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THE PROTECTION OF TRADITIONAL KNOWLEDGE: CHALLENGES AND POSSIBILITIES ARISING FROM THE PROTECTION OF BIODIVERSITY IN SOUTH AFRICA

A Mini-thesis submitted in partial fulfilment of the requirements for the award of a Masters of Laws (LLM)

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DECLARATION

I, Dountio Ofimboudem Joelle, declare that the work presented in this Mini-dissertation is original. It has never been presented to any other university or institution before; references, and in some cases, quotations have been provided where other people's work have been used. I, therefore, declare that this work is my original work.

Signed.....

Date.....

Supervisor: Professor Bernard Martin

Signature.....

Date.....

ACKNOWLEDGEMENT

I would like to thank my Dad Mr Leon for his support throughout my academic live, my mom Mrs Celine for her continuous support, love and friendship, you are the best. Warm thanks equally go to my brother and my sisters who are my source of joy.

I thank my friends, Mike, Juvetta, Claudia, and all the others, who are like a family to me here in South Africa and Joel, who played the greatest role in supporting me and assisting me with my studies, you are a blessing.

I am grateful to my lecturers Dr Ekome, Dr Yanou, Dr Fonyam, Mrs Samalang and many others of the Faculty of Law of the University of Buea in Cameroon who all played a great role in introducing me to the field of law which today is like home to me.

And very importantly, I am greatly indebted to Professor Bernard Martin my supervisor, who painstakingly went through this work a good number of times, guided and assisted me throughout the course of this research; you were like a father to me.

Lastly but not least, I would like to thank Dr Dirk Troskie of the Western Cape Department of Agriculture who played a great role in my choice of topic.

DEDICATION

This research is dedicated to God Almighty.

ABBREVIATIONS

TRIPS	Agreement on Trade Related aspects of Intellectual Property Rights
CDB	Convention on Biodiversity
TK	Traditional Knowledge
WTO	World Trade Organisation
IPR	Intellectual Property Rights
WIPO	World Intellectual Property Organisation
PIC	Prior Informed Consent
UPOV	Union for the Protection of New Plant Varieties
ITPFG	International Treaty on Plant Genetic Resources for Food and Agriculture

KEY WORDS

Traditional knowledge

Biodiversity

Bio-piracy

The Convention on Biodiversity

Trade related Aspects of Intellectual Property Rights

Biological resources

Genetic resources

Indigenous peoples

Intellectual Property Right

Bio prospecting

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ABSTRACT

Traditional Knowledge (TK) is the long standing wisdom, teachings and practices of indigenous communities which have been passed on orally, in the majority of cases, from generation to generation. TK is expressed in the form, medicine, agriculture, understanding of the ecology, music, dance, stories, folklore, poetry, spiritual, cultural and artistic expressions, and knowledge relating to bio-diversity.

This thesis focuses on plant bio-diversity, as part of TK, and the problem of bio-piracy. We attempt a definition of TK; its characteristics; possible measures that can be taken to ensure its protection; and challenges that are likely to be faced in seeking to ensure its protection, first at the global level, then with particular attention to South Africa. Some of the suggested measures include the enactment of *sui generis* laws to protect plant biodiversity, rather that the adaptation of the existing IP regime. Some of the challenges include unwillingness of some countries to participate in international initiatives, like the US, which is not even a signatory of the CBD, and the difficulty of identifying the persons in whom ownership of the TK should be vested when it is possessed by many communities.

This issue is a very sensitive one because there have been numerous cases of bio-piracy in developing countries perpetrated by corporations from industrialised countries. Some of the notable examples of bio-piracy include; The *Neem* tree from India whose products are used in medicine, toiletries and cosmetics; the *Ayahuasca* a vine used in India for religious and healing ceremonies; the Asian *Turmeric* plant used in cooking, cosmetics and medicine, the *Hoodia Cactus* plant in the Kalahari Desert of southern Africa used by the San people to stave off hunger. These instances have given rise to increased talks about the necessity of a law on the protection of TK relating to bio-diversity in general at the international, regional and national levels.

The World Intellectual Property Organisation (WIPO) is working on enacting measures to ensure the protection and conservation of TK at the international level; in 2002 it created nine fact finding commissions on TK in general. These fact finding missions on TK innovation and creativity were undertaken with the intention of seeking possibilities of protecting the intellectual property rights of TK holders. In 2002, The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC)

was created to continue with this task. The 1993 Convention on Biodiversity (CBD) encourages States to enact measures to implement its provisions on the protection of knowledge, innovations and practices of indigenous and local communities. This trend in protection of TK relating to biological resources has been followed by the Nagoya Protocol of October 2010. The World Trade Organisation (WTO) also makes mention of protecting plant varieties. The research suggests that one could use both Intellectual Property Rights and *Sui Generis* measures to address and secure protection of TK, and provide compensation to holders for the use of the intellectual property.

CHAPTER I

INTRODUCTION

1.1 Background

Developing countries are richly endowed with knowledge uniquely held by them. This knowledge is found in several domains, namely; medicine, agriculture, music, dance, stories, folklore, poetry, spiritual expressions,[1] knowledge relating to ecology and biodiversity, cultural and artistic expressions. Most of this knowledge was for much of history held only by indigenous communities; it is unwritten (for the most part of it), forms part of their ancestral heritage, and is generally not known to outsiders. A great deal of this knowledge is transmitted orally from one generation to the next. Many people believe that this knowledge, particularly the parts related to medicine, provide remedies that are better than the chemical drugs manufactured by industrialised nations.[2] As an example, we can consider that the Indian sub-continent, in which people rely mainly on traditional medicine, records the highest number of old people.[3]

The astonishing diversity of TK, of which biological resources are but a part, makes it complicated to define.[4] These difficulties notwithstanding, a workable definition is:

> *"tradition-based literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks, names and symbols; undisclosed information; and, all other tradition-based innovations and creations resulting from intellectual activity in the industrial, scientific, literary or artistic fields.*[5]

NB: The terms intellectual property right and Intellectual Property Rights (IP/ IPRs) for purposes of this research are not the same; intellectual property refers to all creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce and not necessarily regulated by the TRIPS agreement. On the other hand, IP / IPRs refer to that which is regulated by the TRIPS Agreement.

[1] Owens 'Protection of Traditional Knowledge: A Global IP Issue' (1999) WIPO Roundtable on IP and Traditional Knowledge Power Point presentation 2 available at www.wipo.int/mdocsarchives/...RT.../Non%20paper%20ROwens.pdf (last visited 22/08/2010).

[2] For more information about the advantages of medicinal plants visit http://www.areyouslim.com/herbal-medicine.php (last visited 15/08/2010).

[3] For more information about the oldest people visit http://socyberty.com/people/10-oldest-people (last visited 15/08/2010).

[4] It may be likened to the story of the six blind men who attempted to describe an elephant by touching and feeling it. The story goes that each man gave different description based on what he could feel 'The Blind Men and the Elephant' available at www.businessknowhow.com/growth/projectwork.htm (last visited 22/08/2010).

[5] WIPO IP and TK Report (1998-1999) 25 available at http://www.wipo.int/tk/en/tk/ffm/report/final/index.html (last visited 15/08/2010).

In another context, TK has been defined as knowledge held and used by people who identify themselves as indigenes of a place based on cultural distinctiveness, prior territorial occupancy, distinct, and dominant culture.[6] In other words, TK is knowledge that is held by a distinct group of people inherently, constituting part of their culture, while it is acquired by foreigners,[7] by enquiring into that culture.

It is worth mentioning that even the word *traditional* used in this context refers to knowledge systems which have been transmitted from one generation to the next, but which are constantly evolving in response to the changing environment.[8] Hence, TK is knowledge that is traditional only to the extent that its creation and use are part of the cultural traditions of a community; it is not necessarily ancient or static.[9]

Mayor defined TK as knowledge possessed by indigenous communities of their environment.[10] He went on to explain that such knowledge is derived from living close to nature, its richness and the complexity of its ecosystems, for centuries; developing an understanding of properties of plants and animals, of functions of the ecosystem, and of techniques for using and managing them.

The detrimental impact of unauthorised appropriation of TK held by developing countries is evident. Corporations and researchers from developed countries, generally carry out the appropriation. The provisions of the Convention on Biodiversity (CBD) and the Nagoya Protocol have become important measures in the fight against unauthorised appropriation of TK. These two biodiversity regulations recognise the right of States to regulate or manage their biological resources which are vital to the conservation of biodiversity.[11] The CBD requires each contracting party to respect and preserve the practices of indigenous communities as far as possible, by means of national legislation, and to ensure equitable sharing of benefits obtained from their authorised utilisation,[12] as well as access based on

[6] UNEP/CBD/COP/3/Inf.33, Annex 2.
[7] These are people who do not belong to that indigenous group.
[8] Holden 'Genetic Resources, Traditional Knowledge and Folklore' (2008) available at http://www.america.gov/st/business-english/2008/April/20080429221258myleen0.8259394.html (last visited 21/10/2010).
[9] WIPO IP and TK Report (1998-1999) 25.
[10] See http://www.unesco.org/education/tlsf/TLSF/theme_c/mod11/uncom11t01.htm (last visited 09/01/2011).
[11] Article 8(c) on In-Situ Conservation.
[12] Article 8 (j) in particular, requires each contracting party to respect and preserve TK relevant for the conservation of biological diversity, and promote their wider application with the approval and involvement of holders of this knowledge while ensuring that they benefit from its utilization.

prior informed consent.[13] The CBD clearly is not opposed to the use of the TK for economic benefits, but it requires the use to be done according to clearly specified rules and procedures, and for the benefit of both the user of such knowledge and the indigenous community from which the knowledge is derived. This treaty further provides that the relevant Member States should lay down the rules and procedures applicable to the use of such TK.[14]

The Convention and the Nagoya Protocol empower Member States to safeguard the interests of TK holders and ensure that appropriation only takes place with prior informed consent (PIC). The CBD also requires that holders and prospective users of TK should enter into fair and equitable benefit sharing agreements. Only if such laws are in place will individuals or countries wanting to gain access to TK of local communities, know how to go about it lawfully.

It is important for developing countries to put in place better laws on TK protection because there have been several instances of violation of the provisions of the CBD in the form of bio-piracy in developing countries, and if nothing is done there is a likelihood that the rate of bio-piracy will continue to increase. Better protection of the biological resources of TK holders will secure a greater share of the benefits derived therefrom for developing countries, and could provide the much needed capital that is required to ameliorate the plight of the unemployed, and poverty stricken.[15]

Two main possibilities for the protection of TK, and more particularly biological resources, have been suggested. The first is that of adapting existing IP law, and the second is protection through a *sui generis* law.[16] The first to be examined here is that of adapting existing IP law to protect TK.

Some researchers are of the view that certain IPRs such as Geographical Indications (GIs), Trademarks (TMs) and Undisclosed information (UI) may be used to protect TK;[17] this is because GIs and TMs are designed to reward goodwill and reputation a producer or a group

[13] Article 15 (5) of the CBD
[14] Article 8(c) provides that each contracting party shall as far, and as appropriately, as possible regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use.
[15] Annual global sales for products in agriculture, biotechnology, horticulture and healthcare sectors derived from genetic resources amount to between US $ 600 to 800 billion. Kate & Laird 'Bioprospecting Agreements and Benefit Sharing with Local Communities' in Finger and Shuler (Eds) *Poor Peoples Knowledge* 134.
[16] One of a kind, unique available at http://dictionary.law.com/Default.aspx?letter=S (last visited 06/10/2010).
[17] Downes 'Using Intellectual Property as a tool to Protect Traditional Knowledge' (2000) 25 *Columbia Journal of Environmental Law* 253.

of producers has or have built up over time -sometimes many years and even over centuries-[18] by distinguishing the goods of one producer from those of others.[19] There are difficulties with using other forms of IPR, such as Patent and Copyright, as tools for TK protection. The problem is that these forms of IPR confer rights on individuals, and are typically for economic gain, inferring that protection is sought for by, and granted (for the greatest part) to, individuals for market-based interests.[20]

Individual market based interests (as a motive for holding an IPR) are contrary to the nature of TK, in which the knowledge is held by a community, (though there are exceptional cases of individually held TK),[21] for the interest or wellbeing of the community, and not for market-based interests.[22] Very seldom is an individual recognised as the sole holder of TK.[23]

Another popular suggestion is that of protecting TK through a *sui generis* regime,[24] that is, a distinct system tailored or modified to accommodate the special characteristics of TK in general and bio-diversity in particular.[25] In this case, countries enact laws for the protection of TK that are separate from their other IP laws.[26] Thus far a *sui generis* regime seems to be the most appropriate mode of protection of TK in general and biodiversity in particular.

South Africa has also experienced a number of pertinent instances of bio-piracy. These include the cases of; the *Hoodia cactus* plant,[27] the *Rooibos* plant, [28] the *Honey bush* plant,[29]

[18] 'Patent and Geographical Indications: An Overview' available at http://www.legalserviceindia.com/articles/patents_geographical.htm (last visited 06/10/2010).
[19] Cohen 'What are Trademarks and Why You Need to Take Them Seriously' available at http://www.intelproplaw.com/Articles/cgi/download.cgi?v=1168918522 (last visited 6/11/2010).
[20] Downes 'Using Intellectual Property as a Tool to protect Traditional Knowledge: Recommendations for Next Steps' (1997) 4 available at http://www.humanrights.ch/home/upload/pdf/061127_UsingIPtoProtectTraditionalKnowledge.pdf (last visited 26/10/2010).
[21] A Shaman holder of TK often owns it as an individual. A Shaman is a medicine man or woman who acts as a spiritual leader of a community, shamans also provide a link between members of a community and their ancestors see http://africanhistory.about.com/od/glossarys/g/def-Shaman.htm (last visited 28/08/2010).
[22] Dutfield 'TRIPS-Related Aspects of Traditional Knowledge' (2001) 33 *Case Western Reserve Journal of International Law* 248.
[23] Dutfield 'TRIPS-Related Aspects of Traditional Knowledge' (2001) 33 *Case Western Reserve Journal of International Law* 253.
[24] Correa 'Traditional Knowledge and Intellectual Property Issues and options surrounding the protection of traditional knowledge' (2001) 13 **a**vailable at www.ppl.nl/bibliographies/wto/files/4445 (last visited 14/08/2010).
[25] Tabrez, Adikary and Das 'Protection of Bio-cultural property in the Cradle of Traditional Knowledge' 10 available at www.eurogeographics.org/workgroups/wg1/eu_directives.pdf (last visited 15/08/2010).
[26] Article 8(a) of the CBD states that each country shall as far and as appropriate as possible establish a system of protected areas where special measures need to be taken to conserve biological diversity.
[27] See www.rebirth.co.za/hoodia/san_tribe_and_biopiracy.htm (last visited 17/08/2010).
[28] See http://www.timeslive.co.za/business/article473765.ece/Nestle-accused-of-SA-bio-piracy (last visited 17/08/2010).

and the *Pelargonium* plant,[30] these are all discussed later. These examples point towards the practice of bio-piracy perpetrated by developed countries in developing countries increasing at an alarming rate.

It is worth mentioning at this juncture that biodiversity is a very broad concept, it is defined as the variability among living organisms from all sources including inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and ecosystems.[31]

Biological resources are defined as including genetic resources, organisms, or parts thereof, populations of any other biotic component of ecosystems with actual or potential use or value to humanity.[32]

Due to this wide scope, the research will be limited to biodiversity, and biological resources relating to plants, that is, plant biodiversity, hence, any reference to biodiversity, biological resources, unless otherwise specified should be interpreted to mean plant biodiversity or, plant biological resources alone.

The issue that this thesis addresses is: how can biological resources best be protected within the framework of protecting traditional knowledge, so that indigenous populations derive the greatest benefit from it?

The related issues that the thesis will also address are: what is traditional knowledge? Why is there need for its protection? For whom should it be protected? How should it be protected? How has it been protected elsewhere? What form of protection will be most beneficial to the holders of such rights? What are the challenges that are likely to be encountered in seeking to protect biological resources? And what is the way out?

1.2 Research objectives and methodology

The objectives of this thesis are twofold namely; academic and strategic. The academic goal, which is central to this thesis, is to explore the concept of TK with particular attention to

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[29] See http://www.timeslive.co.za/business/article473765.ece/Nestle-accused-of-SA-bio-piracy (last visited 17/08/2010).
[30] See www.oaklandinstitute.org/voicesfromafrica/node/67 (last visited 17/08/2010).
[31] The CBD article 2.
[32] The CBD article 2.

biodiversity,[33] and the growing problem of bio-piracy[34] by companies from developed countries, in breach of the CBD and the Nagoya Protocol. We explore the possible means through which biodiversity can be protected, the challenges that developing countries in general, and South Africa in particular, face in attempting to protect their biological resources, and propose recommendations on how best to approach this issue. Occasional references are made to the situation in India with respect to protection of biological resources. We use India because it has been a victim of several instances of bio-piracy,[35] and has put in place very stringent measures to put an end to this. Some of these measures include the creation of the Traditional Knowledge Digital Library (TKDL); it consists of computerised database of documented information available on published texts on Indian system of medicine in several languages.[36] The Indian government has signed agreements with a number of countries giving them access to registered patents on biological resources used for medicine on specified terms so as to put an end to bio-piracy.[37]

The strategic goal of this research is to encourage the improvement and or adoption of legislative measures geared towards improving conservation of biodiversity in South Africa. Such protection can take various forms, a *sui generis* measure or by amendment of the existing IP laws to accommodate TK. Whichever route is chosen, one of the prime factors to be considered should be the interests of the holders of TK; these could be safeguarded by ensuring only authorised exploitation of TK, equitable sharing of benefits with its holders, PIC and exchanges based on mutually agreed terms between its holders and its users as required by the CBD.[38]

Methodologically, the research consists of a desk top review; this entails an analysis and synthesis of materials obtained from text books, journals, articles on biological resources, and Internet sources. The main documents consulted are publications on TK in general,

[33] This refers to the varieties of ecosystems and living organisms; animals, plants their habitats and their genes available at www.iucn.org/ivb/about (last visited 15/08/2010).
[34] Bio-piracy is a term used to describe the commercial development of naturally occurring biological materials, such as plants substances and genetic cell lines, by a technologically advanced country or organisation without fair compensation to the peoples and nations in whose territory, and even with whose assistance the materials were originally discovered available at http://www.thefreedictionary.com/biopiracy (last visited 22/08/2010).
[35] The popular Neem case and the Ayahuasca cases amongst others.
[36] Varkey 'Protection of Traditional Knowledge-the changing Scenario in India' (2007) available at www.law.ed.ac.uk/.../67_varkeytraditionalknowledgeinindia03.pdf (last visited 21/08/2010).
[37] See www.cbd.int/iyb/doc/celebrations/iyb-india-press-en.pdf (last visited 17/08/2010).
[38] Article 8(j).

publications on Biodiversity, International treaties addressing the protection of TK and biodiversity, South African laws on protection of TK and protection of biodiversity.

1.3 Thesis structure

Chapter two of this thesis explains the concept of TK. It focuses on the recognition of TK at the international level; the reasons for the protection of TK; the characteristics of TK in general; the differences between TK and western type scientific knowledge; some of the very important instances of bio-piracy; the controversy surrounding its protection, that is, the idea of positive and defensive protection. The issue of positive or defensive protection relates to whether it should be merely protected in the sense of ensuring prior informed consent, and equitable benefit sharing from its appropriation, or whether it should be to conserve such that no one is given access thereto without permission.

The third chapter focuses on the difficulties that are faced in seeking to afford protection to biological resources knowledge holders in developing countries. Some of these difficulties are; the unwillingness of some developed countries to participate in international efforts aimed at finding a solution to this problem, the inadequacy of existing IPR regime to ensure the protection of TK-based biological resources, particularly patent, the problem of identifying those to be considered as holders of this knowledge so as to ascribe ownership to them. This problem arises because knowledge in this context is held by community at large and not by individuals, and the difficulties associated with designing a *sui generis* law, which so far seems to be the best mode of protection.

The fourth chapter of this work focuses on possible ways of protecting of biological resources in South Africa; we examine the efforts already made, (the existing laws) and their limitations. In this light we examine the South African Biodiversity Act 10 of 2004 as a possible tool for protecting biological diversity, the Biodiversity Act: Commencement on Bio prospecting Access and Benefit-Sharing Regulations 2008, the Intellectual Property Law Amendment Bill of 2010, and the Patent Amendment Act no 20 of 2005.

In the concluding chapter we make recommendations on how to better address the issue of protection in South Africa, bearing in mind challenges discussed.

CHAPTER II

THE CONCEPT OF TRADITIONAL KNOWLEDGE IN CONTEXT

2.1 Introduction

This part of our research deals with the various aspects of the concept of TK; what it is all about, its characteristics, its recognition at the international level, the factors which distinguish it from western scientific knowledge, the reasons for its protection, instances of bio-piracy, the controversy surrounding its protection, and the challenges faced in seeking to protect implement measures for its protection. The aim of this chapter is to ensure a proper understanding of the subject matter of our discussion and its features.

2.2 The concept of TK explained

The concept of TK is very broad,[39] and most indigenous communities possess some intellectual property in all of the areas it covers. This thesis concentrates on the concept of TK possessed by indigenous communities over the uses and properties of biodiversity, precisely, plant biodiversity. This knowledge most at times relate to the medicinal uses of the plants,[40] or their use as beverages.[41] This knowledge may be said to constitute a form of intellectual property because it is a creation of the mind of these communities, and has commercial value. This form of knowledge has been in existence from time immemorial, and has been transmitted orally from generations to generations. It is said that TK does not necessarily refer to knowledge that is old, or lacks a technical character.[42] TK is 'traditional' because it is created in a manner that reflects the traditions of the communities not essentially relating to the nature of the knowledge but to the way in which the knowledge is created, preserved and disseminated.[43]

[39] See para 2 on Background supra.
[40] The Neem case; see 2.6.1.1.1 infra.
[41] The Rooibos and Honey Bush cases; see 2.6.1.1.7 infra.
[42] WIPO Secretariat 'Elements of a Sui Generis System for the protection of Traditional Knowledge' (2000 third session available at www.wipo.int/edocs/mdocs/tk/en/wipo.../wipo_grtkf_ic_3_8.doc (last visited 06/11/2010).
[43] See para. 4 on Background supra.

