

Making the most of natural advantages: intellectual property and natural products in Botswana

By

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The views and opinions expressed in this report remain those of the research team alone.

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List of Acronyms

ABS	Access and benefit sharing
ARIPO	African Regional Intellectual Property Organisation
BIDPA	Botswana Institute for Development Policy Analysis
BTPP	Botswana Trade and Poverty Programme
BOCONGO	Botswana Council of Non-Governmental Organisations
CBD	Convention on Biodiversity
CBNRM	Community Based Natural Resource Management
DEA	Department of Environmental Affairs
Dfid	Department for International Development, UK
GATT	General Agreement on Tariffs and Trade
GIs	Geographical Indicators
GoB	Government of Botswana
IPR	Intellectual Property Rights
ITPGR	International Treaty on Plant Genetic Resources for Food and Agriculture
KCS	Kalahari Conservation Society
LEA	Local Enterprise Authority
NRI	Natural Resources Institute, University of Greenwich, UK
PBR	Plant Breeders Rights
PIC	Prior Informed Consent
SADC	Southern African Development Community
TK	Traditional Knowledge
TRIPS	Agreement on Trade related aspects of intellectual property rights
UNCTAD	United Nations Conference on Trade and Development
UoB	University of Botswana
UPOV	The International Union for the Protection of New Varieties of Plants
VPR&D	Veld Products Research & Development
WIPO	World Intellectual Property Organisation
WTO	World Trade Organisation

Summary of key findings and recommendations

Introduction

This report came about as a result of the desire of Botswana non-state actors to understand the issues surrounding the management of the intellectual property associated with their biodiversity, particularly natural products such as indigenous plants. The research work was conducted between 2-23rd May 2007 and consisted of key informant interview, preparation of case studies and reviews of laws, treaties and other literature.

The purpose of this research was to work towards the development of an intellectual property regime for indigenous plants (and potentially other natural resources) in Botswana that promotes investment in the development of new products whilst protecting the *in situ* natural resource and ensuring full and equitable compensation for intellectual property. This was done through mapping the existing and needed intellectual property regime for indigenous plants.

In the findings and recommendations, the consultants have been asked to state whether, in their opinion, the issue represents a ‘threat’ (i.e., that some aspect such as biodiversity or livelihoods are ‘threatened’) or an ‘opportunity’ (i.e., that biodiversity or livelihoods could be positively impacted upon).

Key findings and recommendations

Of the five key instruments for protection IPR for NPs: patents (and petty patents or utility model certificates), Farmers & Plant Breeders Rights, Trade Secrets, *sui generis* (i.e., public disclosure) and Geographical Indicators, Botswana only has a comprehensive system in place for awarding patents. [Threat – overall IPR protection regime for NPs is weak]

The current system of issuing research permits is fragmented and uncoordinated. [Threat – absence of policy and law could lead to bio-piracy]

[Recommendation: the current research permit system is not protecting citizens from IPR theft or malpractice and should be reformed]

[Recommendation: the ethics of data collection including PIC, MTA and ABS need to be resolved before more data is collected]

[Recommendation: Research permits should only be awarded when plant population base-line information is included in the overall research plan]

[Recommendation: development and dissemination of a simple code of practice for IPR and natural resources in local languages.]

Absence of a national trade policy and poor engagement of non-state actors in trade negotiation weakens the national negotiation mandate. Consultative committees on trade and multi-lateral environmental agreements do not function and have a narrow representation. [Threat – competing countries are better organized]

[Recommendation: the national trade and IPR negotiation mandates of the line Ministries are inadequately formulated. Civil society should press for greater involvement and capacity building for trade and IPR matters.]

[Recommendation: BOCONGO should consider seeking funds to set up a trade research activity to allow it to develop suitable positions on behalf of its members and promote these into the national trade policy and negotiating strategy]

It was found that the legal basis for issuing permits for collection and export of some important NPs has lapsed with the dissolution of the Agricultural Resources Board. [Threat – no means to legally prevent biodiversity loss or administrative measures may be used which have no legal basis]

[Recommendation: The absence of a law to prevent environmentally unsustainable NP activities is of grave concern and this needs to be resolved before valuable resources are lost]

The approved National Biodiversity Strategy and Action Plan strongly supports the approach of bio-beneficiation of NPs (i.e., promoting conservation through creating value at the level of stewardship) and includes Access and Benefit Sharing (ABS) issues. However, several ministries are seeking the ABS mandate. Important issues relating to IPR and trade do not seem to be filtering into the Botswana negotiating position at international fora. [Threat – domestic fragmentation will weaken implementation and Botswana may not achieve its aims in negotiating international agreements]

[Recommendation: Botswana civil society should encourage GoB to take positions at international fora that support protection of TK and promote bio-beneficiation]

[Recommendation: Botswana needs to clarify and focus its ABS mandate before submitting new legislation.]

Botswana has developed an appropriate bio-safety policy and a draft bill. [Threat – whilst policy may be used for regulation, before enactment both Farmers' and Plant Breeders rights are legally threatened]

[Recommendation: Botswana urgently needs to implement a legal system of protection for farmers and plant breeders]

The agricultural research priorities do not currently recognize the potential contribution of NPs to development. [Opportunity – NPs could contribute to agricultural development]

[Recommendation: NGOs should lobby for the inclusion of NPs as a priority for research when and if an Agricultural Research Council is implemented]

The role of Traditional Healers in IPR and NPs is unrecognized. [Opportunity – Traditional Healers could play an important role in IPR and Traditional Knowledge management]

[Recommendation: the NP sector needs to engage with the Ministry of Health on the proposed Traditional Healers Bill to ensure that prior art does not become enshrined in an inappropriate location]

The Ministry of Agriculture issues phytosanitary permits for plant material without checking whether these are for protected species. [Threat – biopiracy]

[Recommendation: the Phytosanitary permit officer should be included in discussion about bio-trade management. It would be prudent to raise awareness of bio-piracy among customs officials.]

Botswana is a member of all the key multi-lateral environmental agreements that impact on trade in NPs including the WTO Trade Related aspects of Intellectual Property (TRIPS) and the Convention on Biodiversity (CBD). Botswana is not a member of the International Convention for Protection of New Varieties of Plants (UPOV) or the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR).

This mix of membership to diverse international agreements is probably appropriate for Botswana's current circumstances and development of NPs. However, the absence of protection for plant breeders and farmers rights is a concern (see above).

Botswana has committed herself to an extensive range of international agreements, treaties and protocols concerning IP, environment and trade. Domestic legislation is struggling to keep up with implementation of these agreements. [Threat – implementation capacity is stretched and gaps appearing that could promote bio-piracy, bio-diversity loss or trade deviation]

The key law concerning IPR is the Industrial Property Act of 1996. This Act excludes 'discoveries' from patent protection and does not exempt plants and animal from patentability. [Threat – legislation not designed with biological resources owned by communities in mind]

[Recommendation: Civil society should express their views on these issues during the forthcoming revision of the Act]

Botswana accepts utility model certificates otherwise known as 'petty patents'. These are simple and cheap ways to protect ideas, particularly domestically which do not require

demonstration of an inventive step. [Opportunity – simple IPR protection through utility model certificates]

[Recommendation: NGO's should consider trying out the Utility Model system to see if this might be an appropriate solution for small scale IPR protection in the NP sector]

There is uncertainty among stakeholders whether the value of the NP resources is owned by communities or the state. This issue is important for ABS policy. Review of the laws and constitution suggests that the states view that the value of NP resources is owned by the state alone seems to be supported. [Threat – this finding might undermine community based resource management as communities might not be repaid for resource depletion]

The scope and powers of the Agricultural Resources Conservation Act in terms of IPR and ABS are wider than the current Forest Act. This issue of balance should be resolved by the new Environmental Management Act. [Opportunity]

There is a great deal of regional variability in the approach and application of policy and legislation for IPR protection related to NPs. [Threat – this could lead to trade deviation or loss of investment]

Countries are implementing IPR and biodiversity management regimes but currently not reaping the benefits through bio-beneficiation. [Opportunity – more needs to be done to harvest the benefits of domestic IP on NPs]

There are efforts to coordinate bio-diversity issues within SADC and these are focusing on Ministries of Environment. Even at the regional level the fragmentation of policy on ABS and TK is apparent. [Threat – regional policy fragmentation could result in bio-diversity loss or loss of investment]

There is clear evidence of various forms of bio-piracy having occurred in Botswana, including uncontrolled bio-prospecting and collection of traditional knowledge by the Government of Botswana, local and international academic and research organizations, companies and private individuals. [Opportunity – the 'value' of previous bio-piracy could be 'mined' by approaching the bio-pirates with a view to legitimizing their activities]

In relation to national, state sponsored efforts to harvest TK, there is an urgent need for dialogue and national policy on ownership of natural products related TK before distinctions become so blurred that desegregation of ownership is impossible. Agreement on ABS on these national TK collections is needed. [Opportunity – this issue can be resolved]

The passive nature of processing patents means that they are awarded unless objections are made. [Threat – Botswana needs to be active to protect its IP on NP from patenting]

The key to protecting the TK associated with NPs is to record prior art. [Opportunity – IPR on NPs can be protected by recording prior art]

[Recommendation: A pilot community based TK registration system is proposed as a possible solution to establishing legal ownership to TK and prior art]

Some commonly held misconceptions concerning bio-piracy and bio-prospecting in Botswana include: overestimation of the real commercial value of biological resources and TK; the desire to over-regulate to protect IP and TK and a knee-jerk reaction to bio-piracy; that once the IP has been ‘lost’ there is nothing that can be done; and, that monetary payments are the only type of benefits that can accrue from IPRs. [Opportunity – capacity building for IPR management, creation of conducive policy and *ex post* IPR harvesting]

[Recommendation: the costs and benefits of developing natural products into commercial products needs to be explained]

[Recommendation: Botswana should seek to create an IP environment that balances protection of domestic interests and promotes inward investment in developing products from NPs. These two goals are not necessarily mutually exclusive.]

[Recommendation: Stakeholders should consider systematically reviewing the research and IP situation for Botswana plants and ‘harvesting’ this by, for example, contacting patent holders.]

IPR issues that could threaten biodiversity and livelihood loss include: punitive patenting by third parties; over-controlling IPR resulting in illegal harvesting and biodiversity loss; under-controlling IPR resulting in investment loss; underestimating the spread of ownership of TK; and, focusing only on obvious plants and missing out on other, potentially valuable, biological resources. [Opportunity – pragmatic policy could lead to bio-beneficiation]

[Recommendation: The IP NP policy should include the possibility of continued trade in the time between patent application and product launch to prevent over-harvesting as long as this does not prejudice the IP rights of the patent holder]

In the view of the team, long term livelihoods and promotion of in situ beneficiation of NPs is more developmentally beneficial than cash rewards and ABS schemes should be weighted accordingly. [Opportunity – pragmatic policy could lead to bio-beneficiation]

[Recommendation: a policy that encourages inward investment, research, capacity building, wild harvesting, small scale farming, commercial production and local processing may be the best package to resolve the investment versus value dilemma.]

The value of biopiracy to date is probably a fraction of the potential value of biological resources in Botswana. [Opportunity – huge potential for bio-beneficiation exists]

[Recommendation: more research is needed to identify all patent and research activity that has already occurred so that a) compensation might be sought; and, b) gaps can be plugged to the benefit of Botswana]

[Recommendation: Botswana should put in place a system to discourage biopiracy and promote bio-beneficiation]

There is much that Botswana can do to prevent bio-piracy and realize the value of indigenous plants and bio-diversity through IPR management. [Opportunity]

[Recommendation: IP code of practice should be developed and disseminated]

[Recommendation: Formulate a National Biotrade Framework (like the Biosafety Framework)?]

[Recommendation: improve research permit system (see above)]

[Recommendation: work with other countries to negotiate coherence between CBD and TRIPS that meets the needs of the sector]

Greater public dialogue on ABS policy is needed as this is particularly important for the NP sector.

[Recommendation: Civil society needs to engage with the issue of PIC and MTA responsibility being devolved to Government. Is Government fully concerned with the specific interests (i.e., of minority communities or women)?]

[Recommendations: Policy on ownership and rights to ABS needs to clarify the issues of groups/state verses individual/community biodiversity and TK rights]

Government seems to want to negotiate on behalf of communities. In the view of the team it would be more enabling for communities to be able to negotiate for themselves or through suitable non-state representatives. [Opportunity]

[Recommendation: If communities are unable to negotiate themselves, the capacities of third parties to negotiate on their behalf need to be enhanced and a code of practice agreed among state non-state actors]

[Recommendation: Botswana ABS policy should be inclusive i.e., it should promote PIC to the community level and not assume that national bodies will always act in the best interests of all parties.]

[Recommendation: Botswana should adopt a pragmatic approach to defining benefits which should include a case by case (as opposed to generic) system and acceptance of all forms of non-monetary benefits as appropriate.]

The team has included a number of comments and recommendations with respect to the draft consultancy on ABS commissioned by the Ministry of Environment. One key issue is where within existing legislation ABS should reside. If no action is taken, ABS will be included in the revised Industrial Property Act. SADC recommend that it should be contained within the Environmental legislation.

[Recommendation: the option to include ABS in other legislation instead of making it stand alone should be thoroughly reviewed]

Botswana does not have comprehensive trade secrets legislation so that route of protecting IPR may be difficult to follow. However, not disclosing IP is a cheap and effective way of preventing its loss.

[Recommendation: Stakeholders in the NP sector should be made aware that non-disclosure is the most cost effective method of IPR protection.]

Botswana has no policy or law concerning geographical indications; the TRIPS Agreement provisions are followed. The *prima face* case for using GIs to protect IPR for NPs seems good; however the cost and difficulties of managing such system may not repay the benefits. Branding and registration of trade marks may be a cheaper and simpler method of achieving the same aim.

[Recommendation: GoB should agree a national position on GIs and express this position at international fora.]

The team found some evidence that NGO's developing NP products have not registered their trade names or logo's.

[Recommendation: BOCONGO should develop a simple flyer explaining to its members the importance of registering trade mark and logo's]

[Recommendation: In the view of the team, Botswana should adopt the following IP policy positions:

- promote patent application through simplifying the patent system, awareness training, capacity building and, if necessary, public subsidy
- not fully support the implementation of a world wide register of GIs until the implications and relative benefits are better understood
- strongly support the inclusion of geographic disclosure of origin in patent applications in the TRIPS agreement
- urgently put in place some form of protection for farmers and plant breeders.]

Summary of findings and recommendations from case studies

Two case studies were conducted on Resurrection plant (*Myrothamnus Flabellifolia*) and the second, Morama Bean (*Tylosema esculentum*).

Both case studies reveal examples of unmanaged bio-prospecting activity in Botswana that has led to both patenting and cultivation of indigenous species in third countries. The general absence of ABS standards or a code of practice and/or a coordinated national research management system has meant that, in these cases, the degree of IPR protection offered was inadequate.

[Recommendation: Botswana needs to improve the coordination of its domestic IPR arrangements, develop a suitable national IPR policy and engage with regional and international bodies to promote this policy agenda]

Coverage of terms of reference

The full terms of reference for this activity are shown at Annex I. This section reviews the coverage of the terms of reference in the report and assists the reader to locate sections of the report that answer specific items.

a) Identify all existing agreements to which Botswana is a signatory that contain elements of intellectual property relevant to trade in indigenous plants.

This can be found at 2.3 page 15.

b) Locate the competent authority for application of each agreement and establish the current state of play with regard to national implementation, the proposed time-scale for full implementation and what might be done to assist the process.

The 'map' of the IP policy environment is given at 2.2 (pages 7 – 14).

c) Collate all relevant legislation with regard to intellectual property and assess it with specific regard to development of indigenous plant opportunities.

The legislation is discussed at 2.4 (pages 22 – 33) and listed at Annex VII on page 89.

d) Where possible, compare the approaches adopted and the progress achieved in Botswana to address the issue of intellectual property management with its primary competitors (notably South Africa and Namibia).

The regional and international perspective is given at 2.5 (page 34).

e) Consult widely along the value chains for indigenous plants to assess the know-how, needs and capacity gaps sector-wide.

A full list of those interviews is given at Annex III (page 80). Participants in the workshop and reference group meetings are shown at Annexes III and IV (pages 80 and 82).

f) Develop case studies of specific indigenous plants to illustrate the potential costs/benefits of an improved/amended intellectual property regime for indigenous plants.

The case study method is discussed at Annex VI (page 87). The case studies themselves are at Section 3 (page 65).

g) Propose activities for funding that will address the needs of the sector to meet the overall objective.

The project proposal is at Section 4 (page 74).

h) Present a summary of the findings and recommendations to a focus group of key stakeholders at a small workshop.

The workshop report is at Annex IV (page 82).

Main report

Introduction

This report concerns research conducted on aspects of Intellectual Property Rights (IPRs) and Natural Products (NPs) in Botswana between 2nd and 23rd May 2007. The research was conducted on behalf of the Botswana Council of Non Government Organisations (BOCONGO), funded by the Botswana Trade and Poverty Programme (BTTP) a programme of the United Kingdom Department for International Development (Dfid) that is housed in the Botswana Institute for Development Policy Analysis (BIDPA).

The research arose from a concern expressed at a non-government stakeholder's workshop on trade and poverty held in 2005 that Botswana was losing the intellectual property related to its indigenous plants and natural products. This concern was developed into an agreed set of terms of reference which can be found at Annex I.

The research was conducted in Botswana and supervised by a reference group. A full list of people consulted either through interviews, as members of the project reference group or as attendees at the final workshop, can be found at Annex II. The programme of activities of the research team is shown at Annex III. The research findings were validated at a workshop, a report of which is located at Annex IV. As specified in the terms of reference, the team was asked where possible to convert problems and issues identified during the research into concrete activities and actions and these are summarised in the final section of the report.

Organisation of the report

The report is organized in four main sections. The first section is concerned with background and method issues. The remaining sections contain the main findings of the key informant interviews, literature research, the case studies and a short proposal for a project to support improved intellectual property management in the Natural Products sector. In appreciation of the complexities of the issues involved an effort has been made to describe in detail some of the most important concepts, legislation and international agreements as it is hoped that this will contribute to better future understanding.

SECTION 1: Background and method

1.1 Background

Botswana has an emerging programme of sustainably harvested sale of wild gathered indigenous plants. In the long run it is hoped that investment in this emerging natural product sector, combined with suitable market access, will have a positive impact on poverty. This sector exhibits the potential for strong and direct linkages between trade and poverty because the products are highly valued for both their inherent and their embedded qualities (i.e., they have comparative advantage in that they are rare, novel and have unique properties and they are produced in ways that have extra value such as wild gathered, organic and fairly traded). More broadly, it is argued that there is a connection between opening markets for wild harvested products and incentives for communities to sustainably manage those resources for the long term benefit of all. Thus the broad objective of developing mechanisms to sustainably and equitably release the value inherent in Botswana's unique biodiversity, way of life and associated intellectual property is the 'super goal' of these efforts.

The specific objective of the research was to develop an intellectual property regime for indigenous plants (and potentially other natural resources) in Botswana that promotes investment in the development of new products whilst protecting the *in situ* natural resource and ensuring full and equitable compensation for intellectual property.

To achieve this it was agreed that the first step should be to map the existing and needed intellectual property regime for indigenous plants and developing a plan of action for achieving this aim. This report attempts to achieve this objective.

1.2 Definition of terms and scope

For the purpose of this research it was agreed that natural products would be defined as "those plants that normally occur within the range of a particular community that may have commercial value". Many other valid definitions for NPs exist; the point being that the sector is relatively young¹ and dynamic and the definition is evolving. This work was initially limited to plants though many of the findings and recommendations are relevant for all biological resources. The scope was not limited to wild harvesting alone in recognition of two important issues. Firstly, that plants that emerge as valuable from wild harvesting usually transfer to cultivation at some point as has happened with the emblematic species Hoodia. Secondly, the identification of valuable properties and selection of plants for these properties by man is also an important and commercial aspect of biodiversity and cannot be ignored. Clarity on terms and scope contributes to framing research questions and developing a suitable methodology to answer those questions.

¹ Though, of course, trade in wild harvested plants was probably among the first that man undertook and numerous references are made to it in both old and new testaments of the Bible.

1.3 Research questions and method

On the basis of the approved terms of reference the following research questions were framed:

- What trade agreements and domestic legislation related to intellectual property rights might impact on trade in natural products and how appropriate are these?
- What are the current and proposed institutional mechanisms for protecting intellectual property rights in Botswana?
- How do other countries in the Southern African region deal with the issue of natural products and intellectual property rights?
- What are the problems/issues within the value chains for natural products in Botswana and how might they be addressed?

The method adopted to answer these questions consisted of four research tools: literature review, key informant interviews, case studies and focus group sessions (in the form of a workshop).

a) Literature review

The literature associated with NPs and IPR is substantial and some relevant references are cited in the text. Much of the literature is 'grey' and consists of internal reports, policy documents and consultancy reports. The team researched widely among the laws and statutes of Botswana. It is notable that Botswana seems to have fewer publicly available government policy and discussion documents than might have been expected. The consultants were refused access to draft policies and draft legislation on more than one occasion. It is felt that this secrecy in developing policy and legislation may not be in the best democratic interests of the general public. All references cited are listed at the end of the report.

b) Key informant interviews

The team identified key informants by asking the reference group to provide a comprehensive list of people and institutions that they knew who were involved or might have an opinion or information on the subject of NPs and IPR. Using this list, the team applied the 'snowball' technique to identify further key informants. This involves asking one key informant to identify further key involvements and 'harvesting' relevant information as the key informant interviews mount up.

The team applied an open ended questionnaire method to the key informant interviews. A list of guide questions was prepared at the outset (See Annex V) and these questions were used to 'open-up' further interesting lines of inquiry.

A total of 30 key informant interviews were conducted.

c) Case studies

The case studies to illustrate IPR important issues within the value chains for NPs were selected using a set of criteria agreed by the reference group (see Annex VI for a detailed description). The group selected the Morama Bean (*Tylosema esculentum*) and Resurrection Plant (*Myrothamnus Flabellifolia*) as the candidates for case studies. The case studies were conducted using interview and guide questions and adopting a value chain analysis approach. Details of these can be found in Annex VI.

d) Focus group sessions (stakeholder workshop)

Finally, information gathered using the three research tools was validated at a workshop where focus groups were asked to a) comment on the findings; b) suggest research gaps, and c) endorse the proposed list of future actions.

SECTION 2 Main Findings

2.1 IPR, Biodiversity and Traditional Knowledge – the background

2.1.1 Introduction

This section provides an overview of the main issues surrounding intellectual property rights (IPR), biodiversity and Traditional Knowledge (TK) from the point of view of biological resources generally and natural products (i.e., wild crafted plants) specifically.

Reasons for protecting IPR's on biological resources fall into three categories: ethics, biopiracy and anti-trust (fear of monopolies). Ethical issues include whether or not claiming the intellectual property of a biological resource for private use and therefore exclusion of other is right. Many individuals, societies and religions believe it is not. Biopiracy is defined as theft of and use for gain of the traditional knowledge and biological resources, often (but not exclusively) by large, multi-national companies. Finally, the concept of public ownership of biological resources and traditional knowledge that has evolved over a long period of time is a norm in many societies. However, the framing of intellectual property and protection of it against use by others is a cornerstone of international trade; the theory being that protecting intellectual property rights promotes innovation by ensuring innovators are rewarded. These objectives for IPR on biological resources are often in conflict and many issues are contentious and unresolved in trade law.

2.1.2 What are intellectual property rights?

Intellectual property rights are the ability of an individual or group to own a specific set of knowledge in the same way that they might own land or a motorcar. With respect to Natural Products, that knowledge could be in the form of information (i.e., where the plant is and what it does), ideas (i.e., the philosophy related to a medicinal plant associated with a religious belief), invention (i.e., discovery that a plant cures a certain disease) and innovation (i.e., new way of extracting the active ingredient from a plant). Types of IPR of particular relevance to biological resources (and therefore natural products) are patents, Plant Breeders Rights (PBR) and Geographical Indicators (GIs). These are considered separately below.

a) Patents

A patent is an exclusive legal right to make, use or sell an invention. Once awarded, patents give a legal monopoly to the inventor for a certain period. This is intended to allow him/her to receive adequate recompense for the invention. Other using the invention must either pay royalties to the inventor or risk punitive legal action and fines.

The key features of patents are:

Novelty	They must include an innovative step that is not obvious to an expert
Products and processes	They can be on a product (i.e., Hoodia p57) or a process (i.e., extraction of <i>Harpagophytum sp.</i>)
Time bound	They are granted exclusively for a period of time (i.e., 20 years)
Tradable	They can be bought and sold
Country specific	They are only guaranteed in the country of application
Require disclosure	Details of the innovation must be shared before protection is granted

Patents require registration with national authorities and clear technical descriptions of the novel step.

In Botswana patents are awarded and protected under the Industrial Property Act of 1996

b) Plant Breeders Rights

Plant Breeders Rights (PBR) are the exclusive right to commercially produce and sell a new plant variety.

The key features of plant breeders rights are that a new plant variety must be: distinct, uniform, stable and novel.

PBRs relate to a new variety. This could be important for wild crafted indigenous species where demand increases and cultivation is proposed.

In Botswana PBRs are protected by disclosure i.e., varieties registered under the Seed Certification Act are considered in the public domain and therefore cannot be patented as they are no longer 'novel'. This is the so-called *sui generis* system of IPR protection.

c) Geographical indicators (GIs)

The key features of GIs are that they identify products with specific geographic locations. Note that the name of the product does not necessarily have to be that of the location of production (i.e., Basmati rice does not come from a place called Basmati).

Danger of GI system for indigenous plants is that one country could register them and then exclude others from using that name.

Botswana does not have GI law and therefore does not offer GI protection².

² In theory, Botswana has acceded to the TRIPS Agreement therefore has incorporated its GI provisions in domestic legislation. Practically, however, the absence of domestic law makes application of the Agreement very difficult.

2.2 Mapping the IPR policy environment

This section summarises the information provided during the 31 key informant interviews (see Annex III) relating to the existing mechanisms for managing NP related IPR in Botswana. This information is collated in Table 1 below. For each issue the relevant lead agency is identified with its related legislation. Where the team has found some form of public consultation and a policy document, this has been highlighted.

2.2.1 IPR management

The formal tools of IPR management accepted in international trade through WIPO and the WTO TRIPS Agreement (patents, trade marks, copyright, design and geographical indications) all come under the remit of the Registrar of Companies. This body is currently within the Ministry of Trade and Industry but it is proposed that it will be an executive agency in the near future. An important aspect of IPR relating to the inherent value of plant selection by communities (Plant Breeders Rights) is currently unprotected.

2.2.2 Research permits

The current system of issuing research permits is fragmented and uncoordinated. There is no relationship between national policy objectives and awarding permits. No technical or ethical criteria for selection were identified by the team. Recovery of research results is haphazard. There is considerable confusion as to who is responsible for issuing permits. It was the Office of the President, but some Ministries now have delegated Authority, usually vested in their Deputy Permanent Secretary. Other Ministries (crucially Agriculture) are still applying to the Office of the President!

[Recommendation: the current research permit system is not protecting citizens from IPR theft or malpractice and should be reformed]

An issue that concerns the team is that research is being conducted on NPs that might promote over-harvesting before proper resource inventories are conducted. There is a risk that *in situ* bio-diversity will be depleted, but that there will be no way of telling that this is happening or has happened.

[Recommendation: Research permits should only be awarded when plant population base-line information is included in the overall research plan]

2.2.3 Market Access

The management of IPR is an important element of access to markets for NPs. Countries with organized IPR protection systems are trade promoting (i.e., they encourage more trade to occur) because other countries and firm feels that there is less risk trading with them. Risk for trading partners takes the form of loss of reputation (i.e., being accused of biopiracy) and loss of IP (e.g., counterfeiting).

All market access issues for Botswana are led by the Ministry of Trade, Division of International Trade, though IPR comes under the Registrar of Companies. The Ministry of Trade has a fairly active National Committee on Trade Policy and Negotiations, but there does not seem to be much involvement of non-state actors. Worryingly, Botswana does not have a National Trade Policy. Its absence greatly weakens the national negotiating mandate in the view of the team. The only public trade policy document located by the team is its WTO Trade Policy Review (WTO 2002). This document contains a limited statement on IPR.

The Registrar of Companies is responsible for coordination of important aspects of IPR as they relate to biological resources and traditional knowledge, but has not successfully implemented the various proposed inter-ministerial committees on these issues.

[Recommendation: the national trade and IPR negotiation mandates of the line Ministries is inadequately formulated. Civil society should press for greater involvement and capacity building for trade and IPR matters.]

2.2.4 Protection of endangered species

The mandate for protecting endangered species through the issuance of permits was with the Agricultural Resources Board, but this body has lapsed along with its legislation. It is proposed that the powers under the Board are transferred to the new Environmental Management Act, but until this happens, prevention of illegal harvesting and trade is not possible.

[Recommendation: The absence of a law to prevent illegal NP activities is of grave concern and this needs to be resolved before valuable resources are lost]

2.2.5 Multi-lateral Environmental Agreements (MEA)

The mandate for DEAs is with the Ministry of Wildlife, Environment and Tourism, Department of Environmental Affairs with the notable exception of the implementation of the Cartagena Protocol. MEA has an agreed National Biodiversity Strategy and Action Plan (Ministry of Wildlife Environment and Tourism 2004). This document supports community led bio-beneficiation (i.e., communities owning and benefiting commercially from their natural resources and traditional knowledge) and as such, underpins much of the work being undertaken by NGO's in Botswana.

However, a number of important aspects of implementation of MEAs remain incomplete. Notably, agreement has yet to be reached on ABS, PIC and uniform MTAs. Work is underway on an ABS policy. However, there are two issues that the team would like to highlight. Firstly, there are important issues of cohesion between CBD and TRIPS (for example on Geographical Disclosure of Origin in patents) that related to IPR and upon which Botswana is silent in international fora. Secondly, several Ministries told the team that they propose to seek the mandate for aspects of ABS on TK. The Registrar of Companies proposed that ABS should form part of the new Industrial Properties Act.

Ministry of Environment is proposing to include ABS in its Environmental Management Act. Ministry of Science and Technology has requested the mandate for TK (and therefore ABS) from the Office of the President. Ministry of Health is preparing a Traditional Healers Bill that will contain elements of ABS management for traditional medicines. This fragmentation of the mandate would not be to the advantage of the NP harvesting communities in the long run.

[Recommendation: Botswana civil society should encourage GoB to take positions at international fora that support protection of TK and promote bio-beneficiation]

[Recommendation: Botswana needs to clarify and focus its ABS mandate before submitting new legislation.]

2.2.6 Biosafety

Botswana has taken a pragmatic stance on genetically modified organisms following the lead of the President of Botswana who supports their safe use. A Biosafety Bill is proposed that will mandate a National Committee on Biosafety. Responsibility for these activities falls to the Department of Agricultural Research. This issue of Plant Breeders and Farmers Rights and whether Botswana should join UPOV or implement a *sui generis* system remains unresolved. The absence of clarity on this issue threatens IPR, particularly where cultivation is envisaged.

[Recommendation: Botswana urgently needs to implement a system of protection for farmers and plant breeders]

[Recommendation: NGOs should lobby for the inclusion of NPs as a priority for research when and if an Agricultural Research Council is implemented]

2.2.7 The role of Traditional Healers

Much of the IP related TK for Botswana NPs is concentrated in the hand of the Traditional Healers and some Ministries have recognized that they might have a role to play in bio-beneficiation. Several ad hoc efforts have taken place to 'extract' IP from traditional healers without PIC or ABS. The Traditional Healers themselves have organizations but these are fragmented. Setting and maintaining standards, regulating new entrants and preventing bad practice in this sector presents a particular challenge.

[Recommendation: the NP sector needs to engage with the Ministry of Health on the proposed Traditional Healers Bill to ensure that prior art does not become enshrined in an inappropriate location]

2.2.8 Phytosanitary control

The Ministry of Agriculture, Plant Protection Division, issues phytosanitary permits for export of plant materials under its mandate as lead Ministry for the WTO Sanitary and

Phytosanitary Agreement. This would seem to be unrelated to IPR and NPs. However, this permit is the only one that is regularly inspected at the borders of Botswana and therefore represents the final barrier to bio-piracy.

[Recommendation: the Phytosanitary permit officer should be included in discussion about bio-trade management. It would be prudent to raise awareness of bio-piracy among customs officials.]

Table 1: IPR, biodiversity and natural resources: summary of who is responsible for what and what is the state of play?

IPR Issue	Relevant Lead Ministry or Competent Authority	Relevant legislation	Public consultation mechanism	Identified policy documents	Notes
IPR management					
- Issuance of patents	Registrar of Companies	Industrial Property Act	Inter-ministerial committee on IP – has only met once	None	Soon to be made an independent agency
- Issuance of utility model certificates	Registrar of Companies	Industrial Property Act	Inter-ministerial committee on IP – has only met once	None	Soon to be made an independent agency
- Registration of trade marks and designs	Registrar of Companies	Industrial Property Act	Inter-ministerial committee on IP – has only met once	None	Soon to be made an independent agency
- Registration of new plant varieties	Ministry of Agriculture	Seed Certification Act	None	None	
- Trade secrets	Registrar of Companies	Regulated under TRIPS, and common law.	None	None	
- Geographical indicators	Registrar of Companies	Regulated under TRIPS	None	None	
Research permits	Each Ministry has autonomous authority to issue permits. Ministries of Agriculture and Environment particularly relevant.	None identified	None	None	There is currently nothing to stop any Ministries issuing research permits on Natural Products. System fragmented. A research council system is under discussion.
Negotiation of market access					
- WTO	Ministry of Trade, Division of International Trade	Various enabling Acts	National Committee on Trade Policy and Negotiations. Meets quarterly	None	Not many non-state actors seem to attend this.
- WIPO	Registrar of companies	Industrial Property Act	Inter-ministerial committee on IP – has		Soon to be made an independent agency

IPR Issue	Relevant Lead Ministry or Competent Authority	Relevant legislation	Public consultation mechanism	Identified policy documents	Notes
			only met once		
- PCT	Registrar of companies	Industrial Property Act	Inter-ministerial committee on IP – has only met once		Soon to be made an independent agency
- Regional Trade	Ministry of Trade, Division of International Trade		National Committee on Trade Policy and Negotiations. Meets quarterly	None	Not many non-state actors seem to attend this.
- TRIPS	Registrar of companies	Industrial Property Act, Schedule II	Technical committee on IP – has not yet met		Soon to be made an independent agency
Harvesting and export permits for protected plants	Department of Forestry and Range Resources, Ministry of Environment	The Board has been dissolved.	None	None	This situation seriously threatens biodiversity
Multilateral environmental agreements (MEA)		None	A National Biodiversity Authority (actually a committee) existed between 2000 and 2003		DEA propose MEA bill to coordinate
- CBD	Department of Environmental Affairs	None		(Ministry of Wildlife Environment and Tourism 2004)	
- Prior informed consent	None	None		(EIA 2007)	
- Access and benefit sharing	Claimed unofficially by Ministries of Environment, Trade and Science.	None	None	(EIA 2007)	ABS and TK claimed by several Ministries
- Materials transfer agreements	None	None			Several bodies have issues their own including the Ministry of Agriculture and National Museum

IPR Issue	Relevant Lead Ministry or Competent Authority	Relevant legislation	Public consultation mechanism	Identified policy documents	Notes
- Cartagena protocol	Ministry of Agriculture, Department of Agricultural research	Biosafety Bill proposed and at 2 nd draft	National stakeholders workshop in 2004. Drafting committee has not met recently.	(Department of Agricultural Research 2004)	
- Implementation of the African Model <i>sui generis</i> system to protect farmers rights	Unclear who is responsible	None	None	None	Botswana has expressed a desire to implement this at international fora, but so far no action.
- International Treaty on Plant Genetic Resources	Ministry of Environment (was Ministry of Agriculture)	None	None to date	None	In negotiation
Inclusion of traditional healers in IRP	Ministry of Health, Directorate of Public Health	Traditional Healers Bill in draft form	A meeting has taken place with traditional healers and some data collected.	None	Ministry of Science and Technology had a project on TK and Traditional Medicine with the Commonwealth Science Council
Traditional Knowledge	Ministry of Science and Technology has officially requested mandate from Office of President	None	Min of Science and Technology held a meeting in 2003 and nominated a Task Team that is now defunct	[Min of Science and Tech policy document reference here]	TK goes will beyond plant knowledge and raises issues outside the scope of this research
Phytosanitary control	Ministry of Agriculture, Plant Protection Division	Plant diseases and pests Act			How much Botswana biological material has been legitimately [sic] exported with this permit only?

2.2.9 Conclusions – IPR policy mapping

The mapping exercise reveals that the NP IPR management situation is highly fragmented with many Ministries expressing ‘ownership’ of important aspects such as TK. Policy and legislation has in some cases been formulated without sufficient public consultation and there is, in some cases, a culture of secrecy prevalent in Government about policy formulation. In particular, the absence of agreed national trade policy undermines Botswana’s trade negotiation mandate severely.

2.3 Membership of international agreements

Table 2 indicates the extensive range of agreements, treaties and protocols relating to IP and NPs that have been considered during this review. They include a range of issues including: conservation, trade, environment and IPR. Botswana seems to have a fair balance of agreements that regulate IPR, environment and trade. The range of agreements and associated obligations, as well as the breadth of implementing institutions domestically means that coordination and cohesion between all these instruments is challenging. There are legal links between some of these agreements (i.e., from TRIPS to the management of Traditional Knowledge) that may require enactment of domestic legislation. In some cases creation of policy and development of legislation within Botswana is struggling to keep up.

The key agreements that this section will focus on are TRIPS and CBD because of the range of overarching issues on IPR that exist between them.

Table 2: Relevant agreements, protocols and treaties

Treaty/International Agreement	Date of Ratification/Accession	Objects/summary	Implementation stage
World Trade Organization	Signed 20 th December 1994	To promote trade liberalization & provide forum for negotiation of trade agreements	Botswana participates in the Doha Round (9 th round of negotiations)
Agreement on Trade-Related Aspects on Intellectual Property Rights (TRIPS)	Acceded August 1994	To protect trade related IPRs	Incorporated into domestic legislation
Convention Establishing the World Intellectual Property Organisation (WIPO)	Acceded 15 th January 1998	To facilitate an accessible international intellectual property rights system that provides incentives	Full compliance with the Convention
The United Nations Framework Convention to Combat Desertification (CCD)	Ratified on 27 th January 1994	To protect fragile arid climate and prevent deforestation	Not available
The Convention on Wetlands of Importance as Waterfowl Habitat (Ramsar Convention)	Acceded 12 th November 1997	Protection of wetlands in fragile ecosystems, Okavango Delta is Ramsar site	Full implementation with policy and strategies in place
Paris Convention for the Protection of Industrial Property (1883)	Acceded 15 th January 1998	To provide protection to IP broad sense, patents, utility model certificates, (small patents), trade names, geographical indications & repression of unfair competition	Implemented through the TRIPS
Southern African Customs Union Agreement (SACU)	Ratified 18 th March 2004	Not available	Not available
The Hague Agreement Concerning the International Registration of Industrial Designs (1925)	Acceded 1 st June 2006	Accession open to Botswana being party to WIPO & the Paris Convention	Provision of Industrial Property Act need amendment to allow for processing of application under the international system.
Berne Convention for the Protection of Literary and Artistic Works	Acceded 15 th January 1998	Minimum protection of works of author published in a contracting with exclusive rights of authorisation	Incorporated in the TRIPS agreement
WIPO Copyright Treaty	Acceded 27 th October 2004	Protects computer programs and compilations of data or databases	It is implemented under the Berne Convention

Treaty/International Agreement	Date of Ratification/Accession	Objects/summary	Implementation stage
Madrid Agreement Concerning the International Registration of Marks (1891) Protocol Relating to that Agreement (1989)	Acceded 5 th December 2006	To protect a mark in many contracting countries within an international registration system	Fully implemented with Industrial Property Act. Provision of Industrial Property Act need amendment to allow for processing of application under the international system.
Patent Cooperation Treaty (PCT) (1970)	Acceded 30 th October 2003	To provide patent protection for a large number of countries by one international patent application	Fully utilised through the Industrial Property Act
Southern African Development Community (SADC) Protocol on Forestry	Ratified 28 th September 2004	To promote conservation and sustainable management of forests and promote trade throughout the region	Not available
Convention on Biological Diversity (CBD)	Ratified 12 th October 1995	To conserve biological diversity and sustainable use them and share in fair and equitable manner	The National Biosafety Framework on second draft
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Acceded 14 th November 1977	To trade in threatened species of flora and fauna compatible to their survival	Natural products fall under Appendix II, strict regulation applied though not necessarily threatened with extinction
Southern African Development Community Protocol on Trade	Ratified 7 th January 1998	To eliminate barrier to trade within SADC region	Full implementation of WTO Agreement on TRIPS
The African Convention on the Conservation of Nature and Natural Resources (The Algiers Convention)	Signed 15 th September 1968	Not available	Not available
African Regional Industrial Property Organization Protocol on Patents and Industrial Designs	Not available	Not available	Not available

2.3.1 TRIPS versus CBD – what are the issues?

This section introduces the central theme of any discussion concerning the management of IPRs for natural product in Botswana: the relationship between the key agreements concerning IPR, namely the Convention on Biodiversity and the WTO TRIPS Agreement. Botswana has acceded to both of these agreements, but the policy balance, objectives and efficacy of the two is widely disparate. Members of these two agreements are faced with a dilemma in that they are obliged to implement both, but, as they currently stand, there are both differences and contradictions between them. These are discussed here.

2.3.2 The TRIPS Agreement

TRIPS agreement specifies that patents must be granted on micro-organisms and micro-biological resources used for producing plants. Members may patent plants. Members must grant IPR protection on plant varieties (both patents and sui generis³ systems allowed). The agreement allows members to grant patents on genes (i.e., USA).

Box 1: What is Traditional Knowledge (TK)

Traditional knowledge in agriculture includes:

Healing
Biodiversity
Conditions of cultivation
Sacred
Processing

TK exists in the following forms (both held by individuals and communities):

Text
Traditional science
Folklore
Practices
Beliefs

TK is related to IPR because it is a guide/market for valuable properties and reduces the cost of discovery.

2.3.3 Convention on Biodiversity

The Convention on Biodiversity (CBD) was ratified on 12th October 1995. Its purpose is “conservation of biodiversity, sustainable use of biological resources and equitable sharing of benefits arising from use of biological resources” r. The key features of the CBD relating to IPR are:

- Members have sovereign control over their biological resources
- Preservation of traditional knowledge is a central objective of the agreement

³ Sui generis means “of its own kind” i.e., unique

- Consent for use of IPR at both government and community level is required
- Equitable benefit sharing
- Access to the results of biotechnology from members resources is obligatory
- IPRs cannot be counter to the overall objectives of the CBD.

Its key bodies are:

- Working Group on ABS (Article 15)
- Working Group on TK (Article 8)
- Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)
- Working Group on Implementation of the Convention.

Under the CBD ABS is framed by the Bonn Guidelines (2002) which include: ABS, PIC, clarity on costs, guidelines on transfer of rights to third parties amongst other detailed implementation guidelines for members.

The primary problems with the CBD are that:

- There is no enforcement mechanism
- It is a government rather than community focused organization.

Botswana is a signatory of the CBD (1992)

2.3.4 Trade Related Aspects of Intellectual Property

The TRIPS Agreement was finalized in 1995. Its purpose is to regulate and harmonise IPR systems worldwide by setting rules and standards which are enforceable, resolving conflict, defining members' rights, settling disputes among members and agreeing transitional arrangements for members whose domestic laws have to change to meet the rules.

IPRs for biological resources (i.e., what can and cannot be patented) come under Article 27 of the agreement and are extremely flexible in their definition of what is an IPR. This has caused some controversy as members have interpreted the rules very differently, from allowing almost any biological resource to be patented, to limiting the patentability of life forms. Part of the problem is that the definition of life forms used is very vague.

The problems with TRIPS are:

It is seen to give an unfair advantage to developed countries who can afford to use the system to their advantage.

There is no recognition of TK or allowance for ABS

It has been criticized for having weak provisions against biopiracy because:

- No PIC
- No disclosure of the geographical origin on of the resource or TK
- No ABS
- No clear universal definition of prior art.

Botswana acceded to TRIPS by dint of its accession to the WTO in 1994

2.3.5 International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR)

This Treaty, agreed in 2001, is managed by the Food and Agriculture Organisation of the United Nations. It came into force in 2001 and specifically deals with the international exchange of biological resources, specifically seeds. It is potentially important because it is harmonized with the CBD.

Botswana is not currently a signatory of the ITPGR.

2.3.6 World Intellectual Property Organisation (WIPO)

This is the world rule making body dealing with IPR with 24 different IPR treaties and 182 members (2006). Note that the Director General of WIPO is also the Secretary General of UPOV, so there is a close relationship between the two. WIPO implements certain aspects of the TRIPS Agreement. The key difference between WIPO and TRIPS is the WIPO is mostly involved in the procedure of protection of intellectual property, whilst TRIPS is the substantive law.

The three WIPO treaties relevant to trade in biological resources are:

- The Inter-government Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folk law (IGC). This committee was constituted in 2000. The IGC is a forum for governments to discuss ABS and establish prior art rules. Recently this committee has been developing a database of ITK.
- The Patent Cooperation Treaty (1970) (PCT). This Treaty allows single patent applications from one member to be recognized in all member states.
- Patent Law Treaty (2000). Enshrines the worldwide standard patent application process.

The problem with WIPO is that it has no development agenda, unlike WTO where recognition of developmental differences is recognized in the Agreement. The fact that WIPO is funded from patent costs also means that it is, to some extent, beholden to the world's corporate economy.

Botswana acceded to WIPO in 1998⁴

2.3.7 International Convention for Protection of New Varieties of Plants (UPOV)

UPOV was started in 1961 and since 1991 has implemented the International Convention for the Protection of New Varieties of Plants. Its purpose is to protect Plant Breeders Rights. It has 61 members (not including Botswana). The primary attraction of UPOV is its ready made *sui generis* system of IP protection which allows member states to comply with TRIPS provisions. UPOV gives strong protection to plant breeders including requiring permission from the IP owner for production, selling, exporting, importing and even stocking genetic material that is registered. For plants breeders have 20 years IP rights.

The main problem with UPOV are its emphasis of plant breeders rights over those of farmers and the potential impact this might have on traditional farming methods in developing countries. The requirements that all registered material must be distinct, uniform and stable is seen as discriminating against small farmers whose traditional practices do not normally encompass these concepts. Many countries have claimed that UPOV threatens domestic food security because:

- The distinctive criterion narrows the range of farmers crops and greatly increases risk.
- Creates dependency among small farmers who are forced to pay breeders for seeds instead of making their own.
- Restricts the free circulation of genetic resources, a traditional means of spreading the benefit of farmer selection.
- Encourages breeders to concentrate on issues not important to small farmers because their market is not large enough to recover development costs.

Botswana has not joined UPOV but supports the African model legislation *sui generis* system though this is yet to be set in law.

⁴ Botswana is also contracted to the Berne Convention (1998), the Hague Agreement (2006), the Madrid Protocol (2006), the Paris Convention (1998), the Patent Cooperation Treaty (2003), the WIPO Copyright Treaty (2005) and the WIPO Performance and Phonograms Treaty (2005).

2.4 The national legal environment for protection of IPR

2.4.1 Introduction, definition and legal concepts

The national law of Botswana was reviewed in order to determine its impact and utility for protecting the IPR associated with NPs. For the purposes of this review intellectual property (IP) is defined as creations of the human intellect of which the creators or owners avail their works to the public in exchange for a period of protection and exclusive rights to the works enabling some form of economic reward⁵.

From a legal perspective, intellectual property rights (IPR) comprises of two categories:

- a) industrial property which includes patents, utility models, industrial designs, trademarks and geographical indications; and,
- b) copyright and neighbouring rights that deal with the protection of literary and artistic works and rights of performers, producers, broadcasters and publishers of literary and artistic works.

Issues regarding IPR and natural products are largely concerned with the first of these categories.

Intellectual property rights are used to grant private ownership to products due to the ingenuity that was involved in finding and developing them. IPR secures ownership in the particular form or expression embodied in things and is therefore intangible property. Globally, due to its growing importance and value, IPR proved to be inextricably linked to issues of international trade and international trade law and thus was included in the agenda of the Uruguay Round. In recognition of the importance of protection of IPR in trade a common system of international rules were adopted by the WTO in the form of the Trade Related aspects of Intellectual Property Rights (TRIPS) Agreement was eventually inserted into GATT.

The legal framework for IPR in Botswana needs to be understood in this historical context. Botswana had an existing IPR legislation at the time of accession to TRIPS, but like other countries, complied with the TRIPS Agreement and strengthened the IPR regimes. Prior to adopting the WIPO model of legislation, Industrial Property Act Botswana was using laws adopted from the United Kingdom and protection granted in the United Kingdom and South Africa was extended to Botswana. The two central pillars of Botswana IP legislation are, the Industrial Property Act of 1996 which was enacted to deal with patents, utility models, trademarks and industrial designs. The Copyright & Neighbouring Rights Act was enacted in 2000 replacing the Copyright Act of 1965. The department of Registrar of Companies is mandated to implement the aforementioned legislation.

⁵ Adapted from Department of Research Science and Technology (2006). Botswana Patents, Utility Models and Industrial Designs Manual. Gaborone, Department of Research Science and Technology.

Botswana has acceded to a number of international agreements on IPR, international trade and the environment such as Paris Convention, Berne Convention, TRIPS and Convention on Biological Diversity. The obligations inherent in accession to these treaties also result in the creation or amendment of domestic legislation.

2.4.2 Domestic legislation

The national law of Botswana comprises of statutes and customary law therefore is a dual legal system. Customary law (Republic of Botswana 2002:Cap 14:03) is unwritten, and varies from one community to another. Under the Customary Courts Act (Republic of Botswana 2002: Cap 04:05) the customary law of the tribe or tribal community applies so far as it is not incompatible with the provisions of any written law or contrary to morality, humanity and natural justice.

The selected key laws, as listed in the Annex VII, are considered relevant in the assessment of intellectual property right management of indigenous plants.

a) Property rights, Access and Benefit Sharing

A more formal definition of intellectual property (IP) is required so as to build a foundation to provide further explanations as to the concept of IP and the various types. The definition provided by the contracting states of WIPO refers to rights relating to

“Literary artistic and scientific works; performances of performing artists, phonograms, and broadcasts; inventions in all fields of human endeavor; scientific discoveries; industrial designs; trademarks, service marks, and commercial names and designations; protection against unfair competition; and “all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.”⁶

The Botswana statutory law has specifically excluded “discoveries” from patent protection (Republic of Botswana 2002: Cap 68:03 section 9). The team is uncertain why this was the case.

[Recommendation: this issue should be clarified in the forthcoming revision]

b) Industrial Property Act (Republic of Botswana 2002: Cap 68:03 commenced August 1996)

The main object of this Act is to provide for the protection of industrial property in Botswana. The Act incorporates the Paris Convention for the Protection of Industrial Property and TRIPS. The first and second schedules influence the interpretation of the Act. The Act covers IP under the following main headings:

- Patents

⁶ Convention Establishing the WIPO, Stockholm, 1967

- Utility model certificates
- Industrial designs
- Trademarks
- Acts of Unfair Competition.

For purposes of the IP and NPs, the relevant heading to be discussed are patents, utility model certificates and acts of unfair competition.

c) Patents (Republic of Botswana 2002: Cap 68:03 part II)

A patent is a document that contains a description of the invention issued by the Registrar of Marks, Patents and Designs.⁷ This document protects the invention and grants exclusive rights to the owner of the patent for a specified period of time which may be exploited only upon authorization of the owner. The purpose of the patent is to provide legal protection for advancement of technology as well as incentives such as the economic benefit and encourage innovation.

Inventions which may relate to a product or process are covered by patents and should be new (novel), involve an inventive step and be industrially applicable. An invention is considered new if it does not form part of prior art, that is, any information relating to an invention, which is disclosed to the public in Botswana and elsewhere before the filing of an application that claims the invention. An inventive step is recognized whereby a person having an ordinary skill in the art considers the advancement 'non-obvious'. Where a person having ordinary skill in the art before the invention considers the state of technology obvious then it is not patentable.

An invention is considered industrially applicable, where it may be used in any kind of industry or trade such as handicraft, agriculture, fishery or services. Simple put, there must be a breakthrough in technology and meet this criteria for the invention to be patentable or provide a new solution to a technological problem. The Act does not require the invention to necessarily be presentable in the physical form.

The Act provides the scope of patentability that being any product or process except a discovery, scientific theory or mathematical method, a literary, dramatic, musical or artistic work or any aesthetic creation, a scheme, rule or method of making business, performance of a mental act or playing a game, a computer program, a diagnostic therapeutic and surgical methods of the treatment of humans and animals and any invention contrary to public order or morality.

NB: Botswana does not specifically exempt plants and animals from patentability. Existing IPR legislation, therefore, does cover inventions or innovations relating to biological resources or processes.

⁷ section 4 of Cap 68:03

[Recommendation: Civil society should express their views on these issues during the forthcoming revision of the Act]

More than one person may apply for a patent and unless agreed by parties, the ownership is on an equal basis on undivided shares and belongs to them jointly. In the event of two or more persons who applied independently of each other for the same invention, the Registrar shall grant patent to the application that reflects the earliest date or the earliest claimed priority date.⁸ The application date of a patent is very important. Where the invention is made under a contract of employment the employer is granted the patent. The owner of a patent may transfer the rights by way of cession, assignment, making of a will or testament or by operation of law.

An applicant should comply with other formalities prescribed in the Act. Upon filing of the application, the Registrar examines whether the requirements are complied with, including a request, a description, a claim, drawings if required, an abstract in form as prescribed and a fees. The request should contain information of the name of inventor or agent, the title of invention and a petition seeking grant of a patent. The description document discloses the invention in a sufficiently clear manner so as to permit the person having ordinary skill in the art to carry out the invention. One mode of how the invention can be performed should be disclosed. The claim document defines the matter for which protection is sought. An abstract should enable the reader to ascertain the subject matter covered and is defined under the Industrial Property Regulations as a “concise summary of the technical disclosure of a patent document.”⁹ Drawings are used as an aid to assist in understanding the invention. In the premises, the written description must be adequate to enable a person to practice the invention for it to be granted a patent.

Another important issue is the “right of priority” provided for under the Act (Republic of Botswana 2002: Capt 68:02 section 18). An applicant may claim the right of priority of title in any convention country of earlier applications, whether national, regional or international, as provided in the Paris Convention. The right confers protection for having filed the first application in any of the contracting countries to the Paris Convention for a period of twelve months and the subsequent applications are regarded as having been filed on the day of the first application. The filing date as recorded by the Registrar is critical as it determines the commencement period of protection and is the date upon which the Registrar receives the application. The period of protection is twenty years from the date of filing of patent application. The same applies for other countries as well.

The Registrar examines the formality or legal requirements of the application and the substantive examination of determining whether the subject matter constitutes a patent is referred to African Regional Intellectual Property Organization (ARIPO). Where the requirements are complied with the Registrar issues a certificate of grant of the patent, records it in the patent register and publishes in the Journal. Where an applicant applies to ARIPO through the ARIPO Protocol designating Botswana as one of the countries for

⁸ This is called the first-to-file system, Introduction to IP, WIPO, 2004

⁹ Regulation 2 of Industrial Property Regulations

protection, a patent granted thereby shall have protection in Botswana unless the Registrar communicates otherwise.

It is suspected that not all patents lodged with ARIPO are mentioned in the Botswana patent register. There is currently no electronic list of patents awarded in Botswana and this makes proper searching laborious. The total number of patents is unknown, but the Registrar of Companies estimates that between 15 and 30 patents are registered each year. The great majority of these are for foreign patent owners.

The rights conferred by a patent include excluding others in the countries where invention is protected, to make use, sell, offer to sell, importing and commercializing the patented invention. Further an enforcement procedure is central to management of IP; hence an owner of a patent may institute legal proceedings for infringement of patent if the person performs the aforementioned unauthorized acts. The owner of a patent takes the initiative to detect the infringement and pursue the alleged infringer. A letter of demand might be sufficient to terminate the infringement and eventually parties may agree to a licensing arrangement. The court may grant relief in form of an interdict, attachment or destruction of the infringing product, damages and account of profits derived from infringement.

The Minister of Trade and Industry is empowered to exploit, without authorization of the owner of a patent, a patent in the interests of nutrition, national security, health or for sake of developing a vital sector of the national economy. Further, where the court determines that the manner of exploitation of a patent by the owner or his licensee is anti-competitive the Minister may carry out a similar act. The Minister shall pay “an equitable remuneration” to the owner, however prior to his decision should provide a hearing to the owner or any interested party. The usage of the invention is mainly targeted for the supply of the domestic market. Where circumstances change the owner of the patent may approach the Minister to revoke his decision.

An interested person may apply to the High Court for a compulsory license under a patent within three years from date of patent or within four years from date of application on the grounds that a market for the patented invention is not being supplied on reasonable terms in Botswana. The license shall not grant exclusive rights and shall not be assignable. It shall be granted for the supply of the patented invention mainly in the local market. The court may terminate the license upon prove of change of circumstances. The Act encourages the applicant to take reasonable steps of communication with the owner of patent before approaching the courts for redress. A license issued under a patent shall terminate on the date the patent expires. Any person may apply to the High Court to invalidate a patent on grounds provided under the Act. The grounds include a misrepresentation of a patent, opposition to the invention due to unsatisfied requirements or that applicant is not entitled to apply for patent.

An applicant for a patent may, before the decision of Registrar is made, apply for the conversion the application to a utility model certificate application.

d) Utility model certificates (Republic of Botswana 2002: Cap 68:03 Part III)

The provisions of Part II of the Act apply to utility model certificates otherwise known as “petty patents”, the reason being that they are inventions except that there is no requirement of “an inventive step”. Any interested person may apply for invalidation of the application on grounds that the requirements as stipulated by the Act are not met. An applicant may convert the application for a utility model certificate into a patent application provided it is done prior to the decision of the Registrar.

[Recommendation: NGO’s should consider trying out the Utility Model system to see if this might be an appropriate solution for small scale IPR protection in the NP sector]

e) Acts of Unfair Competition (Republic of Botswana 2002: 68:03 Part VI)

A person who holds title to protection under the Act, may apply to court seeking an interdict to prevent an act of unfair competition or for an award of damages. An act of unfair competition is contrary to honest practices in industrial or commercial matters. The acts of unfair competition are listed as:

- (a) an act of such a nature as to create confusion by any means whatever with the competitor’s establishment, goods or its industrial or commercial activities;
- (b) a false allegation is made in the course of trade discrediting the competitor’s establishment, goods or its industrial or commercial activities;
- (c) a misleading allegation to the public is made in the course of trade with respect to the nature, the manufacturing process of the competitor, the characteristics of goods and the suitability for their purpose or the quantity of the goods.

It is important to note that there are relevant provisions under the two international agreements incorporated in the schedules of the Act and these are discussed below under the review of relevant international agreements.

2.4.3 Which legal instrument is best for protection IPR and NPs?

The next discussion is on the suitability of the IP to the trade in natural products since natural products (plants) are not excluded from patentability. The criteria stipulated under the Act for application of a patent, that it must be new, take an inventive step and be industrially applicable is clearly not suitable particularly with respect to a utility patent.

The one school of thought states that the patent system requires stringent criteria for a “technological breakthrough” which would present difficulties as indigenous knowledge operates under a different complex form of system according to the North American Indigenous People’s Organisation.¹⁰ This is a school of thought that finds customary laws and practices as the most suitable to protecting IPR and TK for NPs particularly where the legal regime is applicable alongside the general law enforced by the traditional

¹⁰ The Four Directions Council quoted in Dutfield, G. (1997). Can the TRIPS Agreement Protect Biological and Cultural Diversity. Nairobi, African Centre for Technology Studies.

leaders both in urban and rural areas. The problem is that it is unwritten and differs from one locality to another. However, the fact that they are oral is perceived to provide the flexibility to respond to the dynamic changes of society (Swiderska 2006: 11).

“Indigenous people possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, proper procedures for acquiring and sharing knowledge and the rights and responsibilities which attach to possessing knowledge, all of which are embedded uniquely in each culture and its language.”

The other school of thought states that petty patents rights are an appropriate IPR since they are less expensive and the procedure is less complex with less stringent examination. Petty patents are an effective legal way to safeguard knowledge. The disadvantages are that the period of protection is shorter than patents and may not receive the similar protection in other countries. The disadvantages of patents are that, they are suitable for individual inventors not collective knowledge of communities. The applicability of joint patenting shall not solve the problem of collective knowledge of communities since the share proportions should be disclosed otherwise the Registrar shall proceed on the basis that they shared on an equal basis and this will create problems in the communities, where traditional leaders or herbalists claim superior knowledge than ordinary members of the communities.

[Recommendation: utility model certificates (aka petty patents) may be appropriate IPR protection for NPs and indigenous knowledge]

Through the direct influence of the TRIPS agreement whereby, the preamble recognizes IPRs as private rights, the Industrial Property Act suits technological inventions that grant exclusive, whereas NP and its associated TK which in their nature are communally owned.

2.4.4 Land and Land Tenure Rights

As stated before, the discussion regarding trade related IPR over natural products is linked to indigenous/traditional knowledge of communities and access to natural products. To understand the concept of ownership of land one needs to cast light onto the position of law with respect to land and land tenure rights which have a direct bearing to the IPR and access and benefit sharing of natural products due their inalienable connection with their associated ecological context. This section discusses this issue from the point of view of the Constitution and the various land and property laws of Botswana.

- a) The Constitution of Botswana

Apart from the common law position, protection of ownership in property¹¹ and its restrictions emanates from the Constitution¹², which is the supreme law of the country and other enactments derive their validity.

A person's interest or right to property is protected under the Constitution except where there is compulsory acquisition of property for purposes of defense, public safety, order, morality, health, town and country planning, land settlement, development for a purpose beneficial to the community and for development or utilization of the mineral resources of Botswana.

In event of acquisition, prompt payment of adequate compensation and the person having the interest or right may have right of access to the High Court for assistance in the determination of the compensation. The applicable law providing for the compulsory acquisition of rights in land should not be inconsistent with the Constitution. The Constitution legalizes the compulsory acquisition as long as it is in accordance with the law dealing with such.

The President is empowered to acquire any real property in accordance with the Acquisition of Property Act (Republic of Botswana 2002: Cap 32:10). Throughout the paper, the President wields immense power in land issues due to his position as Head of State and Head of the executive arm of Government.

It is important to note that the Interpretation Act, the purpose of which is to provide an aide to construction of statutes defines in any enactment "immovable property" as any estate, right, interest or servitude on or over land and things attached to land or permanently fastened to anything attached to land, whether covered by water or not. It is wide in scope inclusive of natural products wildy grown or cultivated.

b) State Land Act (Republic of Botswana 2002: Cap 32:01)

This Act's object is to define state land of Botswana and to provide for its disposal. State Land is defined as unalienated state land and reacquired state land. Unalienated state land excludes land in tribal territories, Barolong farms, land within the township, Ramatlabama's Kuil Forest Hill, Traquair and Crocodile Pools. The reacquired land means land not being unalienated state land. The ownership of state land is vested in the Republic. The President is empowered to dispose state land by way of grants and such powers may be delegated to any other authority.

Ownership is referred to as having the characteristic of "mother right" in the sense that it confers the most comprehensive control over a thing (Kleyn and Boraine 1992: 162). It is a real right of which the owner may grant limited real rights. Further the right is unlimited and has a residuary character in that whatever entitlements are disposed of, once they are extinguished they revert to the owner automatically.

¹¹ Interpretation Act definition of property includes immovable property

¹² section 8 of Constitution

The word “Republic” is not defined in this Act nor in the Interpretation Act (Republic of Botswana 2002: Cap 01:04), however President is defined as President of the Republic of Botswana. A proportion of urban areas constitute state land with people holding deeds of fixed period grants for residential areas.¹³ The deed registered in the Deeds Registry of Botswana contains the characteristics of ownership as outlined above. The other different forms of land tenure rights include leases, certificates of occupation.

Other authorities are delegated to deal with state land such as Department of Lands, Local Authorities (Councils) and other bodies. From the construction of the provisions of the Act, ownership vests in the Republic represented by the President and any grant of land provides limited real rights in land.

c) Tribal Land Act (Republic of Botswana 2002: Cap 32:02)

The object of this Act is to establish the Tribal Land Boards and vest tribal land in such Boards. All the rights and title to land are vested in trust for the benefit and advantage of people and for promotion of the economic and social development of all Botswana. The Boards are empowered to deal with all forms of customary tenure and exercise all rights that Chief exercised under the customary law in relation to land. They grant customary land rights to land and issue a certificate of grant. With respect to grazing areas and commonage, the Boards are compelled to consult the district councils located within their respective areas. The Act prohibits customary land grants for purposes of trading, manufacturing or other commercial business.

Further, Boards may with the consent of the Minister, grant common law forms of tenure in tribal land. They are empowered to enter into leases for a specific period and on such terms and conditions and to grant ownership in land. The Act requires registration of grant in Deed Registry accompanied with diagram or plan approved by the Director of Surveys and Lands. It is important to note that a common law grant has the effect of a grant made by the State notwithstanding that transfer of rights to land requires consent of the Board.

Land tenure rights within tribal area is regulated by customary law applicable to the community, largely unwritten. Therefore the people have customary rights of tenure over the land and natural products and its associated indigenous knowledge.

The upshot of this review of the constitution and land laws of Botswana is that, for the vast majority of land, the state retains sufficient residual rights over the resource for them to successfully argue that the value of NPs should be shared by all.

[Finding: The states position on sharing the IPR value of NP is supported by the Constitution and Law of Botswana]

¹³ Tribal land constitutes 70%, state land 25% and freehold 5%, NDP 9, Botswana Biodiversity Strategy & Action Plan p7

2.4.5 Other relevant domestic legislation

- a) Wildlife Conservation and National Parks Act (Republic of Botswana 2002: Cap 38:01)

This Act contains land tenure rights and regulates the use of natural products within the game reserves, controlled hunting areas, wildlife management areas, and national parks. The object of the Act is to give, inter alia, effect to Convention on International Trade in Endangered Species (CITES), provide for conservation and management of wild fauna and flora. The concept of land ownership in Botswana is summarized in the definition section (Republic of Botswana 2002: Cap 38:01 section 2), with respect to the meaning of owner. In respect to private land owner is a person in whose name the land is registered in the Deeds Registry, where land is vested in the City / Town Council, the owner is the said City / Town Council, in the case of state land owner is the President and tribal land, owner is the Land Board.

The Act takes the nationalistic approach in the issue of access and benefit sharing Areas specified in the First Schedule¹⁴ of the Act are declared to be national parks 'for the propagation, protection and preservation therein of wild animal life, vegetation and objects of geological, ethnological, archaeological, historical or other scientific interest for the benefit and advantage and enjoyment of the inhabitants of Botswana. The Minister controls the activities of conservation, sale, and collection for scientific purpose, of indigenous vegetation. National parks are state land and are held in ownership by the President. The President may declare any land to be a sanctuary game reserve¹⁵ or a private game reserve.

- b) Forest Act (Republic of Botswana 2002: Cap 38:03)

The President is empowered to declare an area within State Land to be a forest reserve¹⁶. The land boards may apply to the Minister responsible for forestry to have an area within the tribal territory to be a forest reserve. This Act regulates the access and use of forest produce¹⁷ by issuing licenses to people. On the other hand, the Act contains acts of conservation such as declaration of protected trees by Minister. The communities whose livelihood depends on forest produce are permitted to collect and use without a license, but not to sell. This exception has been extended to bona fide traveler and bona fide inhabitant. The forest officer may issue licenses for the prohibited activities listed under section 13 of the Act. The Minister may control and manage forest produce within private land in a way that he deals with state land. Criminal and civil remedies are available for offences in the state land relating to protected trees and forest produce. Enforcement powers include the power of confiscation and seizure of property and powers of search and arrest without warrant.

¹⁴ Chobe National Park, Gemsbok National Park, Nxai Pan National Park, Makgadikgadi Pans National Park

¹⁵ For example: Central Kalahari, Moremi, Khutse Game Reserve

¹⁶ Kasane, Kazuma, Maikaelelo and Sibuyu Forest Reserves

¹⁷ includes plants, reeds, fruits, fungi and any other declared by Minister to be forest produce

The access and use of natural products is influenced largely by the strict regulation by the state which solely holds title of ownership allowing limited access to local communities. It is more biased towards the conservation principle rather than sustainable use.

The Act lists a number of valuable plant species (including Morama Bean) that are permitted for local harvesting but not sale.

This Act has been proposed for revision since 2002 (Krugmann 2002).

[Finding: The scope and powers of the Forest Act are wider than those of the Agricultural Resources Conservation Act because of the range of NPs covered]

c) Agricultural Resources Conservation Act (Republic of Botswana 2002 Cap 35:06)

The Act provides for; inter alia, the conservation and improvement of the agricultural resources of Botswana. The definition of agricultural resources includes plant life and vegetation of Botswana and the vegetable products of the soil. The Agricultural Resources Board (referred to as the Board) is established with functions to supervise over the agricultural resources, advise the Minister as to, the supervision of agricultural resources, the nature of legislation necessary and means to stimulate public interest to promote proper conservation, use and improvement of agricultural resources (Republic of Botswana 2002: Cap 35:06 section 9).

The Board shall prepare a report and submit to the Minister, inter alia, listing the conservation orders issued. The powers of the Board include issuing of orders and regulations relating to conservation of agricultural resources of any land. They may relate to preservation of vegetation, soil and its fertility or control the use of insecticides, fertilizers or chemical compound on any land¹⁸. Criminal offences may be charged against the occupant or owner of land for failing to comply with conservation order or regulation. The Board has powers of entry in any land to enable it to carry out its mandate. The Board may construct works for purposes of, inter alia, preventing of soil erosion and eradicating and preventing noxious weeds. The Minister may establish conservation committees and areas they have jurisdiction. The Board is provided with powers of investigation and hearing of evidence and issuing summons through the Magistrate Court. An appeal lies from Board to the Minister. The regulations on the grapple plant prohibits uprooting, cutting, digging up etc except for medical use otherwise it is an offence.

This enactment tends to focus on conservation of natural products with a restrictive use. The Board and committees are given such wide enforcement powers to implement the provisions of the Act. It does not recognize the rights of the communities and adopts a rather patronizing position since what is at stake for the Board is a threat to agricultural resources. The principle of community empowerment for the conservation of biodiversity needs to be given greater emphasis in the proposed revision of this Act.

¹⁸ Detailed regulation of agrochemicals under Agrochemical Act Cap 35:09

This Act is currently being revised: a new Environmental Management Act is proposed.

d) Seeds Certification Act (Republic of Botswana 2002: Cap 35:07)

The Act regulates the testing, control, sale export and use of seeds. The Minister may establish a seed testing station of which a person may deliver a sample of seeds to be tested accompanied with a written statement specifying the origin, kind, variety and quantity. Persons are prohibited to export seeds without Minister's permission. It is an offence to do so. The Act prohibits dealing in seeds which contain a noxious weed seed. It is an offence to sell or advertise seeds as Government tested seed unless they were submitted to a seed testing station and a certificate was issued. A certificate may be issued to a registered seed grower where, the required standards in respect of purity and germination are attained, the required standards as to trueness to variety and free from disease and the grower complied with instructions of selecting. Seed growers should register with the Minister and the inspector carries powers of entry to land to inspect growing crop of seed grower. The presumption with respect to the particulars contained in the certificates issued under section 8 and 9 on sales of seeds shall be deemed true. The regulation or control of seeds aims at maintaining the standards of purity of the seeds

e) Plant Diseases and Pests Act (Republic of Botswana 2002: Cap 35:02)

The Plant Diseases and Pests Act of 1959 deals with the protection of Botswana from the spread of plant pests and diseases and regulates trade in plant materials through inspection and the issuance of permits. Its relevance to this issue is as a potential biopiracy 'gatekeeper'.

2.4.6 Conclusions – national legal environment for protection of IPR

Despite the existing policy and legislative framework and Botswana's accession to international agreements a policy/legislative vacuum exists concerning protection of indigenous property rights relating to the natural products. This raises important issues, such as the appropriate manner of access and benefit sharing and its relationship to land and land tenure issues, lack of coordination IPR protection efforts made in different Government ministries and departments, appropriate balance of conservation efforts in a sustainable manner with commercialisation of natural resource sector and, finally the determination of who owns economic value attached to natural products. For this last issue, it would seem that the state has a strong case for precedence over communities with respect to plant resources.

[Recommendation: Botswana needs to improve the coordination of its domestic IPR arrangements, develop a suitable national IPR policy and engage with regional and international bodies to promote this policy agenda]

2.5 Regional context – how is intellectual property managed in the Southern African region?

This section compares and contrasts the way that other countries in the region are dealing with aspects of IPR that are important for NPs in order to a) see how Botswana compares, and, b) learn from the best practice of others.

Sources of information on national policies and implementation of relevant legislation in the region is patch. Efforts by countries to fulfill the requirements of the Multi-lateral Environmental Agreements such as the Cartagena Protocol on Biosafety, the CBD and the TRIPS Agreement have resulted in a flurry of activity and draft bills, but little implementation and regulation. Formal IP management in the region (i.e., patents etc) is more ‘mature’ in the sense that there are national patent offices in each country and even a regional organization, the African Regional Intellectual Property Organisation (ARIPO).

Table 3, below summarises the information collected, mostly from data disclosed to the WTO Review process.

Table 3: Regional IPR Policy and Legislation Examples

Country	Administration of IP	Patents legislation	Signatory of Patent Cooperation Treaty	Plant Breeders legislation	Geographical indicators	Trade Secrets	WIPO membership	UPOV membership	ABS legislation	Bio-safety legislation	Trade Marks	Designs
South Africa	Companies and Intellectual Property Registration Office (CIPRO) in Department of Trade and Industry	Patents Act (No.57 of 1978)	1999	Breeders Rights Act (No.15 of 1976)	Under consideration	Covered under Industrial Secrets legislation	✓	Joined 1977	National Environmental Management : Biodiversity Act of June 2004 Draft ABS instrument now gazetted	In place	Trade Marks Act of 1993 – allows registration for 10 years. Counterfeit Good Act (No.37 of 1997)	Designs Act 1993 – allows 10 years protection for functional designs
Namibia	Ministry of Trade and Industry	Various RSA Acts to be consolidated into new Intellectual Property Act [proposed 2003?] ^{1/}	✓	None notified to WTO	No	Unknown	✓	No Sui Generis African model law proposed but not implemented	Draft in preparation	Draft in Preparation	Will be covered by new IP Act	Will be covered by new IP Act

Country	Administration of IP	Patents legislation	Signatory of Patent Cooperation Treaty	Plant Breeders legislation	Geographical indicators	Trade Secrets	WIPO membership	UPOV membership	ABS legislation	Bio-safety legislation	Trade Marks	Designs
Botswana	Registrar of Companies, Industrial Properties Office	Industrial Property Act of 1996 (Industrial Property Act 19 of 1997 as amended), Industrial Property Act 14 of 1996 and Industrial Property Regulations, Statutory Instruments No 78 of 1997. ² GoB issuing Utility Model Certificates for new inventions for 7 years Industrial designs get 15 years protection, renewable twice ¹	✓	None notified to WTO	Not sufficiently covered by current legislation	Not covered by current legislation	✓	No Sui Generis African model law proposed but not implemented ^{3/}	None notified to WTO	None notified to WTO	10 years renewable indefinitely	.
Tanzania	Business Registration and Licensing Agency (BRELA)	Patents Act No.1 of 1987 ^{4/}	✓	No	WIPO has recommended legislation	No	✓	No Sui Generis African model law proposed but not implemented ^{3/}	No	No	Trade and Service Marks Act No. 2 of 1986	No

Country	Administration of IP	Patents legislation	Signatory of Patent Cooperation Treaty	Plant Breeders legislation	Geographical indicators	Trade Secrets	WIPO membership	UPOV membership	ABS legislation	Bio-safety legislation	Trade Marks	Designs
Kenya	a) Kenya Industrial Property Institute (KIPI) b) Dept of Registrar General under Attorney General. (copyrights) c) KEPHIS (plant breeders rights)	Industrial Property Act of 2001	✓	None notified to WTO	Bill submitted to parliament in 2001, but not yet enacted.	Not notified to WTO	✓	Joined 1999	None notified to WTO	None notified to WTO	Trade Marks Act (Cap 506) of 2002.	Industrial Property Act of 2001
Uganda	Customs and Excise Department of the Ugandan Revenue Authority	Patent Statute of 1991 and Rules of 1993	✓	None notified to WTO	No protection	None notified to WTO	✓	No	None notified to WTO	None notified to WTO	Trade Marks Act of 1964. Trade Marks Rules of 1982 No remedies against infringements.	UK Design Protection Act of 1937

Source: WTO Country Review Papers, various years and various countries <http://www.wto.org>

^{1/} Proposed legislation excludes therapeutic methods for treatment of humans and animals, and plants, animals and essentially biological processes for their production from patentability. GoN can issue compulsory licenses for 'strategic' purposes – this clause seems to be directed at pharmaceuticals, but could be a concern for natural products, particularly herbal remedies.

^{2/} Exclusions as Namibia.

^{3/} "No specific protection is provided for micro-organisms, non-essentially biological or microbiological processes. Plants, animals, and essentially biological processes are not excluded from patentability."

^{4/} Tanzania has never granted a domestic patent.

2.5.1 Discussion – regional IP legislation and infrastructure

From the review of regional legislation the following observations are made:

- There is a wide range of different responsible bodies for IP from Customs and Excise (Uganda), to Trade Ministries (Tanzania, South Africa, Namibia and Botswana) and agencies (Kenya).
- Very little progress has been made on bio-trade, bio-safety and ABS. Some countries have started drafting (Namibian), but only South Africa has made real progress to date.
- All countries (accepting South Africa) have expressed support of the African Model *sui generis* system of protecting farmer and breeders rights, but none have implemented the system.
- Very few local patents have been awarded (excepting South Africa). Tanzania has never awarded a domestic patent.
- WTO observes that a) legislation is dated in most cases; and, b) there is little evidence of enforcement of IP legislation.

Generalising from this sample one could observe that the region is ill-prepared to deal with the IP and ABS aspects of bio-diversity and trade in genetic resources as required by membership of the CDB, TRIPS and the Cartagena protocol. This is a serious threat to the future development of Natural Products in the region because of the geographic spread of useful plant resources. Stringent rules in one country can be by-passed by collecting IP and TK in another where the plant is indigenous. Another way of looking at this is that international companies with ‘good’ names would prefer to work within the framework of international law and so would naturally migrate to countries with compliant IP infrastructure to protect their trade reputation. The opposite will apply where no IP infrastructure is in place.

What will happen if this state of affairs continues is that reputable companies will go to South Africa and less reputable ones will operate in the region.

[Finding - Regional variability threatens equitable investment in the natural products sector]

2.5.2 Weighing the costs against the benefits

When countries like Tanzania have never registered a domestic patent and Uganda has passed Trade Mark legislation that does not contain remedies against infringements it might be appropriate to ask why are they bothering to incur these costs. In both countries there is an infrastructure cost of maintaining the institutional capacity to administer these legal instruments, but no apparent benefit.

Much more needs to be done to harvest the benefits of domestic IP to recover the cost of compliance with international agreements and promote domestic innovation.

2.5.3 Regional coordination

The SADC Secretariat has a mandate to manage regional biodiversity efforts and has recently issued a proposed regional ABS guideline which contains many of the actions recommended in this report (such as community registers) (SADC Biodiversity Support Programme, pers comm.). It is proposed that ABS be mandated to Ministries of Environment through national Environmental Management legislation in all member states and from a biodiversity perspective this makes good sense. However, the team has found that aspects of ABS including TK are mandated under the SADC Science and Technology Agreement to national Ministries of Science and Technology. Many relevant issues are also included under the SADC Protocol on Bio-safety¹⁹. This needs to be clarified.

¹⁹ See <http://www.sadc.int/english/documents/legal/protocols/forestry.php>

2.6 Biopiracy

This section explains and defines biopiracy and goes on to consider the questions of whether this has occurred in Botswana and what might be done to turn this kind of activity from threat to opportunity.

Biopiracy is defined as: obtaining IPRs without consent or benefit sharing, and/or, commercially exploiting IPRs without consent or benefit sharing.

Sharing the benefits of IPR is complicated because sometimes it is difficult to identify the original holder or owner of the property and this issue has led to much discussion at local and international fora concerning access to and benefit sharing from the proceeds of commercializing biological resources and their associated traditional knowledge [ABS – see more below].

It should be remembered that the discussion regarding ownership and use of intellectual property is not only about preventing others from stealing i.e., “piracy”, but should also be concerned with creating an enabling environment for investment and innovation. The language used in this debate tends to suggest that all commercial interests are bad and all communities are good. This polarization of the debate is not always helpful. It might be better to consider the use of biological resources as something more positive, such as “bio-beneficiating”, to promote the concept that commercial use of biological resources can promote bio-diversity and livelihoods under the right conditions]

One of the driving forces behind concerns about bio-piracy has been the emergence of widespread bio-prospecting. Bio-prospecting is the investigation of biological resources for new commercial use. It can be by collecting at source or by using gene banks or culture collections *ex situ*. New technologies, including biotechnology, have promoted commercial interest in identifying plants, genes and plant properties that could have a commercial use.

There have been numerous attempts to put a monetary value to bio-prospecting. Examples are shown in Table 4 below.

Table 4: examples of attempt to value bio-prospecting

Value (US\$ billion)	Resource	Reference
800	Pharmaceuticals, botanical medicines, agricultural produce, ornamental horticultural products, crop protection products, personal care and cosmