting access and indigenous competent authorities. The access and benefit sharing clearinghouse is also added as an international layer to further lessen the administrative burden for the members and users

The question is how much has Botswana done at the attempt to be in synergy with these developments. At face value, there is nothing to show beyond just membership. This study therefore finds that with the above, Botswana systems are not yet compatible and in speed with international developments. It is still notable and commendable that the country takes the effort to participate in the debates and other forums that contribute to the discourse. The main drawback is caused by the lethargic speed at which the country amends its laws to suit changing times. It is always important to note that in many cases with regards to visiting researchers, the required information and the procedure to access it should be specified in the national law and regulations of the provider countries.

7.4.3.3 The Bonn Guidelines

It was not until the sixth Congress of the Parties in the Netherlands that took place in the year 2002 that the Bonn Guidelines were presented by the working group that set the PIC and MAT

parameters of CBD. Hence the full name as 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising out of their Utilization'. According to Thomas Greiber, et al (2004) parties were divided between those that sought an overarching framework instrument on access to genetic resources and the fair and equitable sharing of benefits resulting from their utilization on the one hand, and those that sought an outcome that recognized a broader international regime on genetic resources on the other.

The first real dalliance of Botswana policy environment with the Bonn guidelines happened in 2005 when a study was commissioned by UNEP and local researchers to assess the country's readiness to adopt the guidelines. Mindful of the fact that the Bonn Guidelines essentially expound on the CBD principles to help countries (as providers on the one hand and users of genetic resources on the other) to implement access and benefit-sharing procedures effectively. The exercise is entirely voluntary, but the Bonn guidelines are generally recognized as the first and vital step towards implementing ABS provisions of the CBD.

In effect the UNEP study concluded that:

> 'Botswana does not have specific legislation on access to genetic resources and benefit-sharing as provided for under the CBD and the Bonn Guidelines. However, there is sectoral legislation with components of and relevance to ABS. In Botswana, natural resources are managed by a statutory authority, usually a government department that would be responsible for administering sector-specific legislation depending on the resource.' (UNEP 2008)

7.4.3.4 The Situation Right Now

Despite the bleak picture painted by the foregoing assessment of the position of Botswana systems of IPR protection with regards to international developments and how the country could harness developments to help Barolong traditional medicine practitioners, there is a glimmer of hope. Between 1992 when CBD was born, and now (including the intervening period) not much has been achieved in that regard. The glimmer of hope is now brought by the fact that as of February 2018, United Nations Development Program (UNDP) is involved in spearheading a project titled 'Strengthening human resources, legal frameworks, and institutional capacities to implement the Nagoya Protocol' (Global ABS Project). This is a 3-year project that specifically aims at assisting 24 countries in the development and strengthening of their national ABS frameworks, human resources as well as administrative capabilities to implement the Nagoya Protocol. Botswana is among those countries. The project seeks to achieve this through its four components namely:

i. Strengthening the legal, policy and institutional capacity to develop national ABS frameworks.
ii. Building trust between users and providers of genetic resources to facilitate the identification of bio-discovery efforts.
iii. Strengthening the capacity of indigenous and local communities to contribute to the implementation of the Nagoya Protocol.
iv. Implementing a Community of Practice and South-South Cooperation Framework on ABS.

This project indeed brings promise because it is country-specific. It is designed to take into consideration, and dovetail with the national Indigenous Knowledge Systems Policy. The jury is still out. It would procedurally not be advisable to even report on ideas that have not been implemented. Nonetheless there is no doubt that such a consultancy that aims to support the identification, the drafting and even assist the validation process of national legal instruments on ABS in Botswana, CBD- and Nagoya-compliant, is a highly welcome panacea to the current impasse.

7.4 ANALYSIS AND CONCLUSION

A set of country-level operational protocols is essential for researchers working across state boundaries. They facilitate collaboration among research and the cross-fertilization of knowledge across hemispheres. This chapter has found and underlines the proven fact that access to the resources and the traditional knowledge that has always supported them may become easier in the event that the procedures are not only in place but also work to increase transparency, leading to trust between stakeholders. In the case of Botswana, national biological diversity has always been the mainstay of traditional people's lives as they have use it as food, medicine, feed, as well as a range of other day-to-day uses. If properly regulated, the biodiversity holds so much promise in the lives of Batswana and could work towards employment creation and poverty alleviation. The contrary, however, it the truth: in the absence of proper, well-coordinated and publicized regulatory and legislative systems in place, the real potential of this national gem would never be fully tapped into. ABS-compliant legislation would ensure that the full benefits of the national biodiversity are enjoyed by all across the world as facilitated by knowledge exchange and cross-border transfer of technology. Further benefits ensuing from this transfer of technology would be

occasioned by the North-South research enterprises, some of which would lead to improved ways of conserving and preserving the resources.

Botswana has not moved in speed to ensure that all the bases are covered. While a member of both CBD and its improvement Nagoya Protocol, it still missed the boat on ensuring that concrete steps are taken to ensure that the national law provides for legislative, regulatory, administrative and policy measures on access and benefit-sharing, so that prior informed consent and mutually agreed terms are also required for access to and utilization of 'naturally occurring biochemical derivatives' as defined in Article 2 of the Nagoya Protocol. Access to associated traditional knowledge relevant to the utilization of such derivatives should also be conducted in such a way that ensures that the benefits are shared equitably with the custodians of these resources. The total set-up is hamstrung by the lack of national specific legislation on access to genetic resources and benefit- sharing in the context of the CBD. It does not help that there are various piecemeal sector-based legislative texts with components of and relevance to ABS which are perhaps merely used for compliance purposes.

The rule of thumb is that accessing resources in a country with no ABS legislation and procedures that are strictly enforced at national level by domestic legislation has always been a boon to free riders. While the African Union urges its members to regulate access to traditional knowledge associated with genetic resources through domestic legislative, regulatory, administrative and policy measures aimed at ensuring that prior informed consent or approval and involvement of indigenous or local communities is obtained for such access, and that mutually agreed terms have been established, little has been done in Botswana. The AU through

its guidelines has added a layer of protection to assist the members by emphasizing that the absence of such domestic measures in any Member State shall not imply that PIC or approval and involvement of the communities concerned is not required or has been granted. In what becomes relevant in the shared knowledge and the straddling presence of Barolong between South Africa and Botswana, AU guidelines also urge Member States to cooperate to enforce the rights of indigenous and local communities against the scourge of misappropriation.

In conclusion, this chapter and the analysis therein found that the compatibility of Botswana systems of protection of intellectual property rights with international standards is wanting. This further strengthens the case for the country in collaboration with non-state actors and non-governmental organizations to work towards the development of a homegrown protection system of Barolong traditional medicine practitioners in Botswana. This became more instructive from the fact that with all the membership that at best typifies fitting into a league, the situation on the ground does not go hand in hand with the international system. This has been found to be caused by the fact that while the international bodies generally discuss merely access and benefit-sharing, the rest of southern Africa is grappling with food security as well as health and wellness of the communities holding the genetic resources and their associated traditional knowledge.