There have been many radio and television documentaries in which researchers (mostly from developed countries) accompany natives of developing countries into the forest and pose questions to them about why and how they use particular plants, the bark of trees, or properties thereof; this is because these researchers have discovered the value of the knowledge possessed by native communities, and how much this knowledge can contribute to the advancement of their pharmaceutical companies. This impression is confirmed by the fact that enormous profits have been made out of the use of this knowledge by industries of developed countries.[44] It is this knowledge of the properties of plant biodiversity and their uses, held by indigenous communities, which we refer to as TK relating to plant biodiversity. This form of intellectual property has, to some extent, been recognised at the international level.

The international community acknowledges the existence of some form of intellectual property possessed by indigenous communities on plant biological resources. The two international intellectual property organisations, the WTO (which administers the TRIPS Agreement) and the World Intellectual Property Organisation (WIPO) have recognised the intellectual property possessed by these communities and have both taken steps (thought insufficient) to afford protection to TK. While the TRIPS Agreement deals specifically with plant varieties, (otherwise referred to in this work as plant biological resources or plant biodiversity), the WIPO deals with TK as a whole, including folkloric and cultural expressions.

2.3 Characteristics of Traditional Knowledge

TK has been described as being owned by communities, undocumented, holistic, intuitive, qualitative, spiritual, empirical, and based on diachronic data;[45] we now proceed to explain some of these features.

2.3.1 Absence of individual ownership

TK is generally not owned by individuals. Save in very few situations,[46] no single individual can be identified as the owner or holder of a particular form of TK; most at times it is owned

[44] See footnote 15 supra for a monetary estimate of how much has been lost by developing countries to developed countries through bio-piracy.
[45] Berkes 'Traditional Ecological Knowledge in Perspective' chapter 1of Inglis (Ed) *Traditional Ecological Knowledge: Concepts and Cases* (1993) 4.

collectively by and for the welfare of the community concerned, and transmitted from one generation to the next. This flexible combination of individual and collective ownership seems to make it more complicated in seeking to protect it. Such owners must not necessarily be a whole community; it could be a clan,[47] a moiety,[48] a lineage,[49] a family, a single household.

For example, in the case of the discovery of the Hoodia Cactus plant, all sources of information on this subject matter state that the knowledge was held by 'San people.' The same applies to other cases of bio-piracy.[50]

2.3.2 Traditional Knowledge is not documented in writing

TK is transmitted orally from one generation to the next. This is not generally the case with IP of industrialised countries, the latter is well documented. The reason for the undocumented nature of the bulk of intellectual property based on TK is that most of those who hold this knowledge are illiterate.

2.3.3 Traditional Knowledge is based on experience, ie empirical [51]

TK is described as knowledge that is gained from thousands of years of direct human contact with the environment.[52] Though scientific it is based on accumulation from a progressive cycle of trial, experiment and observation repeated over countless generations.[53] Although different in so many ways, it is fundamentally based on similar empirical and pragmatic

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[46] A Shaman holder of TK may own it as an individual, a Shaman is a medicine man or woman who acts as a spiritual leader of a community, shamans also provide a link between members of a community and their ancestors available at http://africanhistory.about.com/od/glossarys/g/def-Shaman.htm (last visited 28/08/2010).
[47] This word is derived from the Scottish Gaelic language meaning children, descendants, offspring of a particular tribe available at http://www.rampantscotland.com/features/faq.htm (last visited 28/08/2010).
[48] Used in anthropology to refer to each of two social or ritual groups into which a people is divided; see http://oxforddictionaries.com (last visited 07/10/2010).
[49] This refers to a social group tracing its descent from a single ancestor. See http://oxforddictionaries.com (last visited 07/10/2010).
[50] See instances of bio-piracy 2.6.1.1 infra.
[51] Butler 'How Rainforest Shamans Treat Diseases' (2009) available at http://news.mongabay.com/2009/1110-herndon_amozon_shaman.html (last visited 29/08/2010).
[52] Berkes 'Traditional Ecological Knowledge in Perspective' chapter 1 of Inglis (Ed) *Traditional Ecological Knowledge: Concepts and Cases* (1993) 4.
[53] Butler 'How Rainforest Shamans Treat Diseases' available at http://news.mongabay.com/2009/1110-herndon_amazon_shaman.html (last visited 6/11/2010).

principles as western science.[54] This is not the case with western scientific systems in which there is a systematic deliberate accumulation of facts.[55]

2.3.4 Traditional Knowledge is holistic

TK is not split into different sub-disciplines but takes into account all facets of human functioning in the treatment of diseases. [56] Holism gives TK an advantage over scientific medicine because its holistic approach to treatment is widely accepted in the field of medicine.[57] It often includes multi-species ecological model explaining a causal relationship between events and the environment.[58] This is because TK is rooted in the social context that sees the world in terms of social and spiritual connections between all life-forms.[59]

2.3.5 Traditional Knowledge is intuitive[60]

Intuition here is opposed to rational, and refers to receiving ideas without knowing exactly where they come from, in such a situation, the person receiving the ideas simply knows they are not from him. Like creativity, intuitive inspiration often happens when one is highly focused in an activity. Intuition can be trained, and at its highest level, leads to a conscious contact with a non-incarnated being.[61]

2.3.6 Traditional Knowledge often has a spiritual dimension

Some writers have argued that part of TK is based on spiritual beliefs, methods of governance, and languages. This is because the holders of this knowledge, (shamans) particularly holders of medicinal knowledge, posses qualities and powers which appear to be

[54] Berkes 'Traditional Ecological Knowledge in Perspective' chapter 1 of Inglis (Ed) *Traditional Ecological Knowledge: Concepts and Cases* (1993) 4.
[55] Berkes 'Traditional Ecological Knowledge in Perspective' chapter 1 of Inglis (Ed) *Traditional Ecological Knowledge: Concepts and Cases* (1993) 4.
[56] Eythorsson 'Sami Fjord Fishermen and the state: Traditional Knowledge and Resources Management in Northern Norway' chapter 13 of Inglis (Ed) *Traditional Ecological Knowledge: Concepts and cases* (1993) 139.
[57] World Health Organisation 'Draft Regional Strategy for Traditional Medicine in the Western Pacific' fifty second session (2001) 7 available at http://www.wpro.who.int/internet/resources.ashx/RCM/RC52-07.pdf (last visited 6/11/2010).
[58] Eythorsson 'Sami Fjord Fishermen and the State: Traditional Knowledge and Resource s Management in Northern Norway' chapter 13 of Inglis (Ed) *Traditional Ecological Knowledge: Concepts and Cases* (1993) 139.
[59] Dutfield 'Protecting Traditional Knowledge and Folklore' (2002) 13 available at http://www.iprsonline.org/unctadictsd/docs/Dutfield2002.pdf (last visited 16/10/2010).
[60] Dutfield 'TRIPS-Related Aspects of Traditional Knowledge' (2001) 33 *Case Western Reserve Journal of International Law* 241.
[61] See http://www.timeforchange.org/definition-of-intuition-intuitive (last visited 28/08/2010).

beyond human understanding.[62] Others have said that TK is based on the understanding that elements of matter have life form: all parts of the natural world are infused with spirits.[63]

2.3.7 Traditional Knowledge imposes responsibilities on its holders

TK consists of communal knowledge, specialised knowledge, and sacred knowledge, each having its own characteristics. Communal knowledge is that part of TK which is open to all; holders of this form of TK share it with the community, as access to it is essential. This is because it consists of knowledge relating to issues like seeds, medicine, and farming, hence, indispensible for survival. Moreover, sharing it is vital to sustaining livelihoods in harsh environments as it provides access to a wider range of resources. This knowledge is generally freely shared between villages for community welfare. Holders of this knowledge have the obligation of sharing it for the welfare of the community.[64]

Specialised knowledge is also often medicinal in nature, and it may be restricted to a particular family, clan, or lineage, and holders have the responsibility of ensuring the proper healthcare of the community. Such communities (holders) for the most part have rules governing the transmission of such knowledge, to ensure that it is transmitted to people who are motivated and fit to safeguard the knowledge.[65]

The third and last type of TK called sacred knowledge is kept secret by their holders who are specialized healers or elders; it is used in spiritual healing, ceremonies or worship. In some communities a sacred code or language is used and these healers are under an obligation to keep these TK secrets (this may be under an oath)[66] so as to protect its sacred nature, and may be penalized for not doing so.

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[62] A good example of such a scenario is the Shamans of India. See Butler 'How Rainforest Shamans Treat Diseases' (2009) available at http://news.mongabay.com/2009/1110-herndon_amozon_shaman.html (last visited 29/08/2010).
[63] Dutfield 'TRIPS-Related Aspects of Traditional Knowledge' (2001) *33 Case Western Reserve Journal of International Law* 248.
[64] IIED 'Protecting Traditional Knowledge from the Grassroots up' (2009) 3 available at http://www.iied.org/pubs/pdfs/17067IIED.pdf (last visited 28/08/2010).
[65] The Maasai and Mijikenda of Kenya traditionally use a rating process to assess personal conduct available at http://www.iied.org/pubs/pdfs/17067IIED.pdf (last visited 29/08/2010).
[66] IIED 'Protecting Traditional Knowledge from the Grassroots up' (2009) 3 available at http://www.iied.org/pubs/pdfs/17067IIED.pdf. (last visited 28/08/2010).

Other characteristics considered are that TK is based on data generated by resource users, as such it is more inclusive than scientific knowledge which is collected by a specialized group of researchers who are very selective and deliberate in the accumulation of facts.[67]

Generally, it can be said that TK though a science, is different from western type scientific knowledge. This difference arises from the fact that TK is essentially traditional and sometimes sacred. This has led some people to believe that TK is underdeveloped; this belief is however rejected by researchers in the field who believe that TK is constantly evolving in response to changing environment.[68] These differences give TK plant biological resources used in medicine an advantage over western type medicines as earlier mentioned,[69] and accounts for the cases of bio-piracy which abound.

We now examine the differences between western scientific knowledge and TK.

2.4 Differences between Traditional Knowledge and scientific knowledge

The distinction here is aimed at providing a better understanding of what TK in general and TK relating to plant biodiversity in particular is, to provide an understanding of why it is not easy to provide an all embracing definition, and pass a law or regulation governing its use and appropriation.

The first difference to be examined is the aspect of ownership. It has been explained above that TK is characterized by communal ownership for the benefit of the whole community of the holder.[70] This however is not the case with scientific knowledge. The latter in most cases has a single and identifiable holder who holds it for himself and for his sole benefit. Such a holder may then proceed to use it as he pleases either by licensing it to others for pure

[67] Dutfield 'TRIPS-Related Aspects of Traditional Knowledge' (2001) 33 Case Western Reserve Journal of International Law 241.
[68] Daya & Vink 'Protecting traditional-ethnobotanical knowledge in South Africa through intellectual property regime' (2006) 322 *Agrekon* 45 No 3 available at http://ageconsearch.umn.edu/bitstream/31738/1/45030319.pdf (last visited 16/10/2010).
[69] See para 1 on Background supra.
[70] See 2.3.7 supra.

economic benefits,[71] or utilize it all alone and make utmost financial gain out of it for as long as the registration is valid.[72]

The second difference is that relating to documentation, as mentioned earlier, little or nothing about western-type scientific knowledge is undocumented.

TK is empirical, that is based on organic experiment and observation repeated over countless generations. This is not the case with scientific knowledge which is a systematic and deliberate accumulation of facts.[73]

Western scientific knowledge is reductionist, that is, it entails trying to study a something complex by seeking to understand its components; it is based on the principle that complex phenomena should be explained by the simplest underlying principles possible.[74] Reductionism stands in contrast to TK wherein, all facets of a subject matter are taken into account when studying it.[75]

It is clear from the above discussion that TK to an extent is different from western-type scientific knowledge. In spite of the difference between TK and western scientific knowledge protected under the current IPRs system, TK has gained some international recognition. We shall now proceed to look at the recognition of TK in the international community.

2.5 International recognition of Traditional Knowledge as a form of intellectual property

2.5.1 The TRIPS Agreement

The ministerial meeting of the General Agreement on Trade and Tariffs (GATT) held in Geneva in 1982 agreed that members would meet again in 1986 for a round of negotiation in Punta Del Este, Uruguay.

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[71] Article 31 of the TRIPS Agreement dealing with Patent Rights, titled 'Other Uses without the Authorization of the Holder.'
[72] See Article 16 of the TRIPS Agreement on Trademarks, dealing with Rights Conferred, it states "The owner of a registered trademark shall have the exclusive right to prevent all third parties not having the owner's consent from using in the course of trade identical or similar signs for goods or services which are…"
[73] See 2.3.3 supra
[74] For the definition of 'Reductionism', visit http://www.necsi.edu/guide/concepts/reductionism.html (last visited 05/01/2011).
[75] See http://www.simplypsychology.pwp.blueyonder.co.uk/reductionism-holism.html (last visited 17/11/2010).

Government ministers at the Uruguay meeting adopted an agenda covering outstanding trade-related policy issues, and the US requested the inclusion of IP in the negotiations.[76] This meeting lasted seven years, and in 1993 all aspects of the negotiations were finally resolved at Marrakesh, Morocco, resulting in what was termed the World Trade Organisation Agreement (WTO). The TRIPS Agreement is one of the agreements that were signed by the government ministers.

The TRIPS agreement is a legally binding agreement that provides for the protection of all aspects of IP, namely; copyright, trademarks, geographical indications, industrial designs, patents, and layout designs (topographies and integrated circuits) protection of undisclosed information, control of anti-competitive practices in contractual licenses.

This IPR agreement addresses the issue of protection of plant varieties, and requires member states to protect this knowledge through the use of patents or other effective *sui generis* laws.[77] From this provision, it is clear that the TRIPS Agreement recognises the existence of some form of intellectual property right in plant varieties. This is in fact is what the research addresses.

2.5.2 The WIPO Engagements

The WIPO is a UN specialised agency that, through international co-operation, secures agreement on the creation, dissemination, use and protection of works of the human spirit for the economic, cultural and social progress of all mankind.[78] Historically, WIPO dates back to the Paris and Berne conventions of 1883 and 1886 respectively. The Paris Convention sought to protect patents, trademarks and industrial designs, while the Berne Convention was adopted for the protection of artistic endeavours (visual arts, literary works, music, etc). In 1893, the secretariats of these two conventions merged to create BIRPI, a French acronym for United International Bureau for the Protection of Intellectual Property[79] and moved its

[76] Repetto & Cavalcanti 'Trade-Related Aspects of Intellectual Property Rights' available at http://www.fao.org/docrep/003/x7355e/x7355e02.htm (last visited 21/10/2010).
[77] Article 27.3.b of the TRIPS Agreement.
[78] WIPO 'A brief History of WIPO' available at http://www.wipo.int/edocs/mdocs/sme/en/wipo_kipo_myipo_smes_kul_08/wipo_kipo_myipo_smes_kul_08_www_109135.ppt (last visited 22/10/2010).
[79] Science for Life 'What international treaties or establishments have been created to protect inventors?' available at http://www.bio.org/ip/primer/intltreaty.asp (last visited 22/10/2010).

headquarters from Berne to Geneva in 1960. Over time the organisation expanded to become known as the WIPO in 1970.[80]

During 1998 and 1999, WIPO conducted nine fact finding missions (FFMs) to identify needs and expectations of holders of TK and cultural expressions on an intellectual property regime.[81] These FFMs contacted a wide range of stakeholders, namely; indigenous peoples and local communities, NGOs, governmental representatives, and academics. Following the evaluation of these FFMs, the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) was established by the General Assembly in 2002. The WIPO IGC is currently undertaking text-based negotiations aimed at reaching an agreement between governments on a text of international legal instrument(s) which will ensure the effective protection of TK, Traditional Cultural Expressions (TCEs)/Folklore and Genetic Resources.[82]

This international intellectual property organisation also recognises the existence of some IP in the TK of developing countries; this explains why it is taking measures to secure its protection. Moreover the mandate of the IGC was to end in 2008, but has been extended to 2011 to give it ample time to come up with a legal instrument for the protection of the TK of indigenous communities.[83]

The discussion above suggests that the fact that these two universal intellectual property organisations not only allude to, but attempt to provide some measure of protection for the practices of indigenous communities, indicates that these practices contain some form of intellectual property worth protecting. Having had an insight into what TK relating to plant biological resources is, and its international recognition, we shall proceed to examine why it should be protected.

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[80] 'World Intellectual Property Organisation' available at http://www.patentlens.net/daisy/KeyOrgs/1236/418/420.html (last visited 22/10/2010).
[81] Bhatti 'Intellectual Property and Traditional Knowledge: the Work and Role of the World Intellectual Property Organisation' (2000) 5 available at http://www.unctad.org/trade_env/docs/wipo.pdf (last visited 13/11/2010).
[82] Wendland 'WIPO Intergovernmental Committee and its Mandate 2010-2011' 10 available at http://www.wipo.int/edocs/mdocs/tk/en/wipo_iptk_bkk_09/wipo_iptk_bkk_09_topic2_3.pdf (last visited 13/11/2010).
[83] Vivas-Egui, Fernanda & Winkler 'International Negotiations on Biodiversity, Genetic Resources and Intellectual Property: Implications of the WIPO Intergovernmental Committee's New Mandate' (2004) 4 available at http://www.iprsonline.org/ictsd/docs/Vivas-Espinosa-WinklerMarch04.pdf (last visited 22/10/2010).

2.6 Reasons for protecting Traditional Knowledge

2.6.1 Avoiding bio-piracy and ensuring equitable benefit sharing

The prime reason for the protection of TK is to avoid its misappropriation through bio-piracy. This is because many instances of bio-piracy abound. All other reasons for the protection of TK flow from this reason. It is but logical to say that holders of intellectual property relating to plant biodiversity should be protected; this is because like other IPRs, it has commercial value, hence, its use by others should be based on agreed terms. Given its difference from contemporary IPRs, the CBD provides for protection based on equitable benefit sharing between the holders and the users.[84]

Some of such instances of bio-piracy include; the Neem tree case, the Ayahuasca plant, the Turmeric plant, the Hoodia cactus plant, the Rosy Periwinkle case, the Ayurverda plant, the pelargonium case, and the Rooibos and Honey Bush cases.

2.6.1.1 Instances of bio-piracy

2.6.1.1.1 - The Neem Tree case

The neem tree *(Azadiracthta indica)* referred to as Margosa in English, is a member of the mahogany family that is indigenous to India, although it is grown in arid regions throughout Africa and Asia. This tree is mentioned in Indian texts written over 2,000 years ago.[85] Components of this plant are used for human and veterinary medicine, cosmetics, toiletries, insect repellent in agriculture, and fungicide.[86]

One of the ways Indian farmers traditionally used neem was by soaking the seeds in water and alcohol and thereafter, spraying the emulsion on their plants as a pesticide. This method however, only allowed the emulsion to be stored for a few days. Farmers in the industrialized world were attracted to this plant because unlike most chemical pesticides, it has few damaging side effects.[87]

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[84] CBD section 15 (7).
[85] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge' Chapter 7 of Finger & Schuler (Eds) *Poor People's Knowledge* (2004)161.
[86] 'The Neem Tree' available at http://www.organeem.com/neem_tree.html (last visited 27/10/2010).
[87] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge' Chapter 7 of Finger & Schuler (Eds) *Poor People's Knowledge* (2004) 161.

Two chemical companies, one European, W.G. Grace, and the other from the US, filled patent application based on properties of this tree for controlling fungi on plants using stable extracts from the neem seeds. In 1992, U.S. Patent 5,124,349 was granted, while in 1994 European patent EP0436257 was granted.[88] The documents containing their patent registrations enumerated various steps for processing the seeds using a variety of solvents at a variety of strengths to avoid the quick degradation of the emulsion.[89] These steps are what these companies argued were novel, giving them the right to apply for patent on properties of the neem tree, since the Indian natives could not preserve the emulsion for as long as they (the US and European companies) did.

A challenge to the patent was filled at the Munich office of the European Patent Office (EPO) by three groups: the EU Parliament's Green Party, Dr. Vandana Shiva of the India-based Research Foundation for Science, Technology and Ecology, and the International Federation of Organic Agriculture Movements. These three groups demanded the invalidation of the patent on the ground that the fungicide qualities of the neem and its use had been known in India for over 2,000 years.[90]

In 1993, and 1995 there were public demonstration against the patents. The US company argued that the procedure it used to extract the substance used from the neem tree was different from that of the Indians in that it permits longer storage life, of up to two years and that its patent in no way prevented the Indians from producing and distributing their own extracts.[91]

In 2002, the EPO revoked the patent it had earlier granted to W.G. Grace on the grounds that the discovery was not novel in view of prior public use.[92] It should be noted that there are still

[88] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge' Chapter 7 of Finger & Schuler (Eds) *Poor People's Knowledge* (2004) 161.
[89] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge' Chapter 7 of Finger & Schuler (Eds) *Poor People's Knowledge* (2004) 159.
[90] Raghavan 'Neem Patent Revoked by the European Patent Office' Third World Network (2000) available at http://www.twnside.org.sg/title/revoked.htm (last visited 27/10/2010).
[91] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge' Chapter 7 of Finger & Schuler (Ed) *s Knowledge* (2004) 162.
[92] Raghavan 'Neem Patent Revoked by the European Patent Office' Third World Network (2000) available at http://www.twnside.org.sg/title/revoked.htm (last visited 27/10/2010).

about 90 patents granted worldwide on properties of the neem tree which the Indians might need to combat.[93]

2.6.1.1.2 - The Ayahuasca plant

In this case, the shamans of indigenous tribes throughout the Amazon Basin had used the bark of Banisteriopsis caapi (for centuries) along with other rainforest plants to produce a ceremonial drink known as ayahuasca or yage.[94] The plant was also used by these people in religious and healing ceremonies, to diagnose and treat illnesses, to meet with spirits and to divine the future.

In 1986, a US citizen Lores S. Miller obtained US patent number 5,751 over a purported unique variety of Banisteriopsis caapi which he termed "Da Vine." [95] Miller stated in his patent application that he found the plant in a garden in the Amazon rain-forest of South America. Indigenous leaders of the Amazon learnt of the patent in the mid 1990s, and objected to it on the grounds that it enabled private individuals to appropriate a plant that belonged to sacred traditions of many indigenous peoples in the Amazon.[96] The objection was supported by the Centre for International Environmental Law (CIEL) who in 1999 filed a request for re-examination of the patent with the US Patent and Trademark Office (PTO) on behalf of the Coordinating Body of Indigenous Organisations of the Amazon Basin (COICA), and the Coalition of the Amazonian Peoples and their Environment (Amazon Coalition), CIEL, COICA and the Amazon Coalition simultaneously requested the PTO to broadly review the impacts of its policies and procedures on TK, principally on prior arts that would better serve TK.[97] In November 1999 the PTO issued a decision rejecting the patent claim.[98]

[93] Balansa 'Sharing Bioprospecting benefits: Fight a losing battle?' *The Jakarta Post* (2010) available at http://www.thejakartapost.com/news/2010/10/11/sharing-bioprospecting-benefit-fight-a-losing-battle.html (last visited 19/10/2010).
[94] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge (2004)' Chapter 7 of Finger & Schuler (Eds) *Poor People's Knowledge* 159.
[95] Schuler 'Bio-piracy and Commercialisation of Ethno botanical Knowledge (2004)' Chapter 7 of Finger & Schuler (Eds) *Poor People's Knowledge* 159.
[96] See Downes 'Using Intellectual Property as a tool to Protect Traditional Knowledge' (2000) 25 *Columbia Journal of Environmental Law* 279.
[97] See http://cielorg.identificationofpriorart.pdf (last visited 25/08/2010).
[98] See Downes 'Using Intellectual Property as a tool to Protect Traditional Knowledge' (2000) 25 *Columbia Journal of Environmental Law 280.*

2.6.1.1.3 - The Turmeric Plant

This is a spice long used in India as a colorant, and food flavouring, as well as in medicine as an ingredient, and as a cosmetic. It is derived from the root of Curcuma longa, a plant of the Zingiberaceae to which ginger belongs.[99]

A patent on this plant was granted in 1995 by the US Patent and Trademark Office to the University of the Mississippi Medical Centre, granting it exclusive rights to sell and distribute turmeric.[100] The patent was on the use of the powder from this plant to speed up wound healing. When the Council for Scientific and Industrial Research (CIR) of India heard of this patent, it filled a challenge in 1996. The argument of the (CIR) was that the patent was invalid because it failed the legal requirement of novelty since the use of turmeric to heal wound was part of the prior art. The CIR went as far as showing proof of existing publications in India about the turmeric plant and its uses.[101] In 1997, the US Patent and Trademark Office rejected the patent on the grounds that it was not novel as represented by Indian Scientific publications. The fact that there existed documentation on the traditional use of this plant helped in seeking its protection.

2.6.1.1.4 The Hoodia Cactus Plant

The Hoodia plant has been used for over twenty five thousand years by people living around the Kalahari Desert to stave off hunger during long hunting trips.[102] These people, popularly referred to as the San People went for several days without eating after consuming a small quantity of this plant. In 1937, a Dutch anthropologist studied this plant; his report was later investigated by scientists of the South African Council for Scientific and Industrial Research (CSIR).[103] After the study of the components of the plants and the discovery of its appetite suppressing ability, the CSIR patented the appetite suppressing element (P57) in 1995.

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[99] Apisariyakul, Vanittanakom and Buddhasukh 'Antifungal activity of Turmeric oil extracted from *Curcuma longa* (Zingiberaceae) 49 *Journal of Ethnopharmacology* (1995) 163.
[100] See www.american.edu/ted/turmeric.htm (last visited 26/08/2010).
[101] Ganguli 'Intellectual Property Rights in Transition' 20 *World Patent Information* (1998) 179
[102] O'Connor 'Protecting Traditional Knowledge: An Overview of a Developing Area of Intellectual Property Law' (2005) 6 Journal of World Intellectual Property 677 available at http://onlinelibrary.wiley.com/doi/10.1111/j.1747-1796.2003.tb00236.x/pdf (last visited 26/08/2010).
[103] See more information about the CSIR on http://www.csir.co.za (last visited 26/08/2010).

CSIR later on licensed P57 to an English company, Phytofarm, who in turn licensed it to an American pharmaceutical company, Pfizer to develop and market P 57, for US$ 32 Million plus royalties from future sales,[104] [105] as a potential slimming drug and cure for obesity.[106]

On hearing this, the San people launched legal action against the CSIR for bio-piracy on grounds that the CSIR had breached the CBD provision on PIC of all stakeholders including the original users in granting access to indigenous knowledge.[107] Phytofarm claimed that it had conducted extensive enquiries but had been unable to find the knowledge holders as the remaining San people were apparently living very far from their tribal land. The CSIR for its part argued that it had wanted to be sure that the drug would prove successful before informing the San people of the research and making arrangements for them to have a share in the benefits.[108]

In March 2002, an understanding was reached between the San and the CSIR in which the former were recognised as the custodians of TK associated with the Hoodia plant and entitled to receive a share of the any future royalties. The question that arises here is what about the huge sums made out of the use of this plant by Phytofarm before the San People became aware of the situation? A better way of addressing bio-piracy cases by the courts might be to provide some retrospective remedy, such that when cases like this arise, the indigenes should be able to claim a share of not just future benefits, but also past benefits made from the misappropriation.

The reason for this is that a company may, once it is sued for bio-piracy, stop using the biological resource in question, and the local community involved will have nothing to gain meanwhile the company might have made huge benefits from the use already.

[104] Rebirth Africa 'Hoodia Gordonii and the San Tribe and Biopiracy' available at http://www.rebirth.co.za/hoodia/san_tribe_and_biopiracy.htm (last visited 07/11/2010).
[105] 'Hoodia Gordonii: Western drug industry exploits developing countries' available at http://www.sos-arsenic.net/index.html (last visited 13/11/2010).
[106] 'Focus on Biopiracy in Africa Hoodia Gordonii Cactus' available at http://www.hoodia-dietpills.co.uk/hoodianews5.htm (last visited 13/ 11/2010).
[107] See http://www.tkdl.res.in/tkdl/langdefault/common/Biopiracy.asp?GL=Eng (last visited 25/08/2010).
[108] 'Case study: Hoodia Cactus South Africa' Case Western Reserve University available at http://filer.case.edu/ijd3/authorship/hoodia.html (last visited 14/09 /2010).

2.6.1.1.5 The Rosy Periwinkle plant

The rosy periwinkle plant was originally a native plant of the Island of Madagascar, though it is now found in other warm regions of the world like Texas.[109] This plant was initially used by the natives of Madagascar for the treatment of diabetes.[110]

Components of this plant, namely; vincristrine and vinblastine were discovered during the 1950s by Edi Lilly, a pharmaceutical company, and are used in anti-cancer chemotherapy.[111] There is a controversy as to whether the discovery of these two powerful anti-cancer drugs from the rosy periwinkle plants is a TK of the inhabitants of Madagascar or those in India as Edi Lilly claims.[112] Moreover, Pierre Fabre Laboratories in France developed an entirely synthetic version of one of the components of this same plant for the treatment of bronchial and breast cancer.[113] This case clearly illustrates the difficulties that may arise in trying to ascribe proprietary right of biological resources to a particular community.[114] Given this complex background, it is hard to insist that Madagascar must enjoy special standing in discussions of profits generated by the rosy periwinkle's biochemistry. Even if the species originated there, it was naturalized in other parts of the world before the dawn of the Industrial Revolution, and Eli Lilly's patents drew on properties that were not part of folk knowledge.[115] It is therefore possible that the patent is still valid and irrevocable.

2.6.1.1.6 The Ayurverda case

Ayurverda is an ancient Indian medical system that dates back thousands of years.[116] Livzon a pharmaceutical company in China applied to the EPO in 2007 for the grant of a patent for the use of andrographis and mint for the manufacture of medicines for the treatment of avian

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[109] Jaszi & Woodmansee 'Beyond Authorship: Refiguring Rights in Traditional Culture and Bio knowledge' (2004) available at http://filer.case.edu/~ijd3/authorship/ (last visited 30/08/2010).
[110] 'Commercialisation of Traditional Medicines 'available at http://www.reference.com/browse/rosy+periwinkle (last visited 29/08/2010).
[111] Jaszi & Woodmansee 'Beyond Authorship: Refiguring Rights in Traditional Culture and Bio knowledge' (2004) available at http://filer.case.edu/~ijd3/authorship/ (last visited 30/08/2010).
[112] Brown 'Who Owns Native Culture' (2003) available at http://www.williams.edu/go/native/rosyperiwinkle.htm (last visited 29/08/2010).
[113] Jaszi & Woodmansee 'Beyond Authorship: Refiguring Rights in Traditional Culture and Bio knowledge' (2004) available at http://filer.case.edu/~ijd3/authorship/ (last visited 30/08/2010).
[114] Brown 'Who Owns Native Culture' (2003) available at http://www.williams.edu/go/native/rosyperiwinkle.htm (last visited 29/08/2010).
[115] Brown 'Who Owns Native Culture' (2003) available at http://www.williams.edu/go/native/rosyperiwinkle.htm (last visited 29/08/2010).
[116] Bismas 'India hits back in 'bio-piracy' battle' (2005) BBC News available at http://news.bbc.co.uk/2/hi/south_asia/4506382.stm (last visited 30/08/2010).

flu (H5N1 influenza). When the patent was awarded, India objected to it on the grounds that the discovery was not novel.[117]

These herbs (andrographis and mint) were known to Indians as far back as the 9th century under the names of 'kalamegha' and 'pudina,' and had been used for curing influenza and epidemic fevers. The Indian Council of Scientific and Industrial Research (CIR) cited extensive texts of ayurverda to demonstrate that the medicinal knowledge of these plants was present in India for ages; this led to revocation of the patent.[118]

2.6.1.1.7 The Rooibos and Honey bush cases

Rooibos tea originates from a plant called Aspalathus Linearis. This was discovered by the Khoikhoi people in the Cederberg region of South Africa. These people used the leaves as tea because of its delicious taste, and as an herbal remedy for ailments like eczema.[119]

Honey bush is a plant which grows in the coastal districts of the Western and Eastern Cape region of South Africa. This plant is also consumed as tea, as it has a honey-like pleasant taste and flavour.[120] Both Rooibos and Honey bush are consumed worldwide in the form of tea.

Nestec SA, a subsidiary of Nestle (a renowned company specialising in food production), filed a patent application for the use of the two plants (rooibos and honey bush) for treating some skin and hair conditions; preparation of a remedy for inflammatory disorders; and for use in salad dressing (Rooibos), toothpaste and lipstick manufacture.[121] The South African Department of Environmental Affairs which is the custodian of the Biodiversity Act of South Africa objected this patent application. Due to this objection, the patent application was not considered, hence not granted. This case merely highlights an unsuccessful attempt by a multinational company to misappropriate the biological resources of a developing country.

[117] Sreeram 'India scores Bio-piracy victory' (2010) Asian Times online available at http://www.atimes.com/atimes/South_Asia/LF29Df01.html (last visited 30/08/2010).
[118] Sreeram 'India scores Bio-piracy victory' (2010) Asian Times online available at http://www.atimes.com/atimes/South_Asia/LF29Df01.html (last visited 30/08/2010).
[119] See www.rooibostea.com/history-of-rooibos-tea.php (last visited 30/08/2010); see also 'Traditional Use' available at http://www.imminst.org/forum/topic/13293-red-tea-rooibos (last visited 16/10/2010).
[120] 'Honey Bush Tea' available at http://www.elsenburg.com/economics/downloads/honeybush.pdf (last visited 30/08/2010).
[121] 'Nestle Accused of Bio-piracy' (2010) available at http://www.timeslive.co.za/business/article473765.ece/Nestle-accused-of-SA-bio-piracy (last visited 30/08/2010).

2.6.1.1.8 The Pelargonium case

Pelargonium is a native plant of South Africa,[122] with the greatest quantity found in the Eastern Cape.[123] Some species of the plant have been used for a long time in Africa as medicine.[124] This plant is commonly used to treat intestinal problems, wounds, respiratory ailments, fevers and kidney complaints.[125] In 2007, the EPO granted a patent to a German pharmaceutical company called Schwabe to develop an anti-bronchitis drug made out of extracts from the roots of this plant.[126] Recently in January 2010, the EPO revoked the patent on opposition from the African Centre for Biosafety from South Africa acting on behalf of the Alice community in the Eastern Cape in collaboration with the Swiss anti-bio-piracy watchdog.[127]

2.6.1.1.8 Conclusion

The above cases are indicative of the alarming rate at which bio-piracy is increasing, particularly in developing countries. This is the reason many developing countries have embarked on enacting laws for the conservation of their biological resources, and providing access only upon compensation from prospective users. The other reasons for the protection of TK are now examined.

2.6.2 Equity

The second reason for the protection of TK to be examined is considerations of equity. The use of biological resources by farmers for agricultural practices like planting, and seed production enhances the value of the seeds.[128] As a result of this, there is an increase in agricultural yield and discovery of new species of seeds, which enrich biodiversity. In spite of the enormous contributions made by farmers, these varieties are collected by seed companies and research institutes of industrialised countries for commercial purposes with no

[122] Brendler & Be 'A historical, commercial and scientific perspective on the medicinal uses of Pelargonium sidoites (Geraniaceae)' available at http://www.ncbi.nlm.nih.gov/pubmed/18725280 last visited 06/10/2020.
[123] Mayet 'Biopiracy under fire: The Pelargonium Patent Hearing' (2010) available at http://www.oaklandinstitute.org/voicesfromafrica/node/67 (last visited 06/10/2010).
[124] 'An Herb Society of American Fact Sheet' available at http://www.herbsociety.org (last visited 06/10/2010).
[125] 'An Herb Society of American Fact Sheet' (footnote 124 above).
[126] 'EU patent ruling on German drug highlights biopiracy debate' (2010) available at http://www.dw-world.de/dw/article/0,,5174318,00.html (last visited 06/10/2010).
[127] African Centre for Biosafety 'Joy as Pelargonium Patent Revoked' available at http://www.biosafetyafrica.org.za/index.php/20100126260/JOY-AS-PELARGONIUM-PATENT-REVOKED/menu-id-100029.html (last visited 11/11/2010).
[128] Correa 'Traditional Knowledge and Intellectual Property Issues and options surrounding the protection of traditional knowledge' (2001) 5 **a**vailable at www.ppl.nl/bibliographies/wto/files/4445 (last visited 14/08/2010).

compensation for these farmers. It seems that these farmers at times do not even know of this. This practice is unfair because the farmers themselves can protect these seeds under Plant Breeders' Rights and benefit therefrom.[129] In most developing countries, there is no effective law regulating the share of benefits between these seed companies and the plant breeders.

2.6.3 Conservation of biodiversity

Biological resources may equally be protected for purposes of conservation of biodiversity. Protection in this case generates value for the global community; this is because if conservation is not regulated, biological resources may be irretrievably lost.[130] This is explained in the sense that if farmers abandon the breeding and use of farmers' varieties for the cultivation of modern crops which are more economically beneficial, it will lead to a gradual but sure disappearance in biodiversity, conservation in this case encourages them to continue with agriculture.

Moreover, The International Institute for Environment and Development (IIED)'s research with partners in China, India, Kenya, Panama and Peru shows that the diversity of traditional seed varieties is falling fast and this means drought and pest resistance could be lost forever.[131] The researchers say that customary approaches to protecting and sharing TK and biological resources build resilience to environmental variability such as climate change.[132]

In addition, The United Nations declared 2010 to be the International Year of Biodiversity. It is a celebration of life on earth and of the value of biodiversity for our lives. The world is invited to take action in 2010 to safeguard the variety of life on earth.[133]

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[129] Plant Breeder's Rights relates to a form of intellectual property right providing for the acquisition of legal rights in terms of the Plant Breeder's Right Act 1976. Here, farmers obtain royalties as remuneration for efforts made during the breeding of a new plant variety of a plant available at http://www.nda.agric.za/docs/geneticresources/variety_control.htm (last visited 13/11/2010).

[130] Correa 'Traditional Knowledge and Intellectual Property Issues and options surrounding the protection of traditional knowledge' **a**vailable at www.ppl.nl/bibliographies/wto/files/4445 (2001) 6 (last visited 14/08/2010).

[131] 'Seed industry and UN Agency ignore traditional ways to protect biodiversity and knowledge' (2009) available at http://www.iied.org/natural-resources/key-issues/biodiversity-and-conservation/seed-industry-and-un-agency-ignore-tradit (last visited 6/11/2010).

[132] 'Seed industry and the UN ignore traditional ways to protect biodiversity and knowledge' (2009) http://www.iied.org/natural-resources/key-issues/biodiversity-and-conservation/seed-industry-and-un-agency-ignore-tradit (last visited 6/11/2010).

[133] See http://www.nbaindia.org/iyb2010/index.html (last visited 18/09/2010).

2.6.4 Preservation of traditional community lifestyles

The protection of biological resources may be instrumental to the preservation of traditional lifestyles of particular communities. This reason for protection is completely different from that under IPR systems. The rationale for the protection in this case is to encourage the maintenance of practices and knowledge embodying traditional lifestyles as a central element of cultural heritage of humanity.[134]

2.6.5 Promotion of fair practice in bio prospecting[135]

Appropriation of biological resources should be regulated to ensure that the process of bioprospecting is carried out fairly, that is, without destroying the plants from which the material is extracted.[136] In Cameroon, South Africa and Madagascar where the bark of the *Prunus Africana* tree is harvested and used for bladder pains and *old man's diseases*,[137] unpublished source provide that in Cameroon some 8000 standing but dead trees can be found on Mt Oku, and over 80% of the trees on Mt Kilimanjaro have died due to poor harvesting techniques.[138]

2.6.6 Encouragement of research and development (R&D)

This entails conferring to the inventor or holder of an idea which can be used for further inventions, some exclusive rights so as to compensate him for the discovery, and motivate him to go ahead and if possible make more discoveries; this may be done by the grant of a patent right under the current IRP system.[139] Such rights go a long way to inspire the inventors: the invention benefits mankind while the inventor benefits from the monopoly he

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[134] Correa 'Traditional Knowledge and Intellectual Property Issues and options surrounding the protection of traditional knowledge' (2001) 6 **a**vailable at www.ppl.nl/bibliographies/wto/files/4445 (last visited 14/08/2010).
[135] Bio prospecting is the search for and gathering of biological material that will then be examined for features of potential value available at http://www.med.govt.nz/templates/ContentTopicSummary____28014.aspx (last visited 14/11/2010).
[136] This refers to the process of searching and extracting potential pharmaceutical compounds from plants. Available at http://encarta.msn.com/dictionary_701704641_1861727546/nextpage.html (last visited on 14/08/2010).
[137] Also known as Alzheimer's disease, it is a known brain disorder that is progressive and irreversible. It is still not known where and how the disorder develops in the human brain neither is there any sure fire cure for the disease. What is known by medical scientists is that the disease attacks slowly available at http://alzheimersdiseaseaid.com/alzheimer-s--not-just-an-old-man-s-disease.php (last visited 14/08/2010).
[138] Fakim 'Bridging the gap between TRIPS and CBD' (2005) 5 available at www.irfd.org/events/wfsids/virtual/papers/sids_guribfakim2 (last visited 14/08/2010).
[139] Article 27.1 of the TRPS Agreement provides that Patent are available for any invention, whether product or process, in all technology provided they are new, involve an inventive step and capable of industrial application.

enjoys.[140]

The inventor may license[141] his invention to other people, who may use it for further discoveries. A measure such as this encourages even those who have not yet made an invention to do research in their field of interest.

2.6.7 Conclusion

From the above discussion, it is clear that the protection of TK in general and TK relating to biodiversity in particular is important. It is not just important for the community which holds the knowledge, but for the world at large, this is because these biological resources and the indigenous knowledge which accompany them play a vital role in the biotechnology industries particularly pharmaceutical industries; they are used in the manufacture of drugs, beverages, and other products.[142]

It is therefore clear that the knowledge of local community, or their intellectual property with respect to plants, needs to be accorded protection so as to reduce the rate of, or eradicate the practice of bio-piracy. The reason for this is that individual researchers and researchers of industries in the developed world seem to be advancing and making huge sums of money from the indigenous knowledge of these communities, and registering them as patents to maximise their profits. The people involved in bio-piracy neither recognise the source of the biological resource, (even the knowledge) nor, share the benefits they make with these indigenous communities, because no practical measures have been taken at the international level to ensure this. The knowledge of indigenous communities relating to plant varieties should be protected in a manner that allows them to benefit from the fruits of their labour as is the case with other forms of IPRs.

There is however disagreement even within communities as to what form of protection should be granted. While some advocate for a restrictive measures (which provides for little or no access), others prefer relaxed measures, where in access is based on agreed terms. This is discussed below.

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[140] Monopoly here refers to the sole right to use the discovery.
[141] To officially give permission or grant a permit to someone to use: see www.babylon.com/free-dictionary (last visited 13/08/2010).
[142] See the bio-piracy cases of Neem tree, Rooibos, Honey bush, and even the Pelargonium plants 2.71 and 2.78 infra.

2.7 The controversy surrounding the nature of the protection of Traditional Knowledge

The controversy arises from the following factors, namely, some people want a defensive protection, while others prefer a positive protection.[143] Some local communities consider their TK a reflection of their thoughts, a means of cultural identification, and part of their cultural heritage, hence, inalienable. This group further opposes its sale to third parties, as they believe it should not be privately owned through registration or award of a patent, this form of protection is called defensive protection. On the other hand, some indigenous people are ready and willing to make their TK available for use on agreed equitable benefit sharing terms that is, positive protection.

2.7.1 Defensive protection

Defensive protection of TK basically entails ensuring that the IPR system (and patent application processes in particular) takes into account TK in evaluating applications for IPR in order to determine the level of novelty and inventiveness.[144] At present this requires ensuring that IPR authorities have free access to all available and relevant information on which to base their decisions regarding the granting of a patent over an invention.[145] Providing access to documented TK in journals, books, databases, and registers is one of the mechanisms through which IPR authorities analyse prior art in order to verify essential and substantial characteristics of inventions and determine whether they are worthy of being granted patent protection.[146] The idea behind this form of protection is to avoid a situation in which patent applications based on TK, particularly plant biological resources are granted.

2.7.2 Positive Protection

Proponents of positive protection advocate a legislative basis for the recognition of, or granting of rights over TK; be it through extension of existing IP regimes, or the

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[143] Boonridrerthaikul 'Impact of Intellectual Property (IPRs) on the Right to Self-Determination of Local Communities: A case study of Rice Farmers in Thailand' 2 (2004) available http://mulinet10.li.mahidol.ac.th/e-thesis/4436216.pdf (last visited 16/10/2010).

[144] 'Seminar on Protection of Traditional Knowledge' available at www.unctad.org/trade_env/test1/meetings/delhi/.../brazil.doc (last visited 8/11/2010).

[145] United Nations University 'The Role of Registrars and Databases in the Protection of Traditional Knowledge a Comparative Analysis' (2003) 29 4.1available at http://www.ias.unu.edu/binaries/UNUIAS_TKRegistersReport.pdf (last visited (8/11/2010).

[146] United Nations University 'The Role of Registrars and Databases in the Protection of Traditional Knowledge a Comparative Analysis' (2003) 29 4.1available at http://www.ias.unu.edu/binaries/UNUIAS_TKRegistersReport.pdf (last visited (8/11/2010).

establishment of *sui generis* regimes.[147] Positive protection may also be granted by customary law and practice, or the legal enactments of indigenous laws; that is, the rights to regulate their cultural patrimony, whether tangible or intangible should be re recognised by national law and policy.[148]

2.7.3 Conclusion

Most local communities face similar problems of bio-piracy but they seem to disagree on what form of protection should be granted. This makes it the more complicated to enact an international law that will best address the needs of all communities.

This notwithstanding, there are a number of measures which can be taken to reduce the rate of bio-piracy, both *Sui generis* and through existing IPRs, and some governments have implemented some of these already. The next part of the research shall focus on the challenges/difficulties encountered in seeking to implement measures to protect TK in general, and TK relating to plant biological resources in particular.

2.8 Challenges faced in seeking to protect Traditional Knowledge

2.8.1 Introduction

Foreign exploitation of local communities' TK has become the order of the day. Developing countries now understand that developed countries have not ended their rush for acquisition of spheres of influence in the Third World. Developed countries scramble to gain free access to, and benefits from developing countries, this time in another domain; not with guns, but advanced technologies.[149] Their aim now seems to be the appropriation and the use, without compensation, of the biological resources of developing countries in the biotechnology industries. This has led to several cases of bio-piracy as highlighted in preceding chapter.[150] In spite of their understanding of industrialised countries' exploitation, developing countries seem not to be a in a position to afford protection to their biological resources and put an end

[147] United Nations University 'The Role of Registrars and Databases in the Protection of Traditional Knowledge a Comparative Analysis' (2003)30 4.2 available at http://www.ias.unu.edu/binaries/UNUIAS_TKRegistersReport.pdf (last visited (8/11/2010).
[148] United Nations University 'The Role of Registrars and Databases in the Protection of Traditional Knowledge a Comparative Analysis' (2003)30 4.2 available at http://www.ias.unu.edu/binaries/UNUIAS_TKRegistersReport.pdf (last visited (8/11/2010).
[149] Balansa 'Sharing Bioprospecting Benefits: Fight a losing battle?' The Jakarta Post available at http://www.thejakartapost.com/news/2010/10/11/sharing-bioprospecting-benefit-fight-a-losing-battle.html (last visited 19/10/2010).
[150] 2.6.1.1 supra.

to bio-piracy. The reasons for the powerlessness of developing countries to afford protection to their biological resources shall be the hub of this section.

2.8.2 Unwillingness of some developed countries to participate in seeking a solution

The first difficulty countries seeking to protect their biological resources face, is that some developed countries are unwilling to participate in finding a solution to this problem. The US, for example, has not ratified the CBD and the ITPGRFA. The CBD today stands as the only international convention which provides for protection of TK relating to biological resources; requires member states to take active measures to secure its protection based on benefit sharing agreements between the users and the local communities;[151] and PIC of those providing such resources.[152] US patent laws do not seem to encourage the preservation of TK relating to the general biological resources of indigenous communities. Moreover, the US patent laws insist on documentary proof when an objection is made to an application for patent rights,[153] a provision which is not welcomed by the CBD member states.

This law goes further to define prior art to mean;

> '...every*thing which has been made available to the public anywhere in the world by means of written disclosure (including drawings and other illustrations) and which is capable of being of assistance in determining that the claimed invention is or is not new and that it does or does not involve an inventive step...'* [154]

This provisions makes it clear that documentary proof is a *conditio sine qua non* for challenging the application or grant of a patent right based on prior art in the US. This is disadvantageous to holders of TK relating to biological resource because a great part of their knowledge is undocumented, as a consequence of which it may be difficult and even impossible for traditional communities to seek for revocation whenever such a patent is applied for or even granted to third parties by the USPTO. The USPTO has been described by

[151] Rosendal 'The Convention on Biological Diversity: A Viable Instrument for Conservation and Sustainable Use' in Bergesen, Parmann and Thommerssen (Ed) Green Globe Yearbook of International Co-operation on Environment and Development (1995) 75 available at http://www.fni.no/YBICED/95_06_rosendal.pdf (last visited 17/10/1010).
[152] CBD article 15 (5).
[153] The US patent law provides that; 'Any person at any time may cite to the office [the USPTO] in writing prior arts consisting of patents or printed publication which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying to at least one claim of the patent, the citation of the prior art and the explanation thereof will become part of the official file of the patent....' See the 'Patent Opposition and Revocation' section 301 of the USPTO available at www.**patent**lens.net/daisy/bios/2624/.../**Patent**%20Opposition%20US.pdf (last visited 15/10/2010).
[154] USPTO Patent Cooperation Treaty PCT Rule 33.1 available at http://www.uspto.gov/web/offices/pac/mpep/documents/1800_1843_01.htm (last visited 15/10/2010).

Ragnar as being a source of bio-piracy because it insists on documentary proof in revocation applications.[155]

To solve this, it may be suggested that, the USA may amends its Patent Law in to prevent bio-piracy, or the TRIPS Agreement (of which the USA is a member) may include in its requirements for grant of patent that applications for patents shall not be granted where the invention is known; or better still, that applicants may be required to disclose the source of origin for patent applications based on plant biological resources. This leads us to another challenge, which is the fact that TK falls within the sphere of prior art.

2.8.2 The idea of prior art

In terms of the patent law of most states, an article that someone seeks to patent, is part of the prior art where it existed before the patent application was made.[156] The bulk of TK is available in the public domain because it is known and used by members of a community, and as such is part of the prior art. It seems that the spirit of ubuntu[157] which is typical of traditional communities who produce and utilise TK, works against them when it comes to obtaining protection: they share the knowledge among themselves. The TRIPS Agreement provides as a condition for patentability that the subject matter sought to be patented must be *new:*[158] this makes it more difficult for TK holders seeking to obtain protection for their knowledge. It also seems that traditional communities believe in sharing knowledge, especially that which concerns medicine; in fact, holders, of this part of TK (relating to medicine) have the duty of sharing this knowledge with members of their community.[159] This problem can be solved by requiring disclosure of source of origin and proof of consent of TK holders as conditions for patent applications in respect of plant biological resources, among all nations. This will go some way towards ensuring that no one will be able to misappropriate TK relating to biological resources of indigenous communities.

[155] Ragnar 'Biopiracy, the CBD and TRIPS-the Prevention of Biopiracy' (2004) 40 available at http://www.lu.se/o.o.i.s?id=19464&postid=1561387 (last visited 15/10/2010).
[156] Zoltan 'Prior Art and Patent Infringement' available at http://www.suite101.com/content/prior-art-and-patent-infringement---intellectual-property-law-a230634 (last visited 17/10/2010).
[157] This relates to the spirit of togetherness which is typical of Africans. For more information about Ubuntu see 'All you need is Ubuntu by Coughlan available at http://news.bbc.co.uk/2/hi/uk_news/magazine/5388182.stm (last visited 12/11/2010).
[158] Article 27.1 of the TRIPS Agreement.
[159] See 2.5.7 supra.

2.8.3 Traditional Knowledge is not documented

The fact that TK is not documented is in itself a factor which prevents TK holders from seeking its protection. For intellectual property rights to be ascribed to an invention, the individual seeking such a protection should be able to properly describe what he wants to patent. The TRIPS Agreement provides that WTO members shall require that an applicant for a patent shall disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art and may require the applicant to indicate the best mode for carrying out the invention known to the inventor at the filing date or, where priority is claimed, at the priority date of the application. [160]

This provision clearly indicates documentation. This requirement has a negative impact on TK holders because when a traditional healer provides a mixture of herbs to cure a sickness, he may not be able to isolate and describe the chemical compounds and describe their effects on the body in terms of modern biochemistry.[161] This notwithstanding, the healer is able to provide an efficient treatment based on generations of clinical trials, and on a solid empirical understanding of the interaction between the mixture and human physiology.[162] The fact that TK is undocumented, and that very often its holders cannot explain what they do in terms of western science, are fundamental characteristics of TK;[163] this explains why a *sui generis* law seems so far the only solution. Such a *sui generis* law will have to take into account all these features, and be able to in spite of them, provide a means of protection for this form of intellectual property.

2.8.4 The high cost of protection

TK holders often find it difficult to protect their TK because of the expense involved. Obtaining and enforcing IPR for TK is costly for traditional communities;[164] many TK holders find it very costly to apply for registration of their intellectual property. Similarly, seeking revocation whenever rights to TK are granted to third parties is a costly exercise. Communities wishing to protect their resources and innovations through existing IPR are

[160] Article 27 of the TRIPS Agreement on Patentable Subject Matter.
[161] WIPO 'Intellectual Property and Traditional Knowledge' 8 Booklet No 2 available at http://www.wipo.int/freepublications/en/tk/920/wipo_pub_920.pdf (last visited 17/10/2010).
[162] WIPO 'Intellectual Property and Traditional Knowledge' 8 Booklet No 2 available at http://www.wipo.int/freepublications/en/tk/920/wipo_pub_920.pdf (last visited 17/10/2010).
[163] 2.5.3 supra.
[164] WIPO 'Traditional Knowledge and Geographical Indications' 79 Chapter 4 available at http://www.iprcommission.org/papers/pdfs/final_report/Ch4final.pdf (last visited 15/10/2010).

constrained by the cost of documentation and having the documentation translated into the most familiar languages so that it might be accessible to a great part of the world. It is estimated that the government of India spent close to US$ 2 million to document and translate databases for its TKDL.[165] The TRIPS Agreement does not require any formal national registration system for GI, hence the cost and processes associated with registration, and enforcement lies with the holders of the IPR and not the governments.[166] The cost of obtaining a patent under the US patent laws for example is estimated at an average cost of $ 5,000 to $ 10,000 or higher,[167] even thereafter, it is the responsibility of the patent holder to enforce it against infringements.[168] The cost associated with enforcement is very high, given that holders of TK are often members of very poor communities. A good example of a situation where huge sums of money were spent in conserving the biological resource of a community is the turmeric bio-piracy case.[169]

This problem might be solved by enacting a *sui generis* law for protection of TK relating to plant biological resources holders. It should be borne in mind that holders of this knowledge most at times are poor, and measures will have to be taken to ensure that seeking protection under such a law is not expensive for those for whom the law is intended, or better still, provisions could be made for governments to assist these communities in their attempt to protect their TK.

2.8.5 The concepts of individual ownership and novelty

Another challenge faced by developing countries is the inadequacy of the existing IPR regime to ensure the protection of TK-based biological resources, particularly patent. The requirements for the award of the patent are spelt out by the TRIPS Agreement. This agreement provides that;

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[165] 'India's Traditional Knowledge Digital Library (TKDL): A powerful tool for patent examiners' available at http://www.epo.org/topics/issues/traditional.html (last visited 23/09/2010).
[166] WIPO 'Traditional Knowledge and Geographical Indications' 89 Chapter 4 available at http://www.iprcommission.org/papers/pdfs/final_report/Ch4final.pdf (last visited 15/10/2010)..
[167] Hansen & Van Fleet 'Traditional Knowledge and Intellectual Property' A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting their Intellectual Property and maintaining Biological Diversity (2003) 10 available at http://shr.aaas.org/tek/handbook/handbook.pdf (last visited 16/10/2010).
[168]Hansen & Van Fleet 'Traditional Knowledge and Intellectual Property' A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting their Intellectual Property and maintaining Biological Diversity (2003) 10 available at http://shr.aaas.org/tek/handbook/handbook.pdf (last visited 16/10/2010).
[169] Sahai, Pavithran & Barpujari 'Biopiracy Imitations Not Innovations' (2007) available at http://www.biopirateria.org/libros/07-3%20Biopiracy%20Imitations%20not%20Innovations.pdf (last visited 25/10/2010).

> *'patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application...'* [170]

The agreement goes further to allow for the possibility of protecting plant varies through patent or an effective *sui generis* laws.

It is clear from this provision that patents are available only for inventions which must be novel, innovative, and useful. These requirements make it difficult to seek protection of TK-based biological resources which have been transmitted orally from time immemorial, rendering them not novel.[171] Moreover, critics hold that modern IP encourages the erosion of indigenous TK since existing systems which are oriented around the concept of individual ownership are inherently at odds with indigenous cultures which emphasise collective creation and ownership of knowledge.[172] This is because indigenous communities believe in communal ownership of their intellectual property or TK, and most at times share it among themselves. This is contrary to IPRs wherein intellectual property is concealed for economic gains.

It is only through the enactment of special laws designed for TK in general and TK relating to plant biological resources in particular, taking into consideration all these features of TK that protection will be afforded to this kind of intellectual property.

2.8.6 Absence of an international law regulating Traditional Knowledge protection

The absence of an international TK regulation regime is another challenge developing countries face in protecting their TK. Like some researchers in this field have suggested;

> *'A framework treaty is the first critical step in this process because it creates the "contracting space" for the evolution of more specific and enforceable obligations'*[173]

The main international instruments which make attempts to protect TK are; the CBD,[174] the International Labour Organisation Convention on the Rights of Indigenous Peoples 1989

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[170] Article 27.1 of the TRIPS Agreement on Patentable Subject Matter.
[171] 'Traditional Knowledge' Global Restoration Network available at http://www.globalrestorationnetwork.org/restoration/traditional-ecological-knowledge (last visited 16/10/2010).
[172] Downes 'How Intellectual Property Could Be a Tool to Protect Traditional Knowledge' (2000) *25 Columbia Journal of Environmental Law* 257.
[173] Drahos 'Towards an International Framework for the protection of Traditional Group Knowledge and Practice' (2004) 2 available at http://cgkd.anu.edu.au/menus/PDFs/Drahos_tkframework.pdf (last visited 14/11/2010).

(ILO Convention 169), the Nagoya Protocol on Access and Benefit Sharing,[175] and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).[176]

The CBD law has limited application because developed countries, championed by the USA seem to be split into two camps on the legal force of this convention; there is a controversy as to whether to aim at a non-binding-guideline for bio safety or a legally binding protocol.[177] Furthermore, the US is suggesting that its ratification should be accompanied by a statement of interpretation seeking to tone down any article that may seem to place restrictions on the biotechnology industry.[178]

Like the ITPGRFA and the CBD, the ILO Convention 169 equally provides for the recognition of TK,[179] but there is no means of enforcing these rights.

Developing countries saw the WTO as the only international organisation which could effectively address the issue of protection of plant varieties under patent law, [180] but it seems to have disappointed them: [181] negotiations on the amendment of the TRIPS Agreement on TK have yielded no fruits. During discussions on the review at Doha, Qatar, Some developing countries such as India, the African Group, Thailand, Ecuador and Egypt took the view that IP laws should be amended to accommodate TK and the harmonisation of the CBD and TRIPS; developed countries opposed,[182] and this led to the collapse of the negotiations.[183]

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[174] 3.3.1 infra.
[175] 3.3.2 infra.
[176] 3.3.3 infra.
[177] The US Second Session of the Inter Governmental Committee of the Convention on Biological Diversity (June –July 1994).
[178] Rosendal 'The Convention on Biological Diversity: A Viable Instrument for Conservation and Sustainable Use' in Bergesen, Parmann and Thommessen (Eds) *Green Globe Yearbook of International Co-operation on Environment and Development* (1995) 75 available at http://www.fni.no/YBICED/95_06_rosendal.pdf (last visited 17/10/1010).
[179] 'Indigenous and Tribal Peoples' available at http://www.ilo.org/global/Themes/Equality_and_Discrimination/Indigenousandtribalpeoples/lang--en/index.htm (last visited 17/10/2010).
[180] The WTO is regarded as the most efficient in this regard because its provisions are enforceable through the Dispute Settlement Body.
[181] Article 27.3.b provides that the issue of protection of plant varieties shall be reviewed four years after.
[182] IP/C/W/368/Rev./Corr.1[1]/2006 available at www.**wto**.org/english/tratop_e/trips_e/**ipc**w368r1c1.doc (last visited 14/11/2010).
[183] Saurombe 'Intellectual Property Law Protection for Traditional Knowledge/Indigenous Knowledge systems in the Southern Africa and selected Asian Jurisdictions- A view from developing and least developing countries' 2 (2009) available at http://www.kmafrica.com/group.emerging.technologies.Intellectual.property.law.protection.for.traditional.knowledge/indigenous.knowledge.systems.in.SA (last visited 17/10/2010).

Moreover, for a successful international treaty to be achieved there is a need for harmonious and cooperative relationships between indigenous groups and their governments, from the reports of the CBD experts, this cooperation seems to be lacking.[184]

In my opinion, the lack of an international organisation addressing TK and its protection renders its enforcement difficult.

2.8.7 The problem of identifying Traditional Knowledge holders for purposes of conferring ownership

Another difficulty is that of identifying those to be considered as holders of this knowledge so as to ascribe ownership to them. This problem arises because knowledge in this context is held and owned by a community at large. If IPR is to be granted (patent for example), to whom shall it be conferred? This feature of TK makes it difficult to be fully protected under the IPR system. Patent affords the most sought after degree of intellectual property protection, and the TRIPS Agreement provides that patent shall confer to the owner exclusive rights to the subject matter under consideration,[185] if this were to operate, who shall have these exclusive rights?

2.8.8 The non-inclusion of Traditional Knowledge holders in the search for a solution

It has been suggested by some researchers that indigenous communities need to be included in the search for a solution to bio-piracy because they are the principal stakeholders. In a submission made by the Center for Peace Building and Poverty Reduction among Indigenous African Peoples (CEPPER), to the WIPO, it was suggested that one of the challenges faced by indigenous communities in Nigeria in seeking a solution to misappropriation of their TK is that they are excluded from national seminars on IPR and genetic rights.[186] Furthermore, there is the incidence of regular non-inclusion of civil society groups and right holders from contributing to the determination of new trends and protocols that will protect genetic

[184] Drahos 'Towards and International Framework for the Protection of Traditional Group Knowledge and Practice' (2004) 4 point 6 available at r0.unctad.org/trade_env/test1/meetings/.../drahos.draft (last visited 14/11/2010).
[185] Article 28 on Rights Conferred.
[186] Chukwonunyelum submission made by the Center for Peace Building and Poverty Reduction among Indigenous African Peoples (CEPPER) to the WIPO IGC sixteenth session 4 (2010) available at http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_16/wipo_grtkf_ic_16_inf_17.pdf (last visited 25/10/2020).

resources and herbal medicinal practice in the African continent.[187] This creates a problem in that these people (TK holders) are better placed to know the problems they encounter and how these problems can be addressed. State officials present at the negotiation tables or who attend workshops on how to protect TK may not be familiar with some of these problems, hence, not able to come up with very efficient measures of protection.

2.8.9 The difficulty of designing a sui generis law

The next difficulty to be addressed is that of designing a *sui generis* law which, so far, seems to be the best mode of protection. The requirement by the TRIPS Agreement that plant genetic resources can be protected through an effective *sui generis* law appears to be vague. This is because there is no clear definition of what criteria are to be considered in designing such a law. In fact, it is the duty of Member States to decide on how to protect their TK through the so called *sui generis* law. Though some countries have embarked on this,[188] it is my submission that a series of guidelines should be provided for Member States to rely on in designing such a law. The aim of such an endeavour being that of assisting Members States to come up with laws having the same fundamental principles (or laws that are similar), this is because the laws will be aiming at a similar problem, bio-piracy. If this is done, States will end up having laws that are not very different in TK protection, which in turn may lead to a gradual, but sure move towards the creation of an international uniform law on the protection of TK. However, it is generally accepted that a *sui generis* form of protection will afford some legal rights, whether it is an IP or a liability rule having some sort of legal enforcement mechanism.[189]

In spite of these difficulties, WIPO seems to be making some progress in this second mandate. The WIPO Voluntary Fund for Indigenous and Local Communities operates successfully allowing for the participation of ten indigenous representatives in discussion

[187] Chukwonunyelum submission made by the Center for Peace Building and Poverty Reduction among Indigenous African Peoples (CEPPER) to the WIPO IGC sixteenth session 4 (2010) available at http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_16/wipo_grtkf_ic_16_inf_17.pdf (last visited 25/10/2020).
[188] For the efforts made by these countries see 3.4 infra.
[189] Robinson 'Exploring Component and Elements of Sui Generis System for Plant Variety Protection and Traditional Knowledge in India' (2007) 11 available at http://ictsd.org/downloads/2008/06/robinson20sui20generis20march07.pdf (last visited 17/10/2010).

sessions. In May 2010, there was a panel discussion of indigenous experts on the theme, "Free, Prior and Informed Consent."[190]

The WIPO IGC agreed on arrangements of Intersessional working groups (IWGs), establishing a foundation for continued negotiating rounds.[191] The role of IWGs is to support and facilitate the WIPO IGC's negotiations by providing legal and technical advice and analysis, including, where appropriate, options and scenarios. Participation in IWGs is open to all member states and accredited observers. Delegations will be represented by one expert each and WIPO's funding arrangements for the IWGs for developing countries will allow the funding of a number of delegates. In the first IWG session, which was held from July 19 to 23, 2010, it was agreed that one indigenous representative from each of the seven continents of the world for the next upcoming IWG will receive funding.[192] The first IWG session will focus on (Traditional Cultural Expressions) TCEs.

Delegates began negotiations on the substance of a draft international provision for the protection of TK and TCEs. It was agreed that, further versions of the provisions will be prepared by the secretariat for the WIPO IGC's consideration.

Though these progress made by the First Intersessional Working Group Session (IWC1) session is only in the domain of TCEs, it is hoped that issues of TK and genetic resources will be addressed in the next two IWG sessions.[193]

2.9 Conclusion

It is not easy for TK holders to obtain protection, and, therefore, there is need for the international community to properly address the issue. The knowledge possessed by indigenous communities (of their biological resources especially plant biodiversity), is different from western type scientific knowledge with which most of the world is familiar; moreover, these communities themselves do not have a common intention with respect to

[190] WIPO 'WIPO Member States Advance work on Traditional Knowledge, Folklore and Genetic Resources' (2010) available at http://www.wipo.int/pressroom/en/articles/2010/article_0012.html (last visited 05/11/2010).
[191] WIPO 'WIPO Member States Advance work on Traditional Knowledge, Folklore and Genetic Resources' (2010) available at http://www.wipo.int/pressroom/en/articles/2010/article_0012.html (last visited 05/11/2010).
[192] Harry 'First Intersessional Working Group Session July 19-23 2010' (2010) available at http://www.indigenousportal.com/es/Conocimiento-Tradicional/First-Intersessional-Working-Group-session-July-19-23-2010.html (last visited (05/11/2010).
[193] Harry 'First Intersessional Working Group Session July 19-23 2010' (2010) available at http://www.indigenousportal.com/es/Conocimiento-Tradicional/First-Intersessional-Working-Group-session-July-19-23-2010.html (last visited (05/11/2010).

protecting their knowledge. While some of them simply want to share in the use of their intellectual property by third parties, under a positive protection,[194] others do not want to share their knowledge with third parties, hence, they prefer a defensive mode of protection,[195] this and several other issues still need to be addressed before protection could be afforded to this form if intellectual property. It is not as if developing countries are not capable of providing solutions to their problems, the problem is that this issue is one that concerns both developing countries who possess knowledge in, and want to protect their biological resources, and developed countries who need these resources and the knowledge associated with them for their biotechnology. There is consequently a need to establish a bottom line for how these two worlds will make use of these biological resources and all gain equitably therefrom.

Recent achievements of the WIPO IGC, in the domain of TCEs creates hope that the WIPO will provide some yard stick for the protection of TK relating to plant biological resources.

[194] For explanation of this term see 2.7supra.
[195] For explanation of this term see 2.7 supra.

CHAPTER III

POSSIBILITIES FOR PROTECTING TK RELATING TO PLANT BIODIVERSITY

3.1 Introduction

In this chapter, we examine some of the methods through which the rate of bio-piracy could be reduced, or ended. The aim of this chapter is to suggest possible strategies which can be adopted by states for purposes of putting an end to the practice of bio-piracy. The measures to be discussed under this head include; sensitisation of the population on the importance of conserving their biological resources, protection through the creation of Traditional Knowledge Digital Libraries (TKDL), that is, documentation; protection through existing International Treaties (TRIPS, CBD); and protection through a *Sui Generis* laws.

3.2 Preliminary step

3.2.1 Sensitisation of the indigenous populations on the need to protect their TK

The first step towards solving a problem is ensuring that people understand the problem. Hence, the first step towards protection of TK by whatever means, is that of making indigenous communities aware of the problem, and how badly it affects them. This may be achieved through sensitisation of the inhabitants of local communities who posses such knowledge of its importance. This could be done by putting in place measures geared towards ensuring that local populations are educated on the value of what they posses, and how much can be made out of it only if it is properly managed. Constantly reminding them of how-much developed countries have made, and continue to make from TK through bio-piracy, Indigenous communities should equally be made to understand the wealth they have in form of biological resources, and how much the world can gain from them if their biological resources knowhow is utilized by biotechnology industries like pharmaceuticals and food processing industries, on agreed terms of equitable benefit sharing. This could be done by organising and inviting them to workshops where matters are properly explained to them.

Since the proper exploitation of biodiversity requires sophisticated machinery and advanced technology which can only be provided by developed countries,[196] arrangements should be made to secure the recognition and full interest of the holders of TK in this regard, while the TK is exploited by developed countries.

However, there are a number of issues which have to be borne in mind in considering this process; local communities may be unwilling to participate in such activities because it entails disclosing their knowledge to outsiders who may use it for personal gains. Indigenous communities are suspicious of outsiders when it comes to matters concerning their biological resources because the latter are potential 'bio pirates.'[197] To avoid such a situation, a number of local community inhabitants, particularly leaders, can be targeted first. Non-profit organisations willing to assist traditional communities to seek protection for their TK may organise such workshops with these community heads.[198]

They will then have to properly explain to these TK biological resource holders that they are out to help mankind in general; to ensure that the knowledge which these communities are endowed with is used for the general good, while ensuring that these local communities equally benefit from their knowledge and their rich biodiversity.

The reason why heads of such communities should be addressed with the issue first is that most at times these people have respect for their customary heads. So if they are made to understand the value of their biological resources to the world at large, they might be able to convince their people to cooperate with those who want to assist them in finding a solution to the practice of bio-piracy.

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[196] Shao-Fan Lu 'Traditional Knowledge, Genetic Resources, and Biotech Patents The controversy and Possible Solutions' Centre for Advanced Study and Research on Intellectual Property (2007) 14 Issue 2 available at http://www.law.washington.edu/Casrip/Newsletter/default.aspx?year=2007&article=newsv14i2Lu#CITE2 (last visited 19/10/2010).

[197] Heald 'The Rhetoric of Biopiracy' 11*Cardozo Journal of International Comparative Law* (2003) 537.

[198] These Non-profit organisations need to be driven by the desire to assist humanity and local communities in seeking protection for the knowledge possessed by the latter in the domain of biological resource, and they (the members of the organisation) will need to prove this to these communities in order to be able to obtain their collaboration.

3.3 Protection through existing international treaties

The international community has not only recognised the existence of intellectual property in TK, but has put in place measures geared towards the protection of TK. Some of the international organisations which provide for this are; the CBD, the WTO TRIPS Agreement, the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

3.3.1 The Convention on Biodiversity (CBD)

The first internationally recognised instrument for the protection and recognition of indigenous communities' rights to their TK be examined is the CBD. This treaty was signed in 1992 at Rio de Janeiro, and aims to ensure inter alia;

> *'The conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of 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'*[199]

This provision shows that the treaty is geared towards conservation of biological resources and protection of the interests of its stakeholders, (that is people who have some rights in it, namely indigenous communities, researchers and multinational corporations of developed countries) and safeguarding the rights of its holders through equitable sharing of benefits whenever it is used by third parties.

The convention goes on to encourage contracting parties to take measures to; establish a system of protected areas, conserve biodiversity, and ensure its sustainable use through regulation.[200]

The Member States are further urged to respect, preserve and maintain the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation of biodiversity, and to promote its wider application with the approval and involvement of its holders, while ensuring equitable sharing of benefits arising from its use.[201]

[199] Article 1 of the CBD.
[200] Article 8 (a) - (i) of the CBD on In-Situ Conservation.
[201] Article 1 of the CBD.

It should be noted that Article 8(j) provides that member states shall preserve and maintain knowledge of indigenous communities; '*subject to national legislation.'* This means that the enactment national legislation for the conservation of biodiversity is encouraged. It is in the furtherance of this aim that some countries have enacted laws for the conservation of their biodiversity and to fight against bio-piracy.[202]

The CBD provides that access to genetic resources shall be based on PIC of the party providing the resources and on mutually agreed terms (including mechanisms on mutual sharing of benefits).[203] Some of the basic principles to be noted in requiring PIC are that; the criteria for acquiring it should be clear, have some legal certainty, should have a minimum cost, and should be based on consent of stakeholders of which traditional communities are a part.[204]

The Bonn Guidelines further requires that decisions on the grant of PIC when an application is lodged should be taken speedily, within reasonable time frames by the various Member States from the day of receipt of an application; and, the authorisation should be for a specific use.[205] As for mutually agreed terms, the Bonn Guidelines provides that benefits may be monetary or non-monetary.[206] Once more, the enactment of national laws on conservation of biodiversity is prescribed as one of the possible means of securing protection of TK.

3.3.2 The Nagoya Protocol on Access and Benefit Sharing

This agreement is the outcome of 6 years of intensive and political fraught negotiations adopted by the 10th Conference of the Parties of the CBD (CB D COP10).[207] This protocol reiterates that access to TK relating to biological resources shall be based on prior informed

[202] Examples include India, South Africa, and Peru, Costa Rica.
[203] Secretariat of the Convention on Biodiversity 'Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization' 2002, Article 13 available at http://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf last visited 20/09/2010.
[204] Secretariat of the Convention on Biodiversity Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilisation 2002, Article 13 available at http://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf last visited 20/09/2010article 26.
[205] Section 33 of the Bonn Guidelines on Types of Benefits available at http://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf (last visited 10/10/2010).
[206] Section 46 of the Bonn Guidelines on Types of Benefits available at http://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf (last visited 10/10/2010).
[207] 'Introducing the Aichi Nagoya Protocol on ABS' available at http://natural-justice.blogspot.com/2010/10/introducing-aichi-nagoya-protocol-on.html (last visited 08/01/2010).

consent of the TK holders;[208] equitable sharing of benefits;[209] and mutually agreed terms between the TK holders and persons wishing to gain access thereto.[210]

In addition, this protocol provides that;

- compensation for use of TK relating to biological resources may be monetary of non monetary;[211]
- parties to an access and benefit agreement may provide for a dispute settlement clause;[212]
- terms on benefit sharing including in relation to intellectual property shall be clearly specified;[213]
- parties (particularly from developing country) should take measures to promote and encourage research on conservation and sustainable use of biodiversity,[214] organise meeting of indigenous communities and relevant stakeholders,[215] establish and maintain a help desk for indigenous communities and stakeholders;[216]
- parties and indigenous communities should collaborate in implementing the objective of this protocol when TK relating to a particular biological resource is shared between one or more indigenous communities;[217]
- parties shall in accordance with their domestic laws, take into account local customary laws with respect to TK associated with biological resources;[218]
- parties, with the *effective participation* of the indigenous communities concerned, shall take measures to inform potential TK users of their obligations;[219] and
- a National focal point,[220] and an Access and Benefit-sharing Clearing House[221] shall be created to provide information regarding access to TK related to biological resources.

[208] Article 5 of the Nagoya Protocol on Access and Benefit Sharing.
[209] Article 9(b) of the Nagoya Protocol on Access and Benefit Sharing.
[210] Article 5 of the Nagoya Protocol on Access and Benefit Sharing.
[211] Article 4(3) of the Nagoya Protocol on Access and Benefit Sharing.
[212] Article 5(2) (f) (i) of the Nagoya Protocol on Access and Benefit Sharing.
[213] Article 5(2) (f) (ii) of the Nagoya Protocol on Access and Benefit Sharing.
[214] Article 6(a) of the Nagoya Protocol on Access and Benefit Sharing.
[215] Article 17(a) of the Nagoya Protocol on Access and Benefit Sharing.
[216] Article 17(b) of the Nagoya Protocol on Access and Benefit Sharing.
[217] Article 8(2) of the Nagoya Protocol on Access and Benefit Sharing.
[218] Article 9(1) of the Nagoya Protocol on Access and Benefit Sharing.
[219] Article 9(2) of the Nagoya Protocol on Access and Benefit Sharing.
[220] Article 10(1) of the Nagoya Protocol on Access and Benefit Sharing.
[221] Article 11(1) of the Nagoya Protocol on Access and Benefit Sharing.

Clearly, the Nagoya Protocol goes further than the CBD in the recognition of rights of TK holders. It provides for more detailed and specific measures to be taken by parties to protect the TK of their indigenous communities, it acknowledges the existence of, and provides for the respect of customary laws of indigenous communities. While waiting for its coming in to force in 2010, one may say that this protocol is a monumental achievement by developing countries to ensure justice with respect to their TK and the intellectual property attached thereto.

3.3.3 The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

This agreement adopted in 2001 by the Conference of the Food and Agriculture Organization of the United Nation Organisation (FAO Conference in 2001).[222] The goal of this treaty is to conserve and ensure the sustainable use of plant genetic resources for food and agriculture, and the fair and equitable sharing of the benefits arising from their use in conformity with the CBD for sustainable agriculture and food safety.[223]

Holders of knowledge relating to biological resources may seek protection under this treaty. The concept of reasonable reward which is used in rewarding inventors can be applied to rewarding holders of knowledge relating to biological resources; this may take the form of a reward to local communities who hold and preserve this biological resources.[224] In this treaty, the granting of benefits seems to be more accepted in the field of knowledge related to the biological resources used in agriculture. The treaty recognises the enormous efforts made by indigenous and local communities in the conservation and development of plant genetic resources which constitute the basis of food and agriculture throughout the world.[225] It goes ahead to vest the power to protect these communities in their respective governments, requiring them to take steps to;[226]

- Protect traditional knowledge relevant for plant genetic resources;

[222] Cooper 'International Treaty for Plant Genetic Resources for Food and Agriculture' (2002) 11 *Review of European Community and International Environmental Law* 1 available at http://onlinelibrary.wiley.com/doi/10.1111/1467-9388.00298/pdf (last visited 11/10/2010).
[223] Article 1 of the International Treaty on Plant Genetic Resources for Food and Agriculture available at http://www.planttreaty.org/texts_en.htm (last visited 11/10/2010).
[224] Weeraworawit 'Formulating an International Legal Protection for Genetic Resources, Traditional Knowledge and Folklore: Challenges for the Intellectual Property System' *Cardozo Journal of International and Comparative Law* (2003-2004) 774.
[225] Article 9.1 on Farmer's Rights.
[226] Section 9.1 to 9.2(a)-(c) of the International Treaty on Plant Genetic Resources for Food and Agriculture.

- To ensure the local communities have the right to share equitably in the benefits arising from the use of plant genetic resources and agriculture;
- And ensure that traditional communities participate in decision taking on conservation and sustainable use of plant genetic resources and agriculture.

3.3.4 Protection by means of Intellectual Property Rights (IPRs)

The internationally recognised forum dealing with the protection of intellectual property related to trade is the World Trade Organisation (WTO), particularly the TRIPS Agreement.[227] This organisation is stronger in terms of enforcement of its provisions, (this explains why protection of TK through IP would be more beneficial to TK holders), and has taken measures, (though insufficient) to protect TK. Nearly all countries of the world are members of the WTO; they rely on the provisions of TRIPS for the framework within which they provide for the protection of their IP.[228] However, developing countries, particularly indigenous communities, seem to have little to gain from this organisation for the protection of their intellectual property. This is because the principle upon which it is based, *capitalism*, is alien to the culture of most developing countries where intellectual property is considered not necessary in encouraging innovation, especially in the domain of plant biological resources.[229] This is probably because indigenous people believe in solidarity and welfare of every member of the community; hence they do not see the need to accord so much protection and restriction on knowledge relating to their plant biological resources, which is be used as medicine and for food.[230]

Only a few of the IP systems dealt with by the TRIPS Agreement seem to afford some degree of protection to the plant biological resources of developing countries, precisely their indigenous communities these are; GIs, TMs, and UI or trade secrets.[231]

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[227] The TRIPS Agreement has been in force since 1995 and is to date the most comprehensive multilateral agreement on intellectual property. This agreement introduced global minimum standards for protecting and enforcing nearly all forms of IPR available at http://www.who.int/medicines/areas/policy/wto_trips/en/index.html (last visited 11/09/2010).

[228] It has 153 members out the 195 countries in the world.

[229] Ragavan 'Protection of Traditional Knowledge' (2004) available at http://www.law.ou.edu/faculty/facfiles/protection_of_traditional_knowledge.pdf (last visited 11/09/2010).

[230] There is a part of TK that holders have the duty of disclosing to the public for the benefit of all see 2.1.7 of this chapter on characteristics of TK.

[231] Correa 'Traditional Knowledge and Intellectual Property Issues and options surrounding the protection of traditional knowledge' **(**2001**)** 11 available at www.ppl.nl/bibliographies/wto/files/4445 (last visited 14/08/2010); Dutfield 'TRIPS-Related Aspects of Traditional Knowledge' (2001) 33 *Case Western Reserve Journal of International Law* 258.

Patent right which affords the most extensive intellectual property protection is not suited for protection of plant biological resources because TK holders of plant genetic resources cannot fulfil the requirements for its award.[232] Some writers hold the opinion that if indigenous communities make proper use of some of the other forms of IP, the rate of bio-piracy may be greatly reduced, and TK holders of plant biological resources will be able to gain financially or otherwise from the use of their intellectual property. The IPR tools that have been suggested for the protection of biological resources are GIs, TMs and UI.

3.3.4.1 Protection as Geographical Indications (GIs)

GIs are defined as;

> *'Indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.'*[233]

GIs may be used for protection of plant biological resources because they focus on; the relationship between human cultures and their local land and environment, can be maintained for as long as the collective tradition is maintained, and may serve as providing assurance to consumers on the authenticity of a product.[234] This means that if local communities register their products under GIs, their consumers may rely on the origin of the product, and purchase these produce, knowing that they are authentic.

Moreover, GIs are better adapted to suit intellectual property related to plant biological resources for several reasons, the first is that they can be granted to a group of people and for perpetuity, unlike other IPRs;[235] secondly, they do not confer monopoly rights over use of certain information but simply limit the use of a product to a particular a class of people, (in this case the indigenous community), and are aimed at protecting particular characteristics of a good;[236] they reward producers situated in a particular region, (such as a local

[232] The patentable subject matters are spelt out in article 27 of the TRIPS Agreement, novelty is a condition meanwhile TK relating to plant biological resources most at times are already in the public domain, hence not novel.
[233] Article 22 of the TRIPS Agreement on Protection of Geographical Indications.
[234] Heald 'Trademarks and Geographical Indication Exploring the Contours of the TRIPS Agreement' (1996) 29 *Vanderbilt Journal of Transnational Law* 635.
[235] Patent for example is granted to an individual and for a limited duration of 20 years see article 33 of the TRIPS Agreement on Terms of Protection.
[236] Article 22 of the TRIPS Agreement on protection of GIs states that GIs are; for purposes of the agreement, indication which identify a good as originating in the territory of a member state, a region, or a locality in that territory where a given quality, reputation or other characteristics of a good is essentially attributable to its geographical origin.

community),[237] this is applicable where such a community follows production practices associated with that region, its culture and custom (which makes it more favourable for holders of such rights); lastly, but not least, a producer qualifies to use a GIs based on his location and method of production, irrespective of whether he is an individual or it is a group,[238] and protection, from the wordings of the TRIPS Agreement, has no time frame, so it lasts in perpetuity.

These conditions for application of GIs make them suitable for protection of the plant biological resources TK of indigenous communities.

The use of GIs in this context however has a few limitations. GIs do not reward the intellectual property held by indigenous communities over their plant biological resources, what it does is that it rewards the good will or reputation built by a group of producers from producing a particular product for many years, hence, is more useful where the origin of a good is indicative of its quality.[239] This is often not the main reason why TK holders of plant biological resources seek protection, what they seek is the recognition, and compensation of their intellectual property by third parties who use this knowledge.

However, GIs could still be useful because consumers of products made from TK based plant biological resources will quickly identify the goods, and purchase them, and third parties will be precluded from using the GIs.

3.3.4.2 Protection as Trademarks (TMs)

TMs are defined as*;*

> *"Any sign, or any combination of signs, capable of distinguishing the goods or services of one undertaking from those of other undertakings... Such signs, in particular words including personal names, letters, numerals, figurative elements and combinations of colours as well as any combination of such signs, shall be eligible for registration as trademarks. Where signs are not inherently capable of*

[237] Article 22 of the TRIPS Agreement on protection of Gls states that Gls are for the purposes of this agreement indication which identify a good as originating in the territory of a member state, a region, or locality in that territory.
[238] The fact that GIs are granted to members of a community implies that they are not only granted to individuals, but also to a group of people.
[239] Downes 'Using Intellectual Property as a Tool to Protect Traditional Knowledge: Recommendations for Next Steps' (1997) 12 available at http://www.humanrights.ch/home/upload/pdf/061127_UsingIPtoProtectTraditionalKnowledge.pdf (last visited 26/10/2010).

> *distinguishing the relevant goods or services, Members may make registrability depend on distinctiveness acquired through use. Members may require, as a condition of registration, that signs be visually perceptible."*[240]

TMs provide assurance of authenticity; and can also be used in the protection of TK relating to biological resources of indigenous communities if properly registered. Protection here lasts in perpetuity too, and may be granted to a class of people, like a particular tribe or indigenous group.[241] Moreover, TMs are meant to distinguish the goods of a particular producer from those of other producers, irrespective of whether the sign, name or symbol used is descriptive of the goods or not.[242] This means that if indigenous communities market their goods with a registered trademark on them, it will be in their interest because such a mark will serve as an indication to consumers of these products that the product is manufactured by them.

Trademarks too have some inherent limitations with respect to TK protection. TM are used by traders essentially to avoid competition with other traders of similar products as theirs, this may not work so well with products made out of TK relating to plant biological resources because they may not have a large market, hence may not be very competitive. In such a case, TM will afford limited protection. This notwithstanding, TM may provide some protection if the product for which it is used has a large market, and competitors.

3.3.4.3 Protection as Undisclosed Information (UI)

UI is also referred to as trade secrets. This form of IPR can also afford protection to the TK related to plant biological resources. The object of this form of IPR is to lawfully prevent information (which is secret, and having commercial value) within the control of a person(s) from being disclosed to, or acquired by others without permission, '*in a manner contrary to honest commercial practice*'.[243] TRIPS Agreement states;

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[240] Article 15 0f the TRIPS Agreement on Trademarks dealing with Protectable Subject Matter.
[241] Ragavan 'Protection of Traditional Knowledge' (2004) 20 available at http://www.law.ou.edu/faculty/facfiles/protection_of_traditional_knowledge.pdf (last visited 11/09/2010).
[242] See http://www.piperpat.com/IPInformation/Introduction/WhatisaTrademark/tabid/90/Default.aspx (last visited 19/10/2010).
[243] Article 39.2 of the TRIPS Agreement. In the notes on the TRIPS Agreement *in a manner contrary to honest commercial practice* is defined to mean amongst others, practices such as breach of contract, and breach of confidence.

> '*In the course of ensuring effective protection against unfair competition as provided in Article 10bis of the Paris Convention (1967), Members shall protect undisclosed information in accordance with paragraph 2 ...*'[244]

Undisclosed information is also a good IPR regime for protection of the TK of indigenous communities because it is cheaper, quicker, easier to implement, and more flexible than other forms of IPR regimes (for example patent). [245]

There is an added advantage of protecting intellectual property relating to plant biological resources through trade secrets, namely; the holders decide on whether or not to disclose it to others, notwithstanding the requirement of disclosure provided for by the CBD to disclose such knowledge for the benefit of the general good and subject to prior informed consent.[246] Contracting parties (especially developing countries which have a greater proportion of indigenous communities) can escape this proviso by relying on the fact that patent rights and other forms of IP regimes do not compel their holders to disclose them. In fact, like some researchers in the field have said, applying the same analogy, indigenous communities must also be given the right to keep their knowledge secret.[247]

However, the use of UI for the protection of TK has its own shortcomings: the greatest challenge in using this form of IP to protect TK relating to plant biological resources is that much of TK is in the public domain, or constitutes prior art. This means that the information is already disclosed to the members of a community, and outsiders easily have access to it by inquiring from members of such communities. This becomes a problem if such knowledge has to be protected as UI for which unlawful appropriation should be discouraged.

However, the bulk of TK relating to plant genetic resources which is not disclosed yet, or which is still known only to a group of people may still be protected as UI for which illegal appropriations could attract some sanctions.

The fact that GIs, TMs and UI do not require elements of innovation, and are granted for perpetuity tend to be favourable for indigenous communities who wish to use them to secure and protect their TK, though they have some limitations, some form of protection may still be

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[244] Article 39 of the TRIPS Agreement.
[245] Ragavan 'Protection of Traditional Knowledge' (2004) 22 available at http://www.law.ou.edu/faculty/facfiles/protection_of_traditional_knowledge.pdf (last visited 11/09/2010).
[246] Article 15.2of the TRIPS Agreement.
[247] Ragavan 'Protection of Traditional Knowledge' (2004) 22 available at http://www.law.ou.edu/faculty/facfiles/protection_of_traditional_knowledge.pdf (last visited 11/09/2010).

obtained, these measures can be used while awaiting a law which will provide a better form of protection. Having examined the possible modes of protecting TK relating to plant biological resources under the existing IPR systems, we shall now look at the possibilities of protecting these biological resources through special laws designed or enacted for this purpose, we shall do this taking the specific examples of countries that have approached this problem by enacting *sui generis* laws.

3.4 Protection through a *Sui Generis* law

Another mode of ensuring protection of TK is by enacting special laws geared towards achieving such protection. This is provided for by the TRIPS Agreement,[248] which states;

> '*Members may also exclude from patentability:*
>
> *(a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals;*
>
> *(b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof...'*

From this provision, it is clear that members are required to exclude from patentability plants, animals and biological processes, yet, plant variety could be protected through patent or a *sui generis* law or through both. As confusing as this may seem, it is a clear indication of the fact that legislators in developing countries, are in favour of, and seek to afford patent to plant varieties, a practice entirely strange to developing countries.[249]

The term s*ui generis* is defined as 'of its own kind,'[250] it is based on this definition that several countries have enacted quite separate and distinct laws to deal with the right of holders of TK and the intellectual property which accompanies it.[251] We shall, therefore, proceed to study some these countries and their *sui generis* laws.

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[248] Article 27.3.b of the TRIPS Agreement.
[249] Oh 'IPRS and Biological Resources: Implications for Developing Countries' Third World Network available at www.twnside.org.sg/title/iprharare.htm (last visited 18/09/2010).
[250] See http://legal-dictionary.thefreedictionary.com/sui+generis last visited 14/09/2010.
[251] Some of these countries are Brazil, Costa Rica, Panama, Guatemala, Philippines, and Samoa. See WIPO review of existing intellectual protection of traditional knowledge questionnaires responses to question 2 (2002) third session.

3.4 The following countries have adopted a *sui generis* form of protection of TK

3.4.1 Costa Rica

The Invention Patent Law no 7979 1999 of Costa Rica in its Article 2 (c) completely excludes from patentability plants and animals, and biological procedures for the protection of plants and animals.[252]

The government opened up dialogue with right holders, farmers, consumers and other sectors involved in the protection of new plant varieties, the aim was to enact a law that provides intellectual property protection to holders of new plant varieties, agriculture production and maintenance of nutritional security and biological diversity, subject to the country's compliance with the CBD.[253]

Recently in January 2010, the government came up with the Regulation for the protection of New Varieties of Plants Decree, Law No 8631 on the Protection of New Varieties of Plants, as amended by Law No 8686. Now, plant variety right holders may apply for protection before the National Seeds Office,[254] the breeder's right shall be valid for 20 years.[255]

The CBD was formalised through the enactment of Law No. 7788 entitled Biodiversity Law in 1998.[256] This law provides that communities are the holders of *sui generis* community intellectual property rights which exist, and are henceforth recognised and protected by the

[252] Biodiversity issues Review of Article 27. 3(b) of the TRIPS Agreement Costa Rica Experience Paper Prepared for the second regional Meeting of UNCTAD 'Project on Strengthening Research and Policy Making Capacity on Trade and Environment in Developing Countries' (2000) 3 available at http://www.unctad.org/trade_env/docs/27.3.b%29%20paper%20ing.pdf (last visited 20/10/2010); Law No. 7788 Biodiversity Law 1998 of Costa Rica article 78 available at http://www.grain.org/brl_files/costarica-biodiversitylaw-1998-en.pdf (last visited 20/10/2010).

[253] Biodiversity issues Review of Article 27. 3(b) of the TRIPS Agreement Costa Rica Experience Paper Prepared for the second regional Meeting of UNCTAD 'Project on Strengthening Research and Policy Making Capacity on Trade and Environment in Developing Countries' (2000) 3 available at http://www.unctad.org/trade_env/docs/27.3.b%29%20paper%20ing.pdf (last visited 20/10/2010).

[254] Article 5 of Law No 8631 on the Protection of New Varieties of Plants, as amended by Law No 8686 available at http://www.upov.int/export/sites/upov/en/publications/npvlaws/costa_rica/cr_law_8631_amended_8686_coll.pdf (last visited 05/01/2011).

[255] Article 19 of Law No 8631 on the Protection of New Varieties of Plants, as amended by Law No 8686 available at http://www.upov.int/export/sites/upov/en/publications/npvlaws/costa_rica/cr_law_8631_amended_8686_coll.pdf (last visited 05/01/2011).

[256] Beyond UPOV Examples on Developing Countries preparing non-UPOV Sui generis Plant Variety Protection Schemes for compliance with TRIPS 1999 available at http://www.grain.org/briefings/?id=127 (last visited 20/09/2010).

State.[257] Any application for Plant Breeders' Right in Costa Rica must receive clearance from the Technical Office of the Commission administering the Biodiversity Law to ensure that the application does not contravene community intellectual rights, even if this right is not formally registered.[258]

These provisions protect the knowledge, practices, and innovations of the indigenes related to the use of components of biodiversity through a special type of law enacted for that purpose.

3.4.2 The Philippines

In the Philippines, the Indigenous Peoples Right Act 1997 provides that the Indigenous Cultural Communities and Indigenous Peoples (ICCs/IPs) are entitled to the recognition of the full ownership, control and intellectual property protection of their culture.[259] They are also free to have special measures[260] to control, develop, and protect their science, genetic resources, derivatives of these sources, traditional medicines, vital medicinal plants, indigenous knowledge and practices, and knowledge of the properties of flora and fauna.[261]

This law provides that access to biological and genetic resources and to indigenous knowledge relating to the conservation, utilisation and enhancement of these resources shall be dealt with by the ICCs/IPs and with their free and PIC obtained in accordance with their customary laws.[262]

This law too is a special law enacted to afford protection to TK of indigenous populations on their plant biodiversity.

3.4.3 Panama

Panama Law No. 20 of 2000 on "Special intellectual property regime on collective rights of indigenous peoples for the protection and defence of their culture as their traditional knowledge." This law provides for the protection of the collective rights and the intellectual

[257] Biodiversity Law of Costa Rica article 82.
[258] Biodiversity Law of Costa Rica article 84.
[259] Section 34 of the Indigenous Peoples Right Act 1997.
[260] According to section 23 of the Indigenous People's Act, these special measures shall be adopted by the state.
[261] Section 34 of the Indigenous Peoples Right Act 1997.
[262] Section 35 of the Indigenous Peoples Right Act 1997.

property of indigenous communities through special registration systems, and promotion of the commercialisation of such rights.[263]

This law states that TK of the indigenous communities shall constitute part of their cultural assets and shall not be the subject of any form of exclusive rights by unauthorized third parties under the intellectual property systems unless the application is filed by the indigenous communities.[264]

The laws of Panama permit the use of indigenous TK for industrial application, but provide that this shall be upon the prior express consent of congress, traditional authorities and councils, and a contract between the intending user and the holders of the knowledge.[265] These provisions are regulated by Executive Decree No 12 of 2001. This decree defines TK as including genetic resources, medicines and seeds, knowledge of the properties of flora and fauna.[266]

This law was designed specifically to regulate the protection of amongst others, the TK on biodiversity in general and access thereto by third parties.

3.4.4 India

In India, the Biodiversity Act of 2002 was enacted to secure the preservation of the country's rich biodiversity. This law provides for the establishment of the National Biodiversity Authority (NBA).[267] The NBA is required to, among other duties, ensure that foreigners, Indian-non residents, corporations, associations and organisations not registered in India, or registered in India, but having shares held by, or managed by foreigners, do not have unauthorised access to biological resources occurring in India ,[268] or knowledge associated thereto, for purposes of research, commerce, or bio-survey and bio-utilisation.[269]

This law also provides that no one shall without the approval of the NBA transfer results of any research relating to any biological resources occurring in, or obtained in India for

[263] Article 1 dealing with the Purpose of this law available at http://www.grain.org/brl/?docid=461&lawid=2002 (last visited 17/09/2010).
[264] Article 2 of Law No 20 of 2000 of Panama.
[265] Article 17 of Executive Decree No 12 of (2001) regulating Law No 20 of 2000 of Panama available at http://www.grain.org/brl/?docid=461&lawid=2002 (last visited 20/10/2010).
[266] Article 2(iii) of the Executive Decree available at http://www.grain.org/brl/?docid=461&lawid=2002 (last visited 20/10/2010)..
[267] Section 8(1) of the Indian Biodiversity Act of 2002.
[268] Section 3 (1) of the Indian Biodiversity Act of 2002.
[269] Section 3 (2) of the Indian Biodiversity Act.

monetary compensation to a foreigner, an organisation of a body corporate managed by foreigners, or having shares held by foreigners

Chapter X of this law provides that every local authority shall constitute a biodiversity management committee within its area, the purpose of which shall be to promote the conservation, sustainable use and documentation of biodiversity.[270]

We shall now examine the various forms of s*ui generis* protection of Traditional Knowledge

3.5 Other *Sui Generis* modes of protection

Apart from the efforts made by governments through the enactment of new laws for protection of the TK of their indigenous communities, other modes of providing a *sui generis* form of protection to TK, particularly to plant biological resources have been suggested

3.5.1 Documentation

The first of such modes is documentation. Several patents have been granted over biological resources due to lack of knowledge of the fact that the patented item is available to, and used by local communities. The patents were revoked once it was proved that the same product was known, and used for the same purpose prior to the application for the patent.[271]

Moreover, countries like the US do not respect the existence of TK when considering patent applications unless documentary proof of such TK is provided.[272] The benefit of documentation is that it will stop the granting of patent to TK relating to plant biological resources already being used in local communities, as such use will serve as proof of prior art.

Documentation will similarly give recognition to TK holders.[273] A good example other states may find worth emulating is the Traditional Knowledge Digital Library (TKDL) of India; this TKDL contains 54 authoritative texts on Ayurvedic medicines; nearly 159.000 Ayurvedic,

[270] Section 41(1) of the Indian Biodiversity Act.
[271] An example of patents revoked under these circumstance is the Neem case.
[272] See 2.8.2 3 supra.
[273] Varkey 'Traditional Knowledge-the Changing Scenario in India' available at http://www.law.ed.ac.uk/ahrc/files/67_varkeytraditionalknowledgeinindia03.pdf (2007) 8 (last visited 18/09/2010).

unani and siddha medicines; and over 1500 physical exercises, yoga postures.[274] It has been translated into English, French, German, Spanish and Japanese. EPO will have access to this TKDL so as to be able to cross verify whenever it receives a patent application to ensure that the subject matter sought to be patented is not yet known to, and used by local communities in India for the same purpose.[275] This example of India has been followed by China. The Chinese Patent Office (SIPO) has equally given access to its database of 32000 Chinese traditional medicines, to the EPO.[276]

Apart from the efforts made by governments through the enactment of new laws for protection of the TK of their indigenous communities, other modes of providing a *sui generis* form of protection to TK, particularly to plant biological resources have been suggested.

3.5.2 Creation of a Global Bio-collecting Society

The next mode to be discussed is the creation of a Global Bio-collecting Society (GBS) which operates as a private organisation,[277] rather than a treaty might be a good *sui generis* mode of providing protection to TK relating to plant biodiversity. Funding for such an organisation could be sought from the World Bank.[278] Such a GBS should have an open membership policy for both indigenous communities and companies or third parties willing to gain access to TK, and play the role of a middle man between indigenous communities and companies, providing services like; acting as a storeroom for community registers of TK of indigenous knowledge under strict conditions of confidentiality.[279] As such, third parties (companies) intending to have access to the indigenous knowledge will do so by entering into a contract with the indigenous communities, with the GBS acting as a referee between the two to ensure that the contract provides for equitable benefit sharing. This will be beneficial for indigenous communities because many times when they contract for access and benefit

[274] 'India's Traditional Knowledge Digital Library (TKDL): A powerful tool for patent examiners' available at http://www.epo.org/topics/issues/traditional.html (last visited 23/09/2010).
[275] 'India's Traditional Knowledge Digital Library (TKDL): A powerful tool for patent examiners' available at http://www.epo.org/topics/issues/traditional.html (last visited 23/09/2010).
[276] For more information about SIPO visit http://www.sipo.gov.cn/sipo_English/FAQ/ (last visited 20/10/2010).
[277] Drahos 'Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-collecting Society the Answer?' (2000) 22(6) European Intellectual Property Law Review 3 available at available at http://www.anu.edu.au/fellows/pdrahos/articles/pdfs/2000ipandbiopiracy.pdf (last visited 26/10/2010).
[278] For information about what the World Bank does for indigenous communities see Sobrevila 'The Role of Indigenous People in Biodiversity Conservation the Natural but often Forgotten Partners' (2008) 13 available at http://siteresources.worldbank.org/INTBIODIVERSITY/Resources/RoleofIndigenousPeoplesinBiodiversityConservation.pdf (last visited 26/10/2010).
[279] Drahos 'Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-collecting Society the Answer?' (2000) 22(6) European Intellectual Property Law Review 3 available at http://www.anu.edu.au/fellows/pdrahos/articles/pdfs/2000ipandbiopiracy.pdf (last visited 26/10/2010).

sharing agreements with companies. Companies are experienced in negotiating license arrangements for exploitation of intellectual property rights; they (companies) have the upper hand as the indigenous communities lack the experience.

Such GBS should also have a number of independent legal experts willing to assist indigenous communities in contracting with big companies. A GBS could do a worldwide monitoring of patent applications.[280] The essence of this will be to make sure that no patent relating to illegally obtained indigenous knowledge is granted.

Lastly, but not least, the GBS could have a Dispute Resolution Function (DRF), its panels made up of people of impeccable independence who would publicly examine the conduct of both indigenous communities and companies in case of disputes and make recommendations.[281]

The limitation of this measure though is that its implementation is not as easy as it seems, it might not be easy to convince indigenous communities to join such a GBS due to the mistrust they seem to have for companies of the industrialised countries when it comes to negotiating on access and benefit sharing agreements.[282]

However, if such a society is created, once it succeeds in proving to these communities that it aims to advance their interests, and to provide them expertise in contracting with these companies, the communities may readily participate and benefit from the use of their intellectual property.

3.5.3 Disclosure of origin

Another form of *sui generis* law which has been suggested by researchers for the conservation of the TK relating to biological resources in general, and plant biological resources in particular, is that persons applying for patent on biological resources should

[280] Drahos 'Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-collecting Society the Answer?' (2000) 22(6) *European Intellectual Property Law Review* 3 available at http://www.anu.edu.au/fellows/pdrahos/articles/pdfs/2000ipandbiopiracy.pdf (last visited 26/10/2010).
[281] Drahos 'Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-collecting Society the Answer?' (2000) 22 (6) *European Intellectual Property Law Review* 4 available at http://www.anu.edu.au/fellows/pdrahos/articles/pdfs/2000ipandbiopiracy.pdf (last visited 26/10/2010).
[282] Kate & Laird 'Biodiversity and Business: coming to terms with the Grand Bargain' 76 *International Affairs* (2000) 244 available at http://onlinelibrary.wiley.com/doi/10.1111/1468-2346.00132/pdf (last visited 05/01/2011).

disclose the origin of such resources.[283] During the 1999 WTO preparation for the 1999 ministerial council, India submitted that article 29 of the TRIPS Agreement dealing with requirement for patent application should be amended to include the requirement that patent applicant for biological resources should be required to disclose the origin of these resources;[284] this suggestion however was not adopted. Though such a disclosure is not required by the TRIPS Agreement, it does not mean that the TRIPS Agreement prevents or prohibits it.[285] Member states could still in their various regulations insist on such disclosure so as to ensure that each time use is made of a biological resources, and it is sought to be patented, there should be a disclosure of the origin of the biological resources.

If disclosure is made a condition for the grant of patent to applicants, it will go a long way in fighting bio-piracy. This is because each time a patent application shall be lodged it shall not be granted, unless it is proved that the first users or inventors have authorised its patent, hence their consent will have to be sought (prior informed consent). It should be noted that some countries have incorporated this in their intellectual property laws. For example, in Decision 486 'Common Heritage on Industrial Property,' adopted in September 2000, the five countries of the Andean Community have attempted to harmonise the TRIPS Agreement with the CBD.[286] [287] The decision states that certain life forms shall not be considered inventions, hence patents applications based on the region's genetic resources shall be granted only if a copy of an access contract with the community,[288] and applications for a patent based on an invention obtained or developed from TK are accompanied by a copy of the license granted by the community.[289] This suggestion however may not work because developed nations are not in favour of it; this explains why it was not considered in 1999 when India in its submission required that it should be included in article 29 as a condition

[283] Dutfield 'Protecting Traditional Knowledge and Folklore' International Trade and Sustainable Development Series (2003) 34 available at http://www.iprsonline.org/resources/docs/Dutfield%20-%20Protecting%20TK%20and%20Folklore%20-%20Blue%201.pdf (last visited 26/10/2010).
[284] WTO Preparation for the 1999 Ministerial Conference proposals on IPR Issues (WTO/GC/W/147) communication from India (1999) 4 available at http://commerce.nic.in/D644e.doc (last visited 26/10/2010).
[285] Dutfield 'Protecting Traditional Knowledge and Folklore' International Trade and Sustainable Development Series (2003) 34 available at http://www.iprsonline.org/resources/docs/Dutfield%20-%20Protecting%20TK%20and%20Folklore%20-%20Blue%201.pdf (last visited 26/10/2010).
[286] The members of the Andean Community are; Bolivia, Columbia, Ecuador and Peru.
[287] Kate & Laird 'Bioprospecting Agreements and Benefit Sharing with Local Communities' in Finger & Schuler (Eds) *Poor People's Knowledge* (2004) 137.
[288] Kate & Laird 'Bioprospecting Agreements and Benefit Sharing with Local Communities' in Finger & Schuler (Eds) *Poor People's Knowledge* (2004) 137.
[289] For more information about this Decision visit their website at www.comunidadandina.org/ingles//treaties/dec/D486e.htm (last visited 27/10/2010).

for patentability.[290] However, if such a provision is successfully implemented by all nations, it might mark the end of bio-piracy.

3.5.4 Protection through a liability regime

A liability regime is another *sui generis* form of protecting TK relating to plant biodiversity from bio-piracy; [291] this has been described as a 'use now and pay later system.'[292] Under this system, persons are authorised to make use of the TK without necessarily obtaining consent from its holders, and to compensate the holders for the use of this knowledge later on. If this form of protection is used, it may provide some degree of protection given that a great deal of TK relating to plant biological resources is already in the public domain. Governments could determine the rights of both the holders of this TK, and its users by law, or a private collective management institution could be established to; monitor the use of TK and issue licenses for its use, receive the fees thereafter, and distribute it to the right holders, and the fees to be determined in proportion to the extent to which use is made of the TK.[293]

The methods of protecting TK discussed above however might be plagued by the shortcoming of creating the inference that no intellectual property rights exist in TK relating to plant biological resources. Our position is that there exists some form of intellectual property right in this form of TK, the reason why we suggest these special forms (*sui generis*) of protection of TK in general is that in some communities most of their TK is in the public domain,[294] hence used by a good number of people already, This means that if contemporary IPR is sought to protect it, it will not be effective, hence, documentation, GBS, disclosure of origin, and liability right are suggested merely to ensure that TK holders benefit from the use of their knowledge, while awaiting a law that will properly guarantee its protection.

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[290] WTO Preparation for the 1999 Ministerial Conference proposals on IPR Issues (WTO/GC/W/147) communication from India (1999) 4 available at http://commerce.nic.in/D644e.doc (last visited 26/10/2010).
[291] The liability rule is a rule explained by the famous formulations of Calabresi and Mllamed to the effect that, with a liability rule or regime, is a situation in which a person destroys an entitlement (appropriation of TK of indigenous communities without their consent) and is ready to pay an objectively determined value for it available at http://lsolum.typepad.com/legal_theory_lexicon/2006/08/property_rules_.html (last visited 26/10/2010).
[292] Dutfield 'Protecting Traditional Knowledge and Folklore' International Trade and Sustainable Development Series (2003) 40 available at http://www.iprsonline.org/resources/docs/Dutfield%20-%20Protecting%20TK%20and%20Folklore%20-%20Blue%201.pdf (last visited 26/10/2010).
[293] Dutfield 'Protecting Traditional Knowledge and Folklore' International Trade and Sustainable Development Series (2003) 40 available at http://www.iprsonline.org/resources/docs/Dutfield%20-%20Protecting%20TK%20and%20Folklore%20-%20Blue%201.pdf (last visited 26/10/2010).
[294] Dutfield 'Protecting Traditional Knowledge and Folklore' International Trade and Sustainable Development Series (2003) 40 available at http://www.iprsonline.org/resources/docs/Dutfield%20-%20Protecting%20TK%20and%20Folklore%20-%20Blue%201.pdf (last visited 26/10/2010).

3.7 Conclusion

One may argue that TK is unique concept;[295] it relates to a form of knowledge which possesses distinct characteristics, [296]quite different from western type scientific knowledge, though a science too.[297] This knowledge particularly that relating to plant biological resources is a form of intellectual property because it can be used to creations which can be traded, this has been recognised by the international community.[298] TK faces serious threats of bio-piracy,[299] and needs to be protected,[300] yet, indigenous communities and the world at large seem to be divided on how to approach the issue of protecting this form of knowledge.[301] Though there is no international law which affords an effective protection to this knowledge, a few countries have taken steps to secure some form of protection.[302] A few suggestions have equally been made by researchers in this domain on how to approach the protection this knowledge.[303] Implementing these suggestions may not be an easy task, this is because some like documentation may be very expensive; disclosure of source of origin may not be easily welcomed by developed countries; protection rough liability regime may not be welcomed by TK holders as it entails interference with their rights without consent, and compensation later on. The fact remains that there is no perfect measure of protection which can be adopted. The only way out might be for all of these stakeholders[304] to cooperate and seek each other's opinions on how best address the issue of protecting TK such that they all benefit.

[295] 2.2 supra.
[296] 2.3 supra.
[297] 2.4 supra.
[298] 2.3.1 supra.
[299] 2.6.1.1 supra.
[300] 2.6 supra.
[301] 2.7 supra.
[302] 3.4.1 supra.
[303] 3.6.1 to 3.6.3 supra.
[304] The TK holders, their governments, and third parties willing to gain access thereof.

CHAPTER IV

POSSIBILITIES AND CHALLENGES ARISING FROM THE PROTECTION OF TRADITIONAL KNOWLEDGE IN SOUTH AFRICA

4. 1 Introduction

South Africa has not been unaffected by the practice of bio-piracy,[305] the country is one of the 17 countries of the world that is classified as mega-diverse;[306] it has more than 20,000 species of plants, (about 10% of all the known species of plants on earth), making it particularly rich in plant biodiversity.[307] It is the third most bio-diverse country in the world, after Brazil and Indonesia, and has greater biodiversity than any other country of equal or smaller size.[308]

In fact, given its position in the biodiversity world, it is one of the African countries that is most affected by bio-piracy (if not the most affected country).

In this chapter, we focus on the possibilities of and the challenges which arise from the protection of TK relating to plant biological resources in South Africa.

In South Africa, protection of TK relating to the plant biological resource of indigenous communities is provided for under both biodiversity laws and IP laws, namely; the Biodiversity Act 2004, the Commencement on Bioprospecting Access and Benefit Sharing Regulation, for the biodiversity laws; and the Patent Amendment Act of 2005 and the Intellectual Property Amendment Bill 2010 (still pending enactment) for the IP laws.

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[305] See 2.1.1.4; 2.6.1.1.7 and 2.6.1.1.8 supra for bio-piracy cases in South Africa.

[306] The concept of mega diversity is based on the total number of species in a country and the degree of endemism at the species level and at higher taxonomic levels. The World Conservation Monitoring Centre recognised 17 mega diverse countries in July 2000 including Australia, Brazil, China, Colombia, Democratic Republic of the Congo (DRC) (formerly Zaire), Ecuador, India, Indonesia, Madagascar, Malaysia, Mexico, Papua New Guinea, Peru, the Philippines, South Africa, the United States of America (USA) and Venezuela. Together, these 17 countries harbour more than 70% of the earth's species available at http://www.environment.gov.au/soe/2001/publications/theme-reports/biodiversity/biodiversity01-3.html last visited 06/10/2010.

[307] Olive Leaf Foundation available at http://www.olf.org.za/region/south%20africa (last visited 10/11/2010).

[308] Olive Leaf Foundation available at http://www.olf.org.za/region/south%20africa (last visited 10/11/2010).

4.2 Protection of Traditional Knowledge through biodiversity law (*Sui generis*)

It is important to say that the protection of TK through biodiversity law is considered *sui generis* because it is not regulated by the TRIPS agreement.

4.2.1 Biodiversity Act 2004; and the Regulations

The objectives of the Biodiversity Act are;[309]

- To regulate the practice of bio prospecting and the exportation of biological resources from the country for research;
- To set out the conditions to be fulfilled before this exportation takes place; and
- To ensure that the benefits derived are shared with the indigenous communities who provide and hold this knowledge.

According to this Act, persons wishing to apply for a permit allowing them to undertake bio prospecting activities in the country shall have to identify all the stakeholders involved,[310] namely; state organs or indigenous communities, after which the issuing authority must ensure that the interests of these stakeholders are guaranteed.[311]

Where such interests exist, the issuing authority shall not grant a permit until the applicant has fully disclosed all material information relating to the bio prospecting activity to the stakeholders and has obtained their prior consent.[312] The Act provides for such consent to be followed by a material transfer agreement[313] between the stakeholders and the applicant.

In addition, a permit shall be issued only if the issuing authority is satisfied that the export of the relevant biological resources fulfils the following conditions;[314]

- Is for a purpose that is in the public interest;
- For the conservation of biodiversity in South Africa;
- For the economic development of the country; and

[309] Section 2 of the Biodiversity Act 2004: Regulations on Bio prospecting, Access and Benefit Sharing titled purpose of the regulation.
[310] Section 8 of the Regulation on Bio prospecting Access and Benefit Sharing.
[311] Section 82 (1) (a) of the Biodiversity Act 2004.
[312] Section 82(2) (a) of the Biodiversity Act 2004.
[313] A material transfer agreement is a contract that governs the transfer of tangible research materials between two organisations, wherein the recipient intends to use it for his or her own research purpose see University of California, Berkeley available at http://www.spo.berkeley.edu/guide/mtaquick.html (last visited 5/01/2010).
[314] Section 13(1) (a)-(c) of the Regulations on Bio prospecting, Access and Benefit-Sharing 2008.

- For enhancing the scientific knowledge and technical capacity of the people and institutions of the country.

In addition, the following conditions will have to be met before the bio prospecting permit is granted;[315]

- The permit shall be for a specific duration;
- Must indicate the indigenous biological resources involved;
- The quantity of such biological resources;
- Must specify the source;
- The biological resources in question shall not be used for commercial purposes;
- It shall not be used for bio prospecting purposes;
- Shall not be assigned to a third party by sale, transfer, donation without the written consent of the issuing authority; and
- The holder must submit to the issuing authority from time to time as agreed a status report.

Further protection is granted to biological resource in this regulation as it incriminates persons who either make use of, or export biological resources without a permit, or use a permit for purposes other than that for which it is granted.[316] A person convicted of such an offence shall be liable to imprisonment of not more than five years, or a fine, or both such imprisonment and fine.[317]

4.2.2 Other *sui generis* measures which could be taken by the State to protect Traditional Knowledge

4.2.2.1 Enacting a Traditional Knowledge Protection Law

The effort made by the legislature in South Africa to protect TK by amending existing laws to include provisions on TK protection has not been welcomed by all,[318] thus, enacting a law which has as sole objective to protect TK might be a solution to bio-piracy in South Africa.

[315] Section 13(2) (a)-(f) of the Regulations on Bio prospecting, Access and Benefit-Sharing 2008; and section 83 of the Biodiversity Act 10 of 2004.
[316] Section 20 of the Regulation on Access and Benefit-Sharing Agreement 2008.
[317] Section 21 of the Regulation on Access and Benefit-Sharing Agreement 2008.
[318] Intellectual Property Amendment Bill 2008 and its 2010 amendment and the Patent Amendment Act which all seek to protect TK through existing IPRs have been criticised, these criticisms are addressed in .....infra.

This strategy has been adopted in India, where the TKDL has been created; [319] and the Traditional Knowledge (Protection and Regulation to Access) Bill 2009 has been drafted, and is still to be passed.[320] The Bill is divided into nine chapters which provide for; the creation of a TK Authority, the state TK board, functions and its committees, of these organs, the finance, audit and accounts of the TK board.[321] Some of the salient aspects of the Indian Bill are;

- It identifies and describes the duties and obligations of the central government, the state government and the TK Authority in ensuring prevention of misuse of TK;[322]
- It provides for preparation of national policy, strategy and plan of action by TK Authority every five years, taking into account protection of TK, and sustainability of the human resources on which TK is dependent;[323]
- The TK Authority has a duty to increase awareness by educating the communities on just and fair negotiations and ensuring the use of TK is not against public order and morality.[324]

This is an example the legislature in South Africa might find worth emulating.

4.2.2.2 Creation of a Database

TK of indigenous communities can be protected through the creation of a database for its registration, and it would entail documentation. Such a database will serve as documented proof of prior art in defeating patent applications relating to this TK in institutions like the USPTO and the EPO. This practical measure has been taken by the Indian government as

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[319] See 3.4.5 supra.
[320] SiNApSE 'A Round Table on Protection of Traditional Knowledge/ Traditional Cultural Expression- Evolving a Sui Generis Model for India' (2010) available at http://www.sinapseblog.com/2010/01/round-table-on-protection-of_25.html (last visited 11/11/2010).
[321] SiNApSE 'A Round Table on Protection of Traditional Knowledge/ Traditional Cultural Expression- Evolving a Sui Generis Model for India' (2010) available at http://www.sinapseblog.com/2010/01/round-table-on-protection-of_25.html (last visited 11/11/2010).
[322] Shreedharan 'Bridging the Time and Tide-Traditional Knowledge in the 21st Century) 15 *Journal of Intellectual Property* (2010) 150 available at http://nopr.niscair.res.in/bitstream/123456789/7624/1/JIPR%2015%282%29%20146-150.pdf (last visited 11/11/2010).
[323] SiNApSE 'A Round Table on Protection of Traditional Knowledge/ Traditional Cultural Expression- Evolving a Sui Generis Model for India' (2010) 7 available at http://www.sinapseblog.com/2010/01/round-table-on-protection-of_25.html (last visited 11/11/2010).
[324]Shreedharan 'Bridging the Time and Tide-Traditional Knowledge in the 21st Century) 15 *Journal of Intellectual Property* (2010) 150 available at http://nopr.niscair.res.in/bitstream/123456789/7624/1/JIPR%2015%282%29%20146-150.pdf (last visited 11/11/2010).

described earlier.[325] The South African 2010 Intellectual Property Amendment Bill mentions the creation of database for the registration of TK, but provides no further information as to how it would operate; [326] this could have been ensured by enacting a regulation to this Bill that would explicitly define how it will operate.

Such a database should be in the form of register, opened to all TK holders and accessible to all indigenous communities for the registration of their TK. A central office may be created in the capital (Pretoria) with small regional or local offices in the individual indigenous communities. The members of these regional or local offices should also educate indigenous communities on the issue of bio-piracy creating awareness so that they will be encouraged to register their knowledge. These offices should have at least one representative from the various indigenous communities in which they are located, and even more at the capital. The representatives will be helpful in providing an insight into the problems confronted by these indigenous communities in seeking to protect their TK, and this may play a great role in deliberations on measures to be put in place to avoid bio-piracy.

In Costa Rica, the National Biodiversity Administration Committee (CONAGEBIO) which has the duty of preparing access and benefit sharing policies is required to *coordinate with indigenous people* in carrying out its functions.[327]

The participation of these people is important because they are the holders of TK, and are the ones who need to be protected. By involving them in seeking a solution to bio-piracy better protective measures will be put in place because they (the indigenous people in the offices) will properly reflect the difficulties encountered by TK holders, and by participating in solution seeking, the efficiency of measures taken to address the problem will be increased.

It should be noted that the idea of documenting TK itself has a limitation in that if it is made freely accessible to all, bio-piracy might rather be increased. To avoid this, access to this documentation will have to be limited essentially to patent officers.

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[325] See 3.4.4 supra.
[326] Section 16 (40C) of the South African 2010 Amendment Bill.
[327] Article 17 (2) of the Biodiversity Law of Costa Rica available at http://www.sipo.gov.cn/sipo/ztxx/yczyhctzsbh/zlk/gglf/200503/P020070628545694641443.pdf (last visited 11/11/2010).

4.2.2.3 Provision of non-monetary compensation to Traditional Knowledge holders

Another way the South African government can protect holders of TK relating to biological resources is by amending the laws relating to access and benefit sharing agreements. The Biodiversity Act 2004: Commencement on Bio-prospecting, Access and Benefit-Sharing Regulations 2008 provides for how bio prospecting and issuing of bio prospecting permits shall be carried out. A close examination of this law gives the impression that only monetary compensation can be paid to indigenous communities for use of their biological resources.[328]

Monetary compensation may not always be the best because it may not have a long lasting effect on those who receive it. Moreover, the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilisation 2002 provide for payment of monetary or non-monetary compensation in access and benefit sharing negotiations.[329] Therefore, the South African legislature should expressly provide that payment for access to TK relating to plant biological resources of indigenous communities shall be made in monetary and/or non-monetary terms. By so doing, indigenous communities will greatly benefit from the use of their knowledge by outsiders.

Such non-monetary payments may be in the form of information technology skills (since some of the companies willing to exploit TK are from the US and Europe, and often very rich), or sale of the products manufactured out of the biological resource to South Africans at a reduced price. For example the European biotechnology firm Novozymes has negotiated access and equitable benefit sharing agreements with a home company in Bangkok, BIOTEC.[330] While the latter collects, isolates, identifies and screens samples, Novozymes sponsors the research; provides training to BIOTEC workers; and transfers enzymes technology, bioinformatics and royalties to BIOTEC.[331]

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[328] Section 11 (2) (f) (i).
[329] Appendix 1 (B) 5 of the Bonn Guidelines provides for the payment of monetary or non-monetary compensation in benefit sharing agreements.
[330] Lange 'Tropical Biodiversity: An Industrial Perspective' (2004) available at http://ixmati.conabio.gob.mx/institucion/cooperacion_internacional/doctos/version_ingles.pdf#page=296 296-347 (last visited 9/11/2010).
[331] Laird & Wynberg 'The Commercial Use of Biodiversity: An Update on Recent Trends in Demand for Access to Genetic Resources and Benefit-Sharing, and Industry Perspectives on ABS Policy and Implementation' Secretariat of the CBD Access and Benefit Sharing in Practice 38 (2005) 119 available at http://www.cbd.int/doc/publications/cbd-ts-38-en.pdf (last visited 9/10/2010).

In Costa Rica, the Asociacion Instituto Nacional de Biodiversidab (INBio), a private non-profit scientific organisation, and Merck a US pharmaceutical multinational corporation signed a bio prospecting agreement in 1993.[332] In this agreement, in exchange for the biological resources received, Merck was to pay monetary compensation; royalties on the sales of the products manufactured out of the biological resources obtained; transfer of technology necessary to manufacture, and direct marketing of the commercially valuable end-products of genetic materials (biotechnology);[333] and train Costa Rican citizens.[334]

Recalling the bio prospecting agreement on the Hoodia Cactus plant of South Africa, it is controversial that being the source of the TK and the biological resource used in manufacturing an appetite suppressing, and weight loss drug, the country is one of the countries with the highest number of people suffering from obesity in the world (61% of the population).[335]

These foreign companies could be required to assist by providing social services like, good water supply and electricity, which are still lacking in some of the communities from which the biological resources are obtained. If corporations are required to pay indigenous communities monetary and/or non-monetary compensation in bio prospecting agreements, then the country will reap long term benefits even at the end of the bio prospecting agreement.

It is worth mentioning that these foreign companies might not be willing to provide non-monetary compensation. In such a case, the government might seek to negotiate otherwise, for instance, sale of the product at a cheaper price.

4.2.2.4 Payment of specific percentage of profits after using the biological resources

Requiring companies to pay indigenous communities a specific percentage of their sales, after exploiting the TK, harnessing, and selling products made out of the biological resources,

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[332] Merck-INBio Plant Agreement available at http://www1.american.edu/ted/merck.htm (last visited 11/11/2010).
[333] Coughlin 'Using the Merck-INBio agreement to clarify the Convention on Biological Diversity' 31 *Columbia Journal of Transnational Law* (1993) available at http://www.ciesin.org/docs/008-129/008-129.html (last visited 05/01/2011).
[334] Costa Rica Rural Tours 'Exploring Costa Rica Biodiversity through Bioprospecting' available at http://www.costaricarural.com/en/bioprospecting.htm (last visited 11/11/2010).
[335] Smith 'South Africa Amongst the Word's Fattest People, Survey finds' (2010) available at http://www.guardian.co.uk/world/2010/sep/09/south-africa-obesity-survey-health (last visited 10/11/2010).

will guarantee greater benefit from the use of TK for its holders. The Regulation on Access and Benefit Sharing could include this as one of its provisions.

The issuing authority may not know the value of the biological resources it is making available to a foreign company, and on the other hand, the latter is not sure yet of the results it will obtain from conducting tests on the particular biological resource it is contracting to gain access to.[336] In such a situation it becomes difficult for both parties to evaluate the amount of profit that will be made out of the said use at the end of the day, so as to determine what is *equitable* to share with the suppliers of the biological resources.[337] South Africa can, in granting access to the biological resource, contract for specified percentage of the profits that will be made after the products are manufactured. To avoid a situation wherein the company will make huge benefits and there will be an insignificant benefit for the TK holders. This way, there will not just be benefit sharing, but *equitable* benefit sharing for which the CBD provides.

4.2.2.5 Providing funds to bio-safety Organisations (organisations seeking protection of biodiversity)

Measures should be taken by the government to provide a legal basis and mechanisms for funding activities geared towards bio-safety.[338] Currently in South Africa, there are a good number of bio-safety organisations,[339] which have as common objective, the conservation of plant biodiversity; measures could be taken by the government to encourage the creation of other organisations non profit making nongovernmental organisations (NGOs) having as objectives the fight for the protection of TK, and compensation of TK holders for the use of their TK. These could be done by providing funds for their creation. This way, non-profit organisations driven by the desire to protect biodiversity, and assisting indigenous communities to benefit from exploitation of TK will created. These organisations might be in a better position to address the needs of the holders of knowledge relating to plant biological resources, and ensuring that their TK is protected.

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[336] Heald 'The Rhetoric of Biopiracy' 11 *Cardozo Journal of Intellectual Property* (2003) 537.
[337] With an agreed percentage, if the company makes huge profits, the equitable benefit will be great and vice versa.
[338] Klemm 'The Protection of Traditional Knowledge on the International Level-Reflections in Connection with the World Trade' (2000) 15 available at http://www.unctad.org/trade_env/docs/biberklemm.pdf (last visited 10/11/2010).
[339] Examples are the Biosafety South Africa, African Centre for Biosafety of Miriam Mayet (a Non Profit Organisation), and Africa Bio all of these organisations seek to protect biodiversity in the country.

However there might be a limitation here in the sense that unscrupulous individuals in these organisations may not channel the proceeds to the indigenous communities. This notwithstanding, with the degree of corporate governance required of these organisations, the risk of misappropriation of such funds, or not paying the proceeds to indigenous communities is reduced.[340]

From the above, it is clear that properly regulated and monitored *sui generis* measures could play a great role in seeking to address the problem of bio-piracy in South Africa. Such measures include, enacting a law for this purpose, creation of a database, ensuring proper and equitable compensation, and the provision of funds by the government for the creation of organisations that will seek to protect the rights of TK holders, and make sure that they benefit from the use of their knowledge. Quite apart from these measures, existing IP system could be used to protect TK in South Africa.

4.3 Protection of Traditional Knowledge through existing IP system

In this part, we shall examine the IP laws which provide for protection of TK. We shall begin with the Patent Amendment Act 2005 which amended the Patent Act No 57 of 1978. This Act has been amended to include disclosure of source of origin as a requirement for patent applications based on plant biological resources.

4.3.1 The Patent Amendment Act

This Act provides that;

> *'Every person who lodges an application for a patent accompanied by a complete specification shall, before acceptance of the application, lodge with the registrar a statement in the prescribed manner stating whether or not the invention for which protection is claimed is based on or derived from an indigenous biological resource, genetic resource, or traditional knowledge or use.'*[341]

The Act goes further to state that if the applicant lodges such a statement, indicating that the invention is based on, or derived from indigenous biological resources, genetic resources, or TK, the registrar shall require the applicant to;

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[340] The King III regulating Corporate Governance practices does not distinguish Non-profit companies from other categories of companies in ascribing Corporate Governance practices; they all have the same degree of corporate social responsibility; see also article 10 of the South African Companies Act N071 of 2008.
[341] Section 2(3A) of the Patent Amendment Act.

> *'... furnish proof in the prescribed manner as to his or her title or authority to make use of the indigenous biological resource, genetic resource or of the traditional knowledge or use of it...'*[342]

The regulation to this amendment act provides that the authorisation to make use of indigenous biological resources may take any of the following forms;

- Proof of prior informed consent of the indigenous community providing the indigenous resources;[343]
- Proof of a material transfer agreement between the holder of the biological resource and the applicant if applicable;[344]
- Proof of benefit sharing agreement between the indigenous community and the applicant if applicable;[345] and
- Proof of co-ownership between the applicant and the indigenous community in question if applicable.[346]

Clearly, the intention of the legislator here is to afford protection to TK relating to plant biological resources. It seeks to ensure that all patents applications based on TK or a biological resource are accompanied by a proof of the fact that the TK holders are aware of and authorise the patent applicant to apply for the patent.

4.3.2 Intellectual Property Amendment Bill 2010

The second IP law which provides for the protection of TK through the existing IPRs is the Intellectual Property Amendment Bill 2010. One of the issues dealt with in this bill, is the amendment of the Trade Mark Act to provide for the registration of traditional terms and expressions[347] as collective TMs, certification marks, or GIs.[348]

The bill provides that;

> *'In order to be registrable as a certification mark or collective trade mark, the traditional term or expression should be capable of distinguishing the goods or*

[342] Section 2(3B) of the Patent Amendment Act.
[343] Section 2 44A (2) (b) of the regulation to the Patent Amendment Act.
[344] Section 2 44A (2) (c) of the regulation to the Patent Amendment Act.
[345] Section 2 44A (2) (d) of the regulation to the Patent Amendment Act.
[346] Section 2 44A (2) (e) of the regulation to the Patent Amendment Act.
[347] This refers to terms and expression recognised by an indigenous community as a term or expression having and indigenous origin and a traditional character, used to designate, describe or refer to goods or services section 18(e) of the Intellectual Property Amendment Bill 2010.
[348] Section 18 (f) (6) (a) and (b) of the Intellectual Property Amendment Bill 2010.

> *services of an indigenous community in respect of which it is registered or proposed to be registered, from the goods or services of another community or person, either generally or where the traditional term or expression is registered or proposed to be registered subject to limitations, in relation to use within those limitations.'* [349]

This provision clearly gives TK holders the opportunity to seek relief, or protect their knowledge through the use of this certification or collective trademarks. Through this method, TK holders may adopt a sign which they put on every product made out of a particular biological resource. This trademark can then be registered at the trust office by the producers to prevent it from being used by any other person without their consent.

This bill further provides for creation of;

- A Database;[350]
- A Trust Fund for Traditional Intellectual Property (for commercialisation of traditional intellectual property);[351] and
- A National Council for Traditional Intellectual Property (to advise the registrar of IPR on matters concerning intellectual property relating to indigenous knowledge).[352]

From the foregoing, we can say that there are a number of measures both *Sui generis* and under IPRs which could be employed by indigenous communities to protect their TK. Making effective use of these measures, considering their shortcomings, properly orienting them to the characteristics of TK, and the interest of their holders may enable indigenous communities to reap some benefits as required by the CBD.

The above discussion focused only on the possible means through which TK could be protected in South Africa. We shall now discuss the criticisms levied on some of these measures, precisely the 2010 Intellectual Property Amendment Bill.

It should be noted that, the 2010 Intellectual Property Amendment Bill has been criticised for Non-participation of indigenous communities in solution seeking. The opinion held by many is that TK protection must give subjective consideration to the original holders of the

[349] Section 19(3) (a) of the 2010 Bill.
[350] Section 16 (40C) of the Intellectual Property Amendment Bill.
[351] Section 16 (40D) of the Intellectual Property Amendment Bill.
[352] Section 16 (40A) of the Intellectual Property Amendment Bill.

knowledge, especially because it is important that such protection should be affordable, understandable and accessible to TK holders.[353]

The idea of protecting TK through the Intellectual Property Amendment instead of creating a forum wherein those concerned (indigenous communities) will participate in addressing the problem has been greatly criticised by IP law experts. One such IP experts, Owen Dean holds that the South African legislator has gone '*where angels fear to tread*,'[354] by providing for protection of TK through IP laws, he states;

> *'If the bill becomes law and the intellectual property statutes are amended in this manner, South Africa will embarrass itself in the international community and the courts will have to deal with legislative provisions which are basically nonsensical. Clearly this situation should be averted; government should withdraw the bill entirely and commence afresh with efforts to provide some form of protection to traditional knowledge. The irony is that without exception, commentators on the bill have welcomed the notion of protecting but have disagreed vehemently with the unprecedented approach of simply incorporating such protection into existing intellectual property rights.'*[355]

The reason for this is that protecting TK in its entirety through the IPR regime is a measure which has not gained much attention. Most countries prefer a *sui generis* form of protection; moreover, TK is different in characteristics from western knowledge which the existing IPR seek to protect.

One of the limitations of the Intellectual Property Amendment Bill is that it accords so power to the trust fund. The bill provides for revenue from commercialisation of TK in general to be paid to the trust fund, not to the indigenous communities, and that the trust fund shall in turn '*use the money for the benefit of the indigenous communities*.'[356] More so, the bill provides that if a member of an indigenous community makes a commercial benefit from a traditional

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[353] See http://www.legalserviceindia.com/article/l98-Intellectual-Property-and-Traditional-knowledge.html (last visited 16/11/2010).
[354] Dean 'Where Angels Fear to Tread' *Without Prejudice* (2009) 18 available at http://search.sabinet.co.za/WebZ/images/ejour/jb_prej/jb_prej_v9_n1_a10.pdf?sessionid=01-48028-906101127&format=F (last visited 11/11/2010).
[355] Dean 'Where Angels Fear to Tread' *Without Prejudice* (2009) 19 available at http://search.sabinet.co.za/WebZ/images/ejour/jb_prej/jb_prej_v9_n1_a10.pdf?sessionid=01-48028-906101127&format=F (last visited 11/11/2010).
[356] Section 16 40D (4) (b) of the Intellectual Property Amendment Bill 2010.

work, he shall pay a royalty to the trust fund,[357] the amount of which shall be determined by the former and the latter, or by the court.[358] This provision is problematic because it means that members of indigenous communities will be deprived of part of their income in return for no apparent benefit.[359]

To add, the bill seems not to recognise the possibility that intellectual property based on or derived from TK can be owned by an individual.[360] It has been mentioned earlier in discussing the characteristics of TK that there is a part of TK which is sacred, and kept under an oath by the holders.[361] If the holder in this case decides to register such an intellectual property or to make commercial benefit of it, from the provision of the bill, he is obliged to pay part of the money obtained from such commercialization to the national fund. This seems to mean that if this bill is enacted, all intellectual property derived from TK will not be owned by the TK holders alone, but by the latter and the trust fund, the question which remains unanswered is why?

Another criticism which has been casted on this bill is the lack of a comprehensive definition of key terms like indigenous communities, TK, and traditional character. [362] The word indigenous community has been loosely defined as;

> *'Any community of people currently living within the borders of the republic, or which historically lived in a geographical area currently within the borders of the republic'*[363]

The term 'traditional character' has not even been defined; the omission of a proper definition of these words and the insertion of vague provisions may in practice make it very difficult for indigenous communities to protect their TK, which will therefore negate the very purpose of

[357] Section 10 19C (3) of the Intellectual Property Amendment Bill 2010.
[358] Section 10 19C (3) (a) (b) (c); and 13 (b) (c) (1) of the Intellectual Property Amendment Bill 2010.
[359] 'Executive Summary of main issues of concern regarding the Bill' 2 point 2.5 available at http://www.samro.org.za/files/IPBILL/Presentation%20to%20Deputy%20Minister%20of%20trade%20and%20industry.pdf (last visited 3/11/2010).
[360] 'Executive Summary of main issues of concern regarding the Bill' 3 point 4.5 available at http://www.samro.org.za/files/IPBILL/Presentation%20to%20Deputy%20Minister%20of%20trade%20and%20industry.pdf (last visited 3/11/2010).
[361] See 2.3.7 supra.
[362] Rengecas 'An Overview of the Protection of Traditional Knowledge in South Africa, 3 available at http://www.evecutiveview.com/knowledge (last visited 2/11/2010).
[363] Section 5 (d) of the Intellectual Property Amendment Bill 2010.

the bill.[364] Moreover, the bill is silent about the duration of the protection it affords to TK holders.

Furthermore, the bill has been criticised for want of an African spirit. Some academics preferred a bill that is more African oriented, with little or no western type IPR system.[365] This points out to the fact that the Bill provides for a form of protection which is strange to TK holders and to indigenous communities in general, IPRs is something entirely alien to these people. A Bill particularly oriented to address the protection of TK and its particular characteristics will perhaps be more considerate of typical African values like solidarity, and will purge the bill of the 'money seeking' intention it seems to possess.

Lastly, but not least, the Bill has been criticised from an anthropology and community development perspective. The concern of the researchers in these fields is that the Bill classifies TK as a commodity, rather than as a constitutive feature of indigenous communities; it transforms into 'a thing' rather than recognising that it is embedded in relationships.[366]

One may therefore say that the South African government has in fact made some efforts to protect TK relating to plant biological resources, namely, the amendment to the Patent Law to include provisions on TK protection,[367] and protection through the biodiversity laws.[368] Some of these measures seem to be inappropriate, this probably accounts for the fact that bio-piracy is still a cause for concern in the country.

Having examined the measures taken to Protect TK in South Africa and their criticisms, we shall proceed to the next part of our work which shall deal with the challenges encountered in an attempt to protect TK.

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[364] Rengecas 'An Overview of the Protection of Traditional Knowledge in South Africa, 3 available at http://www.evecutiveview.com/knowledge (last visited 2/11/2010).
[365] Saurombe 'Intellectual Property Law Protection for Traditional Knowledge/Indigenous Knowledge systems in the Southern Africa and selected Asian Jurisdictions- A view from developing and least developing countries' (2009) 7 available at www.kmafrica.com/...protection...traditional.knowledge/indigenous.knowledge.systems.in.SA (last visited 17/10/2010)
[366] Rens 'Intellectual Property Amendment Bill: Public Hearings' available at http://aliquidnovi.org/debating-traditionalknowledge-legislation (last visited 5/11/2010).
[367] See 4.3.1 supra.
[368] See 4.2 supra.

4.4 Challenges arising from the protection of Traditional Knowledge relating to plant biological resources in South Africa

4.4.1 The lack of teachings in the field of Traditional Knowledge

Creating awareness on the misappropriation of TK by third parties through bio-piracy is an important step towards seeking a solution to this problem. One of the challenges faced by South Africa in seeking to protect its TK is that the country still lacks behind in terms of educating its citizens on taxonomy.[369] [370] This refers to the science of naming, describing and classifying organisms and includes all plants, animals and microorganisms of the world.[371] The point remains that one of the difficulties developing countries in general face in seeking to protect their biological resources is the lack of knowledge in this field.[372] Taxonomy provides basic understanding about the components of biodiversity which is necessary for effective decision-making about conservation and sustainable use.[373]

Indonesia has gone far by developing necessary expertise and curricula for university courses on taxonomy.[374] The New Partnership for Africa's Development (NEPAD), of which South Africa is a member has emphasised on securing Africa's indigenous knowledge through amongst others, developing and promoting an African body of methodology and guidelines for integrating indigenous knowledge systems into formal education and training.[375]

None of these measures seem to have been adopted by South Africa. Due to changing natural environments and fast-paced socio-economic conditions like urbanization, indigenous knowledge system is at risk of becoming extinct.

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[369] for more on formation on the importance of taxonomy and why we should study it see the CBD documents on http://www.cbd.int/gti/taxonomy.shtml (last visited 16/11/20110)
[370] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 4 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010).
[371] 'What is Taxonomy' available at http://www.cbd.int/gti/taxonomy.shtml (last visited 07/01/2011).
[372] 'Why is Taxonomy important' available at http://www.cbd.int/gti/importance.shtml (last visited 07/01/2011).
[373] 'Why is Taxonomy important' available at http://www.cbd.int/gti/importance.shtml (last visited 07/01/2011).
[374] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 4 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010).
[375] NEPAD 'Securing and Using Africa's Indigenous Knowledge Base' available at http://www.nepadst.org/platforms/ik.shtml (last visited 16/11/2010).

The Department of Science and Technology and the South African Qualifications Authority have requested and South Africa is now planning to introduce an accredited degree in Indigenous Knowledge Systems.[376]

4.4.2 Difficulties of identifying Traditional Knowledge holders

Another problem faced by states in general, and South Africa in particular in seeking to protect TK is that of identifying some of the TK holders, this may arise when an indigenous community holder of a particular TK cannot be found.[377] This is possible given that indigenous communities are gradually disappearing due to globalization.[378] Moreover, there might be situations where there are more than one community holders of a particular TK.

The latter situation clearly creates a conflict, and new laws relating to this particular kind of conflicts will have to be enacted. Enacting an entirely new law is never an easy task, given that care has to be taken to ensure that it does not conflict with existing laws. This probably explains why the legislator chose to protect TK under existing IP laws.

4.4.3 Improper co-ordination of experts in various fields related to Traditional Knowledge to ensure its documentation

South African experts in various fields related to indigenous knowledge seem to be improperly co-ordinated; this is evident from the fact that no active measures seem to have been taken to ensure documentation of TK.[379]

Nigeria and India have gone far by taking effective measures to ensure protection, for example documentation of their TK, though they have limited financial resources when compared to South Africa.[380] This is thanks to good co-ordination of experts in the field of

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[376] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 4 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010).
[377] In the Hoodia bio-piracy, the British spokesman for Pfizer said that they had been told that the San population was 'extinct' see www.rebirth.co.za/hoodia/san_tribe_and_biopiracy.htm (last visited 17/08/2010).
[378] See http://indigenouspeoplesissues.com/index.php?view=article&catid=49%3Aasiabooks&id=95%3Adisappearing-peoples-indigenous-groups-and-ethnic-minorities-in-south-and-central-asia&option=com_content&Itemid=66 (last visited 16/11/2010).
[379] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 5 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010).
[380] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 5 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010).

TK. The changing natural environments and urbanisation have resulted in indigenous knowledge systems fast becoming extinct. The intrusion of technology aggravates the disappearance of indigenous knowledge.[381] Hence proper co-ordination of experts in the field TK protection should be one of the first steps to take in seeking protection. Such proper co-ordination will put in place conducive measures for the documentation of TK, only then will South Africans be able to present it as a valid proof of prior art in seeking to protect it from bio-piracy.

4.4.4 The high cost associated with documentation

The limitation that is likely to be faced in creating a database for registration and storage of TK is financial constrains, India spent huge amounts in setting up the TKDL.[382] This however should not be a hindrance to implementing this measure because the state can allocate a budget each year for that, and carry out the process progressively. Moreover, the amount of money that can be spent in setting up a TKDL cannot be higher than that which can be gained from royalties that will be paid for gaining access to such TK once a database is created, and the cultural identity of the TK holders that will be protected. The profits which indigenous communities can make from protection of their TK therefore should not be underestimated. This profit can be of great significance to indigenous communities who most at times are very poor.[383]

4.4.6 Conclusion

One may therefore conclude that South Africa has taken a number of measures to combat bio-piracy, while most governments are putting in place *sui generis* laws, particularly tailored to the unique nature of TK;[384] [385] the South African government has enacted *sui generis* laws[386] and proposed changes to the IP laws.[387] The latter measure however has attracted

[381] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 5 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010).
[382] See 2.8.4 supra.
[383] A good example is the San people, who live in poverty http://www.krugerpark.co.za/africa_bushmen.html last visited (10/11/2010).
[384] See 3.4.1 to 3.4.4 supra.
[385] See for 2.3.1 to 2.3.7 supra for the characteristics of TK
[386] The Biodiversity Act 2004, The Bio prospecting Access and Benefit Sharing Regulation 2008, and the Patent Amendment Bill 2005.
[387] The Patent Amendment Act; and the Intellectual Property Law Amendment Bill 2010.

criticisms.[388] Given the unique nature of TK, several challenges arise from enacting a law specifically tailored to address all its characteristics.[389] The question of whether a *sui generis* law or a law under IPRs is best suited to protect TK still remains a complicated one to answer.

Therefore, IPRs alone cannot fully protect TK, and enacting a special law is not an easy task. The only way out seems to that of enacting both of these (*sui generis* and IP) provided that existing laws and international engagements are not jeopardised;[390] the rights of the TK holders are fully recognised and protected; and they are made to benefit from the use of their knowledge.

[388] See 4.4.5 supra.
[389] 4.4.1 to 4.4.5 supra.
[390] For example WTO engagements.

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The conception that indigenous communities are poor, hence having nothing to offer seems to be rapidly being removed from peoples' minds. These people posses inherent and unique[391] intellectual property, which if properly exploited can greatly influence the world, especially in the area of medicine. Researchers of industrialised countries now seek out these indigenous people in pursuit of their TK. The reason for this is that this knowledge, though *traditional* is rich and original, different and sometimes capable of generating millions for pharmaceutical companies.[392]

For some time, companies of industrialised countries have illegally made use of the TK of these communities for several purposes, namely; agriculture, medicine,[393] food processing, including making of beverages.[394] Some of these companies have gone as far patenting such uses, making huge profits for themselves[395] without, informing the TK holders and enabling them to benefit from their indigenous knowledge.

Today however, things seem to have changed. Indigenous communities are gradually beginning to understand how much they have lost and continue to lose, and are seeking to reap the fruits of their labour. The CBD, the WIPO and the WTO are all getting involved in one way or the other in the fight against this mal practice. Developing countries, which have the greatest majority of indigenous communities, are equally beginning to understand the value of the knowledge of their indigenous communities, and all agree that active steps need to be taken to fight this malpractice. Developing countries, which have the greatest majority of indigenous communities, are equally beginning to understand the value of their knowledge, and all agree that active steps need to be taken to fight bio-piracy. The question which seems to remain unanswered is how best this knowledge can be protected.

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[391] See 2.3 supra.
[392] See 2.6.1.1.4 supra.
[393] See 2.6.1.1.1 supra.
[394] See 2.6.1.1.7 supra.
[395] See 2.6.1.1.4 supra.

The WTO by means of the TRIPS Agreement provides for protection of this intellectual property, (relating to plant varieties), through patent or *sui generis* laws. The WIPO is still in the process of coming up with a mechanism for protecting this particular kind of intellectual property, the IGC are still busy trying to come up with a law regulating the protection of TK.

The CBD and the Nagoya protocol are the lone international agreements which have not only recognised this intellectual property, but have gone as far as providing for concrete measures which can be taken to protect TK. The CBD provides for access to TK only on the prior informed consent of these people, and the equitable sharing of benefits derived from using the biological resources and TK related thereto.[396] The Nagoya Protocol in addition to these provide among others, for the respect of customary laws of indigenous communities,[397] encourages parties to take appropriate, effective and proportionate measures to address situations of non-compliance,[398] and education and training of users and holders of TK relating to biological resources about their access and benefit sharing obligations.[399]

The one thing which all of these organisations seem to agree on is that in order for TK holders to benefit from their TK, a *sui generis* form of protection is best not protection under the existing IP laws.[400]

In my opinion, the efforts made by the South African government cannot be entirely criticised. The move towards protecting TK through the IP system is worth appreciating. The Patent Amendment Act for example does not provide for granting of patents to TK.[401] It merely requires that patent applicants should state whether or not their inventions are based on or derived from TK or indigenous biological resources.[402] With such a provision in the patent law all applicants will be on their guard, because not mentioning this will imply non compliance with the requirements to apply for a patent, and may result in the patent application not being considered.

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[396] Article 15 (5) and (7) of the CBD.
[397] Article 9(1) of the Nagoya Protocol on Access and Benefit Sharing.
[398] Article 12(2) of the Nagoya Protocol on Access and Benefit Sharing.
[399] Article 17(g) of the Nagoya Protocol on Access and Benefit Sharing.
[400] The TRIPS Agreement article 27.3.b provides for *sui generis* form of protection; WIPO which is an IP organisation has not provided for protection of TK, but has created and assigned the IGC to seek possibilities of protecting TK, the CBD too has provided for a *sui generis* form of protection of TK, ie, through access and benefit sharing.
[401] This of course would have been scandalous, given that most of TK lacks novelty, which is a condition sine qua non for the grant of patents rights.
[402] Section 2(3A) of the Patent Amendment Act.

On the other hand, if the patent application is based on or derived from an indigenous biological resource, of TK the patent applicant will have to furnish proof of the authorisation from the indigenous community concerned to make use of the biological resource.[403] This is an area in the Patent Act that is of great significance to TK holders, and upon which they can rely to defeat any patent based on their TK.

The 2010 Intellectual Property Amendment Bill for its part has much to offer to indigenous communities. The bill expressly gives these people the opportunity to make use of collective trademarks, certification trademarks and GIs to protect their traditional terms and expressions, it should be noted that even without this it was still possible to protect TK through the use of GIs and collective trademarks.

One may therefore say that, though the 2010 Intellectual Property Amendment Bill has a few limitations, such as lack proper definition of terms, lack of acceptable definition of functions of the trust fund, it also has so much to offer to indigenous communities in term of protection to their TK. In fact if this Bill is amended slightly and used alongside the Biodiversity Act, the Patent Amendment Act and the Regulations on Bio prospecting and Access and Benefit Sharing, indigenous communities will have a lot to reap from the use of their TK.

5.2 Recommendation

From the possibilities and challenges discussed above, the following recommendations could be made;

The legislature should consider clarifying some of the terms used in the Intellectual Property Amendment Bill; for example ‘indigenous communities,’ ‘TK,’ and ‘traditional character.’

Powers granted to the trust fund for Intellectual Property under the Intellectual Property Amendment Bill 2010 should be revised, to ensure that ownership of TK remains vested with the TK holders.[404]

Advocacy campaign to educate all stakeholders involved in the protection of TK should be launched.[405] These campaigns should explain to these stakeholders the importance of the

[403] Section 2(3B) of the Patent Amendment Act 2005.
[404] See 4.3.2 supra.

Patent Amendment Act, and the Intellectual Property Amendment Bill, and how much these two laws together with the biodiversity laws could assist them in the protection and commercialisation of their TK, so that they will participate with the government in addressing the problem of bio-piracy.

The legislature should make it possible for TK holders to be included in discussions on the protection of their rights so that the measures taken will be geared towards addressing the particular needs of these people.

The legislature should find a way of documenting TK in a database so that it will serve as repository for the intellectual property of indigenous communities, and will be made available as proof of prior art to persons who seek to patent inventions derived from this knowledge. Moreover, this will serve as a first step towards the creation of a TKDL.[406]

The legislator should consider amending the access and benefit sharing laws to allow indigenous communities benefit the most from the use of their TK by outsiders.

The legislator should take active measures to educate indigenous communities on the importance of their TK as provided by the Nagoya Protocol and the fact that it is misappropriated and patented by researchers at their detriment. This way, these people will be on the alert whenever third parties inquire into their TK.

Given that the creation of a database is more recommended given its efficiency, government should try to allocate a budget for that since it is an expensive endeavour.

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[405] Raphesu 'Vulnerability of Indigenous Knowledge Management Systems in South Africa' 7 available at http://www.slideshare.net/Mphelar/vulnerability-of-indigenous-knowledge-management-systems-in-south-africa (last visited 16/11/2010)

[406] Mosimege 'Intellectual Property and Indigenous Knowledge Systems: International Development and Implication for Southern Africa' (2005) 31 available at (last visited 18/11/2010)

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