CHAPTER 8: SUMMARY DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

8.1 INTRODUCTION

This multiple cross-sites case study sought to examine and analyse the protection system that could best suit the Barolong traditional medicine practitioners' intellectual property. The study background revealed that the issue is indeed a burning one even beyond the borders of Botswana. It is a problem that besets most indigenous groups of various nations, whose intellectual property by way of medicinal knowledge is being parcelled out of their places of abode while they could only stand aside and watch. The literature review scoured mounds of research work to look for a solution that could help out the Barolong of Botswana. None was found. While most previous research work has gone to lengths interrogating the anomaly posed by various issues that effectively disempower custodians of resources of the control of the resources, none really investigated the issue in whole. Investigating the problem in whole means including not only the preservation aspect but also the conservation aspect as well the enforceability of protection system. As discussed under the Theoretical Framework the issue of land and its resources (medicinal) is guided by one of the intellectual property theories known at the Natural Rights Theory. This presents a strong theoretical foundation upon which this research builds, and which presents a simplistic common-sense approach to the problem at hand.

In this last but one chapter, the results of the study are given meaning with regards to the research questions that were posed at the beginning of the study; but specifically, to achieve the study objectives. The results will also be tied back to the literature review for consistencies or inconsistencies with the results and observations of the review. This is also done in order to determine if and how the results fill in the indicated knowledge gaps in the topical area of the

protection system of the Barolong intellectual property about their traditional medicinal resources.

The discussions in this chapter are carried out in the similar fashion that has been applied to previous components of this work; they are dealt with according to individual research questions. The constructionist theory as discussed in Chapter 2 continues to underlie the substantive issues that constitute the centrepiece of this work. These are mainly found in Research Question 2. The constructionist epistemology gives voice to the experiences of the people being researched with by using direct quotes from the interviewed participants. As opposed to the pieces of national legislations and affiliations to different international instruments, this part is how indeed these partners in research get to express themselves and potentially offer the answers searched for. Likewise, indigenous knowledge is best constructed, and in this case communicated by the indigenous people. It is not communicated through the policies and legislations that they find themselves having to awkwardly pander to. When it is finally said that Barolong have spoken in matters that directly concern them, it would indeed be said so when their voices are heard and when they solve their own problems with their own solutions to finally put paid to the foisting.

8.2 DISCUSSIONS

8.2.1 Thesis Summary

This is a brief recap of the original trajectory of the thesis. Chapter 1 focused on the background of the study. It examined phenomenon understudy at a global perspective funneling down to sub-Saharan and finally focusing on Botswana context. The process involved a systematic review of empirical studies and policy documents identifying gaps and locating the study within these

gaps. The chapter was divided into sections such as: the statement of the problem, research questions, objectives, purpose, and significance of the study. Constructionism and Intellectual Property Rights theoretical frameworks guiding the study on Protection System of Intellectual Property Rights of Barolong Traditional Medicine Practitioners in Botswana we examined. These theoretical frameworks permeated the whole thesis.

Review of related literature (Chapter 2) based on the four research questions guiding the study. The theoretical frameworks in chapter 1 provided a critical lens to review literature. Review of literature was based on themes such as and: a) laws and policies protecting indigenous medicinal resources, b) sustainable use of natural medicinal resources c) enforceability of the identified protection system d) conformity to international standards. Review of literature in relation to the four research questions indicate that Botswana does not have laws and policies governing traditional knowledge. Therefore, it would be difficult to subject the bits and pieces of available interventions to that scale. All in all, a number of gaps exist in literature and these dimensions have not been fully studied or interrogated. The articulation of literature gap and an on-going problem formed strong justification of the study.

Chapter 3 outlined the methodological disposition chosen to collect data that would answer the research questions of the study. First and foremost, the methodology chosen had to be community-based and participatory, involving the role of IKS holders, organic intellectuals and practitioners. Qualitative methodology complete with multi methods of data collection was utilized. The choice of participants and cases to be studied was selected using non-probability sampling techniques. The use of multiple data collection strategy enabled the researcher to gather rich and thick descriptions about choice of cases that were studied. Data were collected in Botswana and centered mainly within the Borolong district. Cognizant of the limitations of

human as a data collection instrument, a number of validity checks were put in place to increase credibility of the findings of the study. The chapter ended with ethical considerations as the fundamental ethos of research that basically guarantees the integrity and wellbeing of those researched on.

8.2.2 Summary of Results

8.2.2.1 Research Question 1

The question seeks to evaluate the efficacy and shortcomings of relevant international organizations' instruments and standards in protecting Botswana's traditional medicinal plants. Most of these organizations are inter-governmental, having presence in each country in Africa and the rest of the world; hence their regional or local offices will act at the points of information. The instruments analyzed were from the World Health Organization; UN; WIPO and WTO. The analysis of these documents mainly evaluates the applicability of their stated objectives with regards to the impact towards the Barolong of Botswana.

The WIPO texts were determined to be work-in-progress. The process has been going on for close to 20 years and understandably there is no end in sight. This is understandable because the matter, although better left to its knowledge owners who have always handled it effectively through tested cumulative experience, it is still entrusted with alien WIPO. In a nutshell WIPO IGC intervention is currently not protecting the IP of Barolong together with their medicinal resources and attendant knowledge.

The World Health Organization Strategy 2014-2023 which is a sequel to Strategy 2002-2005 and others in between is moving at a speed that the traditional communities cannot cope with. This is

caused by that WHO is dealing with the whole world, as its name suggests. To come up with a solution that drives the interests of the world is a crusade bound to leave out the real interests of other countries; especially the LDCs. Similar concerns have arisen from the World Trade Organization's flexibilities to cater for the different readiness of countries to adopt the TRIPS minimum standards. The countries were given a term of 14 years in 2002 to achieve preparedness in 2016. The term has been extended and extended, and it does not look like the least developed countries will ever be ready in 2033, which is the final permissible chance. As observed in the results of the document review, the level which the Barolong could be dealing with at their current stage is expressed in the 2002-2005 strategy, which is now obsolete.

The Swakopmund Protocol, an instrument that boasts African origins and therefore serving African interests is also not as sufficient as it is self-contained. It still falls short of addressing the irregularities posed by non-member states with regards to trans-boundary knowledge. It has been shown that only one non-member country that borders with member countries can completely render the Protocol null and void, thus spoiling its effectiveness

The final conclusive answer to this research question is that the international instruments, treaties and protocols that are supposed to be dealing with protecting Barolong traditional medicinal resources are far from achieving their intended objective. This is not only with regards to Barolong, but also with Batswana and the other indigenous groups in general.

8.2.2.2 Research Question 2

This research question effectively investigates the history of how the Barolong communities and traditional healers have been protecting and preserving their medicinal resources from plunder

and depletion and to what extent they still do carry out such practices. The result would then be evaluated against the current fruitless attempts as a possible substitute and a stop-gap measure, at least for while the jury is still out at WIPO.

The study made several key conclusions regarding Research Question 2. The Barolong communities are endowed with assorted traditional medicinal plants and/or resources. The findings indicate that these resources are used to alleviate and heal various ailments. Whereas at a normative level there are some laws indirectly protecting indigenous medicines, traditional healers in these communities used traditional ways of protecting traditional medicinal resources from extinction. These strategies involved taboos to observe when harvesting these resources. Results indicate that there is currently lack of documented regulatory framework aimed and dedicated at protection and conservation of these resources. However traditional healers, practitioners and herbalists were found to be self-regulating. Unique to the context of the study factors such as age, level of education and class influenced how these practitioners preserved indigenous medicines. The use of the theoretical constructionism framework stated in chapter 1 enabled the researcher to collect rich data about how Barolong communities protected and preserved traditional medicinal resources in their localities. Using the constructionism lens enabled the researcher to collect contextualized experiences of traditional healers and herbalists so as to answer Research Question 1 in its distinctiveness.

The research question has given a very incisive insight into how the Barolong and Batswana indigenous tribes have used their homegrown innovations to protect, preserve and conserve their medicinal resources. It is against this backdrop that this study would be justified to put forward indigenous methods as the panacea to the problem being investigated. Preliminary indications

are that this part of the research has offered a break into solving the age-old problem of how to protect tribal resources in the absence of a working solution.

8.2.2.3 Research Question 3

What policies, legislations and enforcement systems subsist on the use and management of traditional medicinal resources in Botswana and how effective are they? This section has revealed that there are a number of legislative and policy initiatives that have been developed in reaction to the problem under discussion in this research. It was further revealed that the presence of policies and legislations does not necessarily amount to the researched problem being solved. The legislative situation in Botswana in this regard has been revealed to be a firefighting approach. Different government departments each nibble at different sides of the same problem as stated in Chapter 1. The Ministry of Research, Science and Technology would come up with a law, the law would be housed under the Ministry of Commerce and Industry; and the enforcement of the law would rest with Ministry of Local Government which controls the Police as well as Ministry of Home Affairs which is responsible for border enforcement measures. It also emerged that these departments do not work hand in hand in a coherent manner to ensure a seamless protective measure as dictated by the Copyright Act, for instance. There still needs to be a lot of work done to ensure that the roles of these different departments dovetail and operate as a unit.

In summary it has emerged that while there are instruments available in paper to deal with problems relating to bio-piracy, benefit sharing, environmental conservation and enforcement; they still do not work as a unit, or at least work together to achieve their intended objectives. It is

highly possible that these different units do not understand the magnitude of the problem each one is nibbling at. When the Department of Environmental Affairs signed the Nagoya Protocol on Access and Benefit Sharing, they may not have realized that it could affect a rural village herbalist. The back and front linkages of the actions of various departments need to be highlighted among all the stakeholders, so that at all times the left hand knows what the right hand is doing.

Lastly, it is apparent that the Government of Botswana does sign and join the relevant treaties and protocols affecting issues that deal with intellectual property matters of its nationals. However, this drive is not well coordinated as various government departments do their bit of work and run with it. There are cases where there is duplication of efforts by different ministries leading to wastage of resources. This underlines the need to have a national coordinating authority, as suggested by the Swakopmund Protocol. Nagoya Protocol also refers to these command centers as national focal points or competent national authorities.

8.2.2.4 Research Question 4

To examine compatibility of Botswana IKS legislations and policies with international standards, as the research question seeks to do, there should be legislation to deal with the matter in the first place. This research question was partly incorporated into the other three questions as the element of international compatibility was well addressed in them. The fact that Botswana does not have a piece of legislation that deals squarely with IKS renders this question partially null. Other instruments such as the Swakopmund Protocol, CBD, Nagoya and others were examined within the context of international standards. The examination found that at a regulatory and policy-setting level, the government has indeed joined all of the necessary international

instruments. Unfortunately, that is only how far the government of Botswana has gone. Having put pen to paper to join the protocols has not really compelled government to adopt all the provisions of the protocols. In fact the government is currently in a bid to strengthen the legal, policy and institutional capacity to develop national ABS frameworks finally incorporating the capacity of indigenous and local communities to contribute to the implementation of the CBD and Nagoya Protocols.

The rest of the piecemeal initiatives that have come to characterize the firefighting and reactive approach to problems in Botswana have been found not to conform to international standards in their current form. For purposes of this research, conforming could be understood as the ability of a national instrument to be scaled up and applied as a solution at an international level. For instance, the Swakopmund Protocol conforms because it is applicable across many countries. Finally, it is noteworthy that indigenous knowledge may not necessarily have to be gauged on the scale of international conformity because it is of a local application. In the event other indigenous people or governments want to take it and apply it that would largely depend on whether their circumstances and cultural practices augur well for that action. However, with globalization and cross-fertilization of ideas the indigenous communities may be forced to step out of the cocoon of silo mentality and conform.

8.2.3 Findings

As discussed in the previous chapter, the investigation has answered the research questions posed at the beginning of this long journey. The first question was answered. It was evaluated that the relevant international protocol, treaties and other instruments that take care of Barolong traditional medicinal plants all have various shortcomings as revealed. The second research

question was answered with a revelation of how Barolong communities and traditional healers have always protected, preserved and conserved their medicinal resources from plunder and depletion occasioned by overharvesting. The third research question also discovered that the current policies, legislations and enforcement systems on the use and management of indigenous medicinal resources in Botswana are quite wanting. The fourth and last but one research question interrogated the very international nature of indigenous knowledge systems: its regulations at an international level as well as how international partners, researchers and users of the Barolong knowledge could be catered for. The chapter looked at several international instruments that were borne with IKS issues in mind such as the CBD, Nagoya, Bonn and others, as well as the WIPO intervention. These were examined for their relevance, suitability and compatibility with regards to Barolong traditional medicine practitioners. The results were a landslide: the Barolong/Botswana systems of protection were not in sync with the international grain. This was quite instructive as it automatically meant that for the greater good, the current national systems should be tweaked to fit the international standards, or then to come up with a hybrid system that should also talk the international language, also known as sui generis. Notably, this is occasioned by the lack of political will to be fully compliant to the international instruments.

8.3 CONCLUSION

8.3.1 Key Conclusions on the Success of the Study

This section consists of the main conclusions on the success of the study, theoretical implications, recommendations and the limitations of the study. Future research possibilities are proposed. The aim of this thesis was to examine the protection system of intellectual property rights of Barolong traditional medicine practitioners in Botswana. The study utilized multi-focus

methods that are consistent with qualitative research. Participants were selected purposively to provide multiple perspectives of the phenomenon under study. These participants were deliberately preferred as the actual traditional policymakers, practitioners and intellectual organics.

The study has scored success by way of findings that talk to the objectives. The findings as summarized above have also led to critical conclusions that will have a bearing on the problem under investigation and put pad to the problems that have beleaguered Barolong in the recent years.

Key conclusions of this study are that while the traditional medicines have a number of documented benefits, these resources are not protected from extinction. These conclusions were arrived at after dissecting each and every research question above. The study concluded that there are no laws and policies that effectively protect these resources. As a result, this has led to bio-piracy of these valuable resources in the Barolong district. The obvious impact from the reported overharvesting of Barolong medicinal resources is not counteracted by and concrete and robust methods. This is a far cry from the traditional taboos and other beliefs and practices which were meant to guard against resource extinction and eventual deforestation. Worse still, Botswana has not domesticated the laws following ratification of international conventions that effectively stem the tide of bio-piracy - the Nagoya Protocol and others.

Whereas there are no laws and effective policies emanating from a robust and coherent national strategy, Research Question 2 has shown that traditional healers and herbalists protect and conserve indigenous medicines through the application of traditional knowledge. This knowledge is not documented in the true sense of the word. However, it is known to these

practitioners, and indeed the tribe of Barolong at large. Accordingly, it has never been supposed to be documented, but it tacitly worked well. Up until the advent of 'civilization', which brought foreigners to the land of the indigenous people, the traditional systems have managed to hold everything together. That means the traditional systems indeed served the purpose. The same unwritten rules that were observed by the population of Botswana at large kept at bay the very problem this study seeks to solve.

The existing laws are not compatible with international standards. By implication this has adverse effects on the protection system of intellectual property rights of Barolong traditional medicine practitioners in Botswana. Findings of the study unearthed interesting issues pertaining to the efficacy and shortcomings of relevant international organizations' instruments (e.g. WIPO, WTO, WHO) and standards in protecting African traditional medicines. Essentially these instruments are not particularly helpful to the indigenous ways of knowing. They are alien.

The study concludes that the effective protection system of intellectual property rights of Barolong traditional medicine practitioners in Botswana depends largely on the very owners of the resources – Barolong themselves – no more no less. But since they are not an island inside Botswana, the government should also play its role especially by recognising that its powers against formidable outsiders lies in strong, yet self-serving laws that would cater for its citizens. In fact, the governments of developed countries constantly advise LDCs through the TRIPS Council, that instead of complaining against what they consider to be stiff international laws, they still have their national laws to forestall and counteract the effects while forcing outside entities to dance to their tune.

8.3.2 Theoretical Implications

As discussed in Chapter 1, Constructionism and the Intellectual Property Rights theories guided the study on the protection system of the IP rights of Barolong traditional medicine practitioners in Botswana. The study identified a number of factors that have implications for theory development. At community level, the study identified age, educational level and social class as some of the factors that shaped preservation of traditional medicinal resources. Cultural knowledge and practices, as well at institutional memory transferred from previous generations influenced how the Barolong communities protected indigenous medicines from extinction.

Social construction and/or meanings assigned to traditional medicines influenced perceptions towards the value of traditional medicines. At a macro level this factor overlapped with the political will to offer explanations as to why Botswana was marked with a critical dearth of effective and efficient policies and laws protecting traditional medicines.

The efficiency and effectiveness of policies and laws that protect traditional medicinal resources was to a larger extent influenced by an interaction of factors such as ability to enforce the law, implementation capacity, trained human resources and domestication of laws following ratification of international conventions, protocols and frameworks. The availability of platforms advancing the value and effectiveness of traditional medicines determined recognition and awareness of the value of traditional medicines. Unfortunately, these platforms have been eroded at the same time when the powers of traditional leadership were curtailed in preference to the new political systems that came packaged with colonialism.

One key area in which the study makes a unique contribution to the protection system of intellectual property rights of the Barolong traditional medicine practitioners in Botswana is the

solution to the main problem addressed by this study. The protection system would only work if it has to involve indigenous knowledge and systems, the knowledge that understands the problem, not the knowledge which is imposed and foisted from outside. This contribution by this study posits that the solution has to be a wholesome complementarity, involving traditional medicine, biological diversity, environmental preservation and recourse in the form of enforceable indigenous rights. The literature review has found that a lot of researchers have dwelled at length on this topic. But the gap that has always gone unnoticed was the one involving the provision of a wholesome solution which will do away with the normally abused loopholes that help outsiders to enjoy the spoils of unsuspecting Barolong to commercial levels. The literature review could not find a solution that incorporates indigenous ways of knowing, over and above a total sum of traditional medicine, bio-diversity and environmental management. In fact one practitioner posited that food security and diet were also related to traditional medicine because if people ate properly and exercised restraint and abstinence from the vices of life they would not need the medicinal healing, especially with regards to non-communicable ailments.

Finally, the above analysis also suggests that as a major player already, WIPO cannot be left out of the solution. The outcome of the IGC should strive to incorporate the indigenous knowledge systems of each and every indigenous group whose knowledge they seek to protect within the IP regime. This school of thought advances a hybrid system for each interest country.

8.4 RECOMMENDATIONS

The findings of this study are important and may have implications for theory development, policy makers and CIPA among others, over and above solving an emerging problem. The

findings would also have implications for future research, as it is clear that research involving indigenous knowledge, especially traditional medicine is attracting a lot of interest. The following recommendations are further testimony that for indigenous knowledge to be complete, it should stand on both feet: theory and practice.

8.4.1 Policy and Decision-Makers

Protection of traditional medicinal resources calls for a strong will of the government of Botswana at all levels.

a) The Government should set up a National Coordinating Authority to be responsible for all IKS issues from access, studies, research, legislation, international protocols and treaties, enforcement, benefit sharing and others. This is in consistence with what the Swakopmund Protocol also recommends to the member states of ARIPO. It is especially mandatory for Botswana, where it has been discovered that the current approach where different departments do bits and pieces of one whole does not augur well for real national development. It duplicates and replicates effort and expenditure. It is a case where the left hand does not know what the right hand is doing.
b) The Government should enact laws on indigenous knowledge and specifically acknowledge traditional medicines, and then strive to localise the economic impact of Botswana indigenous knowledge resources through the suggested models of access and benefit sharing.
c) The House of Chiefs should be entrusted with all matters that relate to culture and traditional knowledge in general. When it comes to legislation, counsel from the House of Chiefs should hold sway.

d) There is an urgent need to regularise Botswana laws to re-align them in sync with international frameworks and conventions such as the Swakopmund Protocol, CBD and Nagoya Protocol, cascading down to the African Union and SADC guidelines.

e) Policy makers and experts in indigenous knowledge and owners of indigenous knowledge should consider developing regulatory framework for traditional medicinal resources in Botswana. The current regulatory frameworks are weak, inefficient and at best singularly unhelpful.

f) Recognition of the benefits of traditional medicines in the treatment of lifestyle diseases and reproductive health should be elevated.

g) Government should recognise and enact that indigenous tribes have the inherent and inalienable rights to their natural resources. Such rights dictate that they freely determine what is best for them according to their cultural beliefs, laws and practices.

h) Due to their close relationship with their land, the Barolong and others have acquired unique knowhow that empowers them to understand, manage and react to impacts of climate change. As such they should not be affected by government policies that try to curb greenhouse gases as these people contribute little to nothing in that regard.

8.4.2 CIPA and IKS Unit

CIPA and the IKS Unit should:

a) Provide platforms for assisting traditional healers to creating awareness about traditional medicines and their relationship with medical science.

b) Facilitate acquisition of IP rights of indigenous medicinal resources for Barolong and other communities in Botswana.

c) Document indigenous knowledge about traditional medicines through the Swakopmund Protocol.

d) Advise government on the paramount role of respective tribes of the rights and responsibilities of indigenous and local communities as rooted in international human rights law and instruments, protocols and treaties on sustainable development.

e) Inculcate national appreciation of the value of intellectual property at local level.

f) Motivate at international forums for TRIPS agreement to be amended to fit in IK, so that the minimum standards are also applicable in the IKS domain.

g) Offer grants to facilitate conservation and protection of traditional medicinal resources in Barolong communities.

h) Encourage buy-in and political will by political leaders in recognising and respecting Setswana cultures and taboos such as *boswagadi* and *botsetse* as a way of going back to origin and mainstreaming IKS, with the view towards mainstreaming and integrating them into government policy.

8.4.3 Ministry of Tertiary Education Research Science and Technology

The Ministry of Tertiary Education Research Science and Technology should:

a) Promote research in the area of traditional medicines.

b) Offer research grants promoting research in the area of traditional medicines.

c) Make available a Good Practice Guide for IKS research, access and benefit-sharing in Botswana.

At this juncture, Research Question 5, which was left unanswered in Chapter 2.5, will be dealt with. It is appropriate to introduce it now because all the data have been analysed, and with all the hindsight, it is opportune to propose what could be a working solution. The following model (in two options) is proposed as a recommendation that could act as a proper

and beneficial access and benefit sharing model. It is important to emphasise the novelty of this model as a conceptual framework because it could be particularly applied in many different IKS situations, not just the Barolong case. The model involves all the usual parties and shows the interrelationships that illustrate what is going on in the Barolong community; and it essentially makes conceptual distinctions and organises the scattered and disjointed parties. It comes in two options (Figure 8 and 9), of which the Option 2 (Figure 9) adds a very critical step which would close the loopholes that are usually used by bio-pirates – failure to disclose the origin of resources. Of novelty in this model is the fact the IP or the patent office is heavily involved.

The involvement of the patent office adds a new spin - the patent disclosure requirement. This means that all those who are granted the medicinal resources from their origin country and then take it to their countries for further research, value addition and eventual patenting should be forced to disclose the origin of the resources. This should be emphasized. Yet the whole process should be simplified by including in the national legislation the origin of resources should be identified by a simple GPS location coordinates. No two coordinates are the same; therefore this would point to the exact location, village, district or country, of origin of the resource

This model could also be enforced in the knowledge holder country by the line ministry, in this case the Ministry of Tertiary Education, Research, Science and Technology. While this model may not be the panacea to the whole problem in totality (as damage has already been done) it will be more than suffice to shape the contours of an effective, robust and well-

informed system. Its transparency and the legal simplicity it will bring are needed now to start moving in the right direction and protect and preserve what remains of the resources.

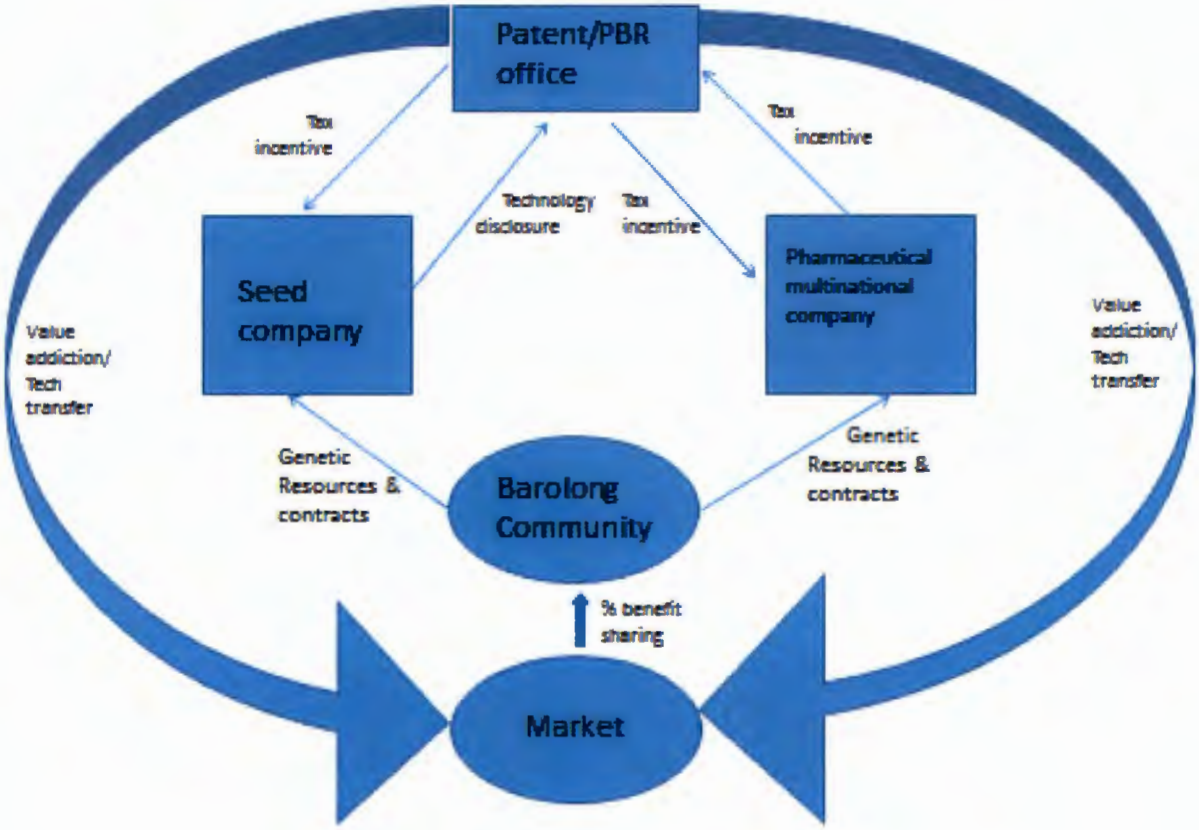

Figure 7. Conceptual Model 1 Showing Ideal Relationships to Solve the Barolong Problem

The patent office represents CIPA in Botswana or NIPMO in South Africa, which could also be the Plant Breeders Rights office to deal with the IP side. The Market represents the current market for the transnational pharmaceutical companies, which is currently not benefitting Barolong. The foreign-based researchers are also included. The Seed companies represent these researchers or plant breeders who might want to improve the varieties of the landraces by genetic means.

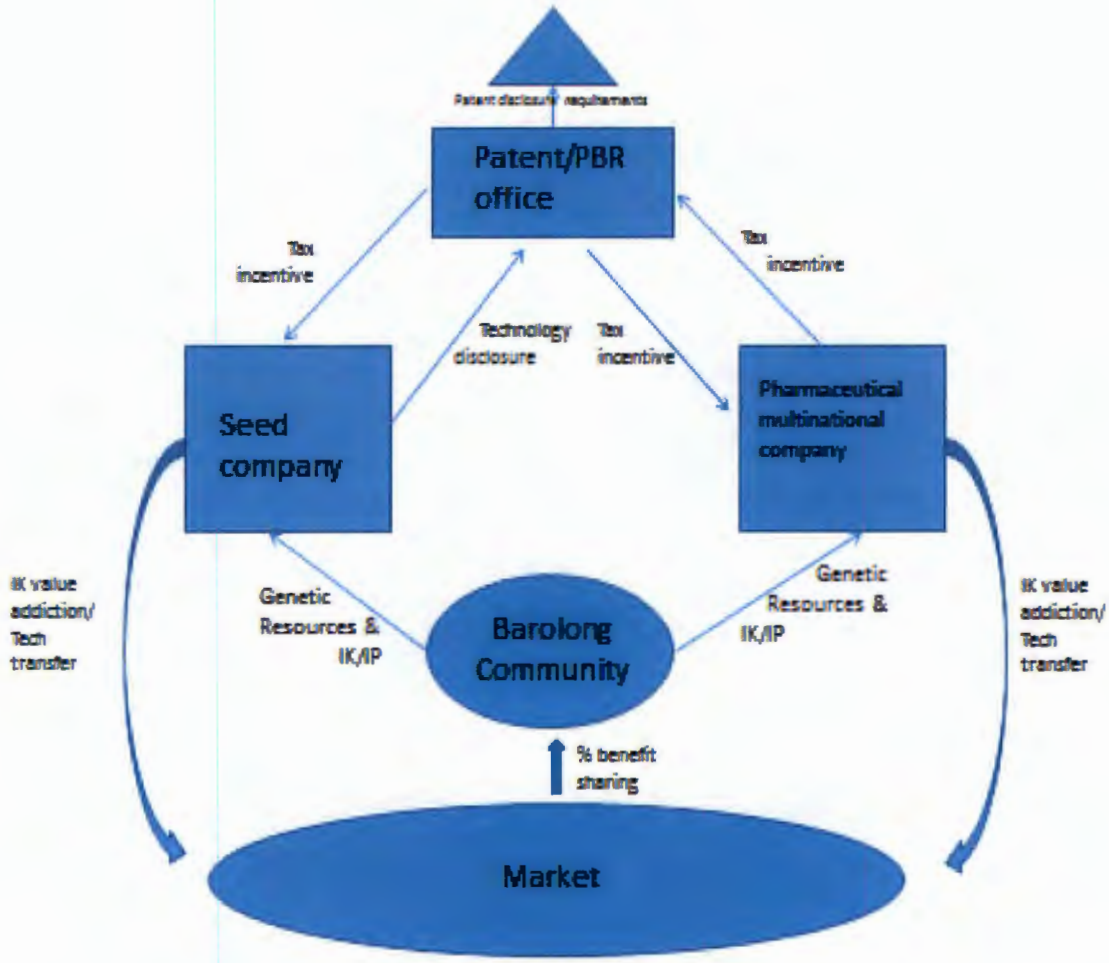

Figure 8. Conceptual Model Option 2 Including Patent Disclosure Requirement

8.4.4 Implication for future research

- As a disclaimer, the 4 weeks of fieldwork engaged in the natural setting was not enough to draw definitive conclusions on traditional medicines and methods of their consumption by Barolong. For this reason, more critical interpretive qualitative research extending over a longer period of time would be necessary to arrive at this kind of conclusion.

- More research studies are required in the area of effectiveness of traditional medicinal resources; these studies should also deal with toxicity and hygienic preparation of the medicines. CIPA should also educate herbalists about the importance of packaging and branding under intellectual property branches such as industrial designs and trademarks.
- Further research exercises complemented by critical interpretive qualitative approaches extending over a longer period of time are required focusing on the efficiency and effectiveness of the traditional Setswana way of managing natural resources, particularly traditional medicines.
- Pharmacognosy, a branch of knowledge concerned with medicinal drugs obtained from plants and other natural resources should be promoted and more researchers encouraged studying it, as it appears to be more in step with the ethos of traditional medicine. It has emerged that unlike classical medicine, pharmacognosy seems to be in the same 'wavelength' with traditional medicines so that it was able to offer scientific explanations of certain unexplained TK taboos and directives. At best, it remains the strong link between traditional medicine and modern medicine.
- IKS-based Theoretical Framework: Having investigated the relevance of the studied theoretical framework that relates to this study, the researcher proposes a hybrid theory that brings together all the theories that talk to the protection of IK for indigenous communities of Africa.
- About 30% of climate change solutions could be contributed by reforestation and improved agricultural methods and processes. These are natural methods which the indigenous communities are able to lead. Studies need to be carried out to determine the contribution that could be rendered by these forgotten players.

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10. ANNEXURES

10.1 ANNEXURE 1: FIGURES AND TABLES

Figures

Tables

10.2 ANNEXURE 2: LETTER GRANTING PREMISSION TO RESEARCH

Faculty of Natural and Agricultural Science

Indigenous Knowledge Systems Centre

To: The Traditional Leadership

Barolong (Botswana)

08 June 2016

Dear Sir/Madam

SUBJECT: PERMISSION TO CONDUCT RESEARCH:

MR OUTULE CUTHBET RAPULENG (STUDENT NO: 25848585)

This serves to inform you that Mr Rapuleng is a registered student for the degree: PhD in Indigenous Knowledge Systems, North-West University since 2015. The topic of his thesis is: The protection system of intellectual property rights of Barolong traditional medicine practitioners in Botswana. The above-mentioned student has finalised his proposal and planning to conduct field work in your community. As indicated above, the research is for academic purposes so that he can be able to complete the study at the end of 2017 academic year.

It will be our great pleasure if you can give him permission and assist him to conduct research in your community.

Regards

Prof. Phillip F Iya (PhD)
Professor of African and Comparative Law
Transnational Legal Consultant & Projects Co-ordinator
IKS Centre, North-West University(Mafikeng Campus)
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20852134@nwu.ac.za
philiya@hotmail.com

10.3 ANNEXURE 3: INVITATION LETTER TO EACH RESEARCH PARTICIPANT

PO Box 70227
Gaborone
BOTSWANA

June 14, 2016

Dear Participant

Goodhope Village Kgotla

My name is Outule Rapuleng. I am a student at North West University in Mafikeng, South Africa enrolled in the PhD Program in Indigenous Knowledge Systems. My studies have relevance to the lives of Barolong and it is hoped that by the end of the study, Barolong and Batswana at large would benefit in many way.

My topic is 'The protection system of intellectual property rights of Barolong traditional medicine practitioners in Botswana'. In short the study is trying to propose a solution that will protect your valuable traditional medicinal knowledge, which as you know is disappearing very fast to the point of affecting the environment. The study also tries to investigate if the olden Setswana practices cannot be reverted to, in order to correct the worsening situation. This is especially where your knowledge as a village elder will be highly useful. The investigation will largely be conducted by a focus group discussion and a one on one interview.

Your participation is entirely voluntary and at any point during the interviews you are free to pull out of the interview. However it is highly emphasised that your valuable input into this study will help not only the study but also governments and generations to come

Kindly be advised that in this type of study, your confidentiality is highly guaranteed. Your name will not be cited at any point and your contribution to this study will be treated with utmost secrecy.

I have with me a letter from my University supervisor Professor Philip Iya with his full details so that you could contact him any time to verify the authenticity of my study

Yours truly

Outule C. Rapuleng

NWU Student ID 25848585

10.4 ANNEXURE 4: RESPONDENTS' CONSENT FORM WITH QUESTIONNAIRES

Objective 2 (Investigating the history of how local communities and traditional healers protect and preserve their medicinal resources from plunder and depletion)
Consent Form for focus group and interview participants

I have read and I understand the information sheet relating to the above study. I have had the opportunity to discuss and be briefed about the objectives and methods of this study and I am satisfied with the answers I have been given.

I understand that taking part in this study is purely voluntary and that I have the right to withdraw from the study at any time without fear of consequences.

I understand that my participation in this study is confidential and that no material which could identify me will be used in any reports that may emanate from this study.

I also agree to have my focus group discussion/interview audio-taped.

I _____ hereby consent to take part in this study.

Date _____

Signature _____

INTERVIEWER INSTRUCTIONS:
Thank you again for taking the time to talk to me today. As indicated when this interview was arranged, we are worried about the disappearance of your natural resources, especially medicinal plants. We are interested in learning more about your community's traditional practices in helping to conserve the said resources. Your answers will be kept confidential and anonymous and will only be used to inform research and policy aimed at preserving indigenous knowledge, beliefs and practices; and medicinal plants in particular. But if you are uncomfortable with any question, you are free to decline answering it.

RESPONDENTS SOCIO-DEMOGRAPHIC INFORMATION

Gender: Male (1) Female (2)

Age (record in completed years in space provided: .....

Place of usual residence: Urban (1) Rural (2)

Rank in community: Traditional healer (1) Traditional leader (2) Ordinary Community member(3) Knowledge holder (4)

Type of employment: Formal (1) Informal (2)

Marital status: Single (1) Married (2) Separated/divorced (3) Widowed (4)

Religious affiliation: Christian (1) Moslem (2) Traditional religion (3) Other (4)

Age

Years of experience in dealing/using traditional medicinal plants

HEALTH ISSUES IN THE COMMUNITY

1. What are the main health problems in this community
2. What are the most affected population group by these diseases?
3. What are the actual causes of these diseases in the community?
4. What are the perceived causes of the diseases in the community?
4. Where do you seek health care services in cases of emergent diseases or any type of illness in this village?
5. How long do you take to seek help in cases of such sickness?

KNOWLEDGE & USE OF INDIGENOUS MEDICINE

5. Do members know about indigenous medicine in this community?

6. What is the perception of the community members regarding indigenous medicine as an alternative source of health care?

7. What specialized field of indigenous medicine do you know? Probe for these if not mentioned: Spiritualism, Herbalist, Magic, Diagnosis specialist, Medicine man/woman, Healer, Midwife and knowledge/training of caregivers.
8. What are the sources of the indigenous medicines used in this community?
9. What is the perceived or actual effectiveness and efficacy/efficiency of these indigenous medicines?
10. Once prepared, how are the medicines stored to maintain their effectiveness?
11. What socioeconomic groups are most likely to use indigenous medicine?
12. What socioeconomic groups are least likely to use indigenous medicines?
13. Why for each of 11 & 12 above?
14. Are indigenous medicines easily found nowadays in this community? Why/Why not?

INDIGENOUS MEDICINES CONSERVATION

15. What specific ways are used to ensure that the medicinal plants are not over-harvested?
16. How are indigenous medicines described above preserved? Probe for harvested/raw.
17. Types of preservation describe

VALUES AND BELIEFS RELATED TO INDIGENOUS MEDICINE

18. List or describe the main values and beliefs in indigenous medicines as practiced in your community. Probe whether or not the above values are still being followed.

19. What were the indigenous laws and regulations regarding the administration of indigenous medicines?

20. Describe any indigenous legal systems, rules or regulations that guide access and use of indigenous medicines: Probe specifically and separately for:
    - Implementers of regulations
    - Practitioners
    - Safety
    - Knowledge transmission
    - Processing
    - Storage
    - conservation
21. What are the main beliefs regarding indigenous medicines?
    a. Indigenous medicines are more effective than modern medicines in all diseases
    b. There are diseases that can only be treated by indigenous medicine
    c. Indigenous medicine is the embodiment of our culture

22. What attitudes and beliefs influence utilization of indigenous medicine?
23. What traditional practices influence use of indigenous medicine
24. what traditional knowledge influence uses of indigenous medicine

25. What else could be done to sustain and increase the efficacy, efficiency and effectiveness of indigenous medicines?

Thank you very much for participating in this discussion

Objective 3. (Establishing the efficiency and effectiveness role of current policies, legislations and practices giving effect to IKS in Botswana).

DOCUMENT ANALYSIS GUIDELINES IKS POLICY PROVISION

Indicators	**Reflexive comments**
1. Availability of a policy	policy strength, failures and gaps
2. Comprehensive legislation	instrument strengths, failures and gaps
3. Implementation capacity	line ministry, coordination with other gov't depts

Objective 4 (Evaluating the effectiveness of the current enforcement systems of the use and management of traditional medicinal resources: compatibility with international standards).

SEMI-STRUCTURED INTERVIEW FOR IKS POLICY MAKERS

The effectiveness of current policies, legislations and practices providing for IKS in Botswana

1. What is the role of your office regarding IKS?
2. What policy provisions are in place for provision of IKS protection?
3. To what an extent have these policies been implemented?
4. How capacitated is your office to implement these polices?
5. What policy targets have been set to ensure provision of IKS in Botswana?
6. How do you ensure that policies developed domestically conform to international norms and standards?
7. Is there anything that you would to bring to my attention regarding the provision IKS in Botswana

10.5 ANNEXURE 5: SAMPLE TRANSCRIPTIONS

Policymakers

Mr Molausi

(I: INTERVIEWER, M: MR MOLAUSI)

Interviewer: the whole research deals with the effectiveness of current policies, legislations and practices providing for the IKS in Botswana which I believe here we call traditional knowledge, TK. What is the role of your office regarding IKS?

Interviewee: our role as CIPA is to provide protection, we have the industrial property act of 2012 that provides for the protection of traditional knowledge, so that is the role that we play to ensure that TK that is owned by the individual and communities can be protected through the industrial ac of 2010.

Interviewer: so you don't play a role with coming up with policies

M: We don't play a role in that, our major role comes into play when it comes to intellectual property as an area which we focus on as CIPA, but we do contribute to policy development, like I know in Botswana IKS policy has been developed by the department of research, science and technology, so we contribute towards the development of the policy.

I: What policy provisions are in place for the protection of TK?

M: At the moment there is no national policy developed that have been put in place per se, or a national policy that has been adopted. Like I said the department of research, science and technology has been working on an IKS policy, so that is what the policy will be used to guide further as to how we can protect IKS.

I: So does the department come up with policies while CIPA enforces them?

M: We focus on protection, they are developing the policy and our role will be as knowledge holders, we ensure that the knowledge is protected, so that people who may want to use it, such knowledge is for commercialisation. At least we have identified who the owners of the knowledge are, so that way they can be able to derive a benefit from.

I: So basically the ministry develops the policies and you implement, how capacitated is your office to implement?

M: In terms of protection, we are not capacitated fully, that is the area where we are supposed really focus on, one of the things we would like to do is seek help from the world intellectual property organization to help us with some training on TK so that we can be able to build in house capacity for us to be able to deal with TK issues. One thing that we are currently doing is reviewing our industrial property act and we have already sought assistant from YPO, for them to look at the current provisions and for them to see if they cannot be able to come in and do more training and see if we cant improve on what we have on how IKS can be protected.

I: Would say YPO is best placed to deal with this issue looking at the fact that there has been a grounds for complaints from indigenous people with regards to TK?

M: In my view YPO does have capacity and resources to assist countries, but obviously each country has to look at its situation and see what is best for itself, but I think the work that YPO has done in this area is enormous which has contributed to this area of knowledge and in my view their contribution has been positive, it has been immense obviously because IKS has a lot of players and interest groups, some people will be happy with some things and others wont be happy, depending on how they view the matter, but in my view I think YPO has capacity to assist.

I: What policy targets have been set to ensure provision of IKS in Botswana?

M: Because the policy has not been implemented there are no targets or implementation targets that really guide in terms of what should be done in Botswana. So at the moment I think the area is not well structured such that we cannot gauge how well we are progressing in terms of implementation when it comes to TK. I believe that in terms of policy it will better guide what should be done, at this time I think everything is haphazard, everybody is doing different things and therefore it is not as effective as its supposed to.

I: So I shouldn't ask if the domestic policy conforms to the international policy standards?

M: No, because at the moment that policy hasn't been put into place.

I: What impacts would you face emanating from the fact that there is no policy?

M: The impacts are huge because we will continue to see the knowledge being used without the benefits accruing to the knowledge holder and that will negatively impact on the TK in Botswana, therefore it is critical for the driving ministry in terms of IKS in Botswana really move the process forward so we can be able to have a structured way of doing things. Like I said we engaged YPO to review the act and also to assist on how we can incorporate issues of mandatory disclosure, issues of consent in our laws so that we can be able to address the issues as they come, other players have to come on board, like the dept. of environmental affairs because they are ones who signed on the protocol so that we can a have a comprehensive way of dealing with this TK issue.

I: Is there anything else you would like to bring to my attention regarding the provision of IKS in Botswana?

M: The challenge that I see concerning IKS is that we don't have a single body that coordinates the IKS issues, that way we can be able to deal and address IKS issues. Everyone is doing what they want with IKS so until we have that body we will continue to face challenges. The other thing is the awareness, the communities themselves and the owners of the knowledge have limited knowledge on how IKS can benefit them even that it can benefit them, that is the real challenge in Botswana we have to address so that we can see benefits accruing to the people.

Traditional Healers

PROF. OF PHARMACOGNOSY

(I: INTERVIEWER, P: D.MOTLHANKA)

I: its about health issues in the community and Botswana in general, what are the main health problems?

P: the main health issues are non-communicable diseases to be specific; high blood pressure, asthma, hypertension, kidney diseases and cancer, not forgetting diabetes, these are the main killer diseases, not HIV. The non-communicable disease have taken over communicable disease, the government and its totality has tried and warned about cardio vascular diseases.

I: what are the most affect age groups?

P: it used to be the elderly people, especially with heart diseases, it used to be common in people above ages of 50 years, nowadays the age has dropped to 30years, it is because of the lifestyle we live, particularly the youth are prone to lifestyle diseases like diabetes. An improvement in the economic status is now having a negative impact on the health and lifestyle of the youth, because now that the standard of living has now gone up, people are able to buy junk food, so now these diseases span throughout all ages.

I: what are the actual cases of these diseases?

P: lack of exercise, people don't take fitness seriously, wrong choice of diet, lots of oxidative stress, which is related to depressive social lifestyle, depressive states at work or knowing that a family member is not doing well and pollution.

I: what are the perceived causes of these health issues?

P: people think it's the dietary change from traditional diets to the modern diets, which is true because a change from non-processed traditional food to overly processed modern foods has now lead to obesity.

I: where do people get assistance in case of emergent diseases?

P: people will think these people go to formal health care providers, wrong, they first go to traditional healers, even church goers go to traditional healers and the other proportion of the community might go to health posts or clinics, but you must not forget that they visit traditional medical centres first especially because some people have the believe that if they go to the clinic they may get worse instead of getting the natural products from the traditional healers.

I; how long does it take to seek help in case of these illnesses?

P; it depends on the social statuses, those who don't believe in traditional healing will go to hospitals, the thing is you find that we don't have a lot of expertise when it comes to these non-communicable diseases, so you will be put on long queues and waiting lists for operations, even though now the government has a corporation with South Africa.

I; do our people know about indigenous medicines?

P; yes, about 80% of our population and any African set up is heavily dependant on traditional medicine, including pastors.

I; what is the perception of people regarding indigenous medicines?

P; about 90% if not all of them have an acceptance of traditional medicines as an avenue to go into that will even replace the orthodox medicine.

I; what specialisation of medicine do you know of in traditional medicine?

P; im practising the whole cocktail of traditional medicine that involves herbalism, im doing what is called phytotherapy, it entails the use of plant materials for the benefit and treatment of mankind in illness and also alleviate problems associated with malnutrition which might lead to diseases.

I; what are the sources of these traditional medicines?

P; they are all from the forest, they are all organic, just a small portions of the community is able to cultivate them in small domesticated areas called nurseries, there is one in Ghanzi where they are cultivating Hudia and I am cultivating sengaparile, it needs sandy areas so that it can be fruitful, if you grow it in clay soil it will produce small tubers with less medicinal properties

I; how effective and efficient are these medicines?

P; according to the feedback from users who have recovered after using the medicines, it works because they are very happy with the out-put, the right word to use is efficacy, once you take it your problems are cleared, with less side effects and no adverse effects, side effects result from the reaction of a target molecule from a plant targeting non-specific receptors, on the other hand an adverse effect is an effect that is undesirable to even the target organ.

I; are there any animal products used as medicines?

P; yes, there are people who use python fat, because there are a lot of fatty acids which is used to draw medicines from the blood, so it is used as a driving force, things can cross the membrane when they are dissolved in lipids, even sheep's fat. I also use donkey products, faeces for asthma preparations, urine for inflammatory illnesses and the skin for control of fever.

I; once prepared, how are the medicines stored to maintain their effectiveness?

P; I use the fridge as storage units, because some of the plants are prone to soil microbes and if you don't wash the plants properly the spores will form around the tubes and if you don't store properly they will proliferate, sometimes I use organic methods such as garlic.

I; since this started in the olden days, how were these medicines preserved?

P; they preserved through grinding the plants, evaporating the moist which might facilitate the growth of moulds.

I; what socio economic groups are most likely to use indigenous medicines and which are less likely to use them?

P; there are trends to it, it is the rural people who are more concerned with the use of traditional medicines, primarily because some of them cannot afford the orthodox medicines, but recently the middle class is also turning its hope towards traditional medicines.

I; are these medicines easily found nowadays?

P; they are scarcely found because most of the custodians of traditional knowledge have died without transferring their knowledge on to the generations that they brought up, except for the few who are surviving as street vendors, those are the few remnants and knowledge is dwindling on them in that area, slowly the knowledge is dying off.

I; what are the provisions in place to ensure that these medicines are not over harvested?

P; one of the ways is to avoid over harvesting, when you go and harvest you remove the old ones and leave the new ones so they can grow and you don't remove everything from the clan, if it's a big plant you don't cut the plant, you just take part of the plant and if you know that the plant's roots and leaves have the same medicinal properties, you take the leaves and the other way to conserve them is to domesticate them, bring the plant from the wild and grow it close by in botanical gardens.

I; how are they preserved to safe guard their integrity?

P; I use the traditional way by drying them, sometimes I freeze dry them, add garlic to preserve them, some of them I produce capsules. We remove water because there's no chemistry that can take place in a dry substance.

I; what are the practices and values associated with traditional medicines as practiced in the community?

P; every African culture know they were raised on traditional medicines, that is the value of it, the problem is those people who come and distort peoples culture who say do away with traditional medicines we will pray, we also pray even though we use traditional medicines, we also believe in God. The thing is that people think when you practice traditional medicine you practice witchcraft, the medicines we use are organic so they come from God.

I; what are the laws and legislations regarding the administration of traditional medicines?

P; there are so many especially those that are traditionally based, like when you are told not to harvest some plants in the morning and on the western side and there are scientific basis behind that, you harvest in the eastern side so that the sun's radiation can hit the plant, which also has electromagnetic components that stimulate the DNA of the plant called genetic locus which stimulate the DNA of the plant which will also reach the side where the sun didn't hit and that reaction is the plant protecting itself.

I; describe any legal systems, rules or regulations that guide the use of indigenous medicines, looking at safety, knowledge transmission, processing and storage and implementers.

P; the only one I can think of are the current associations that are formed, they are there to guide who should be allowed to practice traditional medicine because there are a lot of people, especially at the bus rank, who sell traditional medicines who are not traditional healers, they are insulting the integrity

of traditional healing and medicines. There are laws that are coming up that will stipulate a need of a certificate if you are to deal with traditional medicines.

I; what attitudes and beliefs influence use of indigenous medicines?

P; people who have given up with the current orthodox contemporary medicines, they think they are giving them side effects so they are going back to the roots, moreso that people believe in traditional medicines, they believe that this is the gate way that can save them.

I; what else can be done to ensure efficacy, efficiency and effectiveness of traditional medicines?

P; traditional healers must be trained on a number of issues regarding toxicity, handling the medicines, the extraction processes because sometimes the wrong extraction method can lead to you leaving the important stuff in the junk you throw away, so there is need for training for all dealing with traditional medicines, safety and preservation, package, storage, dosages and concentrations and prescriptions, some need to be trained that some of these herbs are indeed drugs, you need to be trained to know if your patient is on any other medicine or not so to avoid counter actions in the body.

I; is there anything else?

P; we have to preserve medicinal plants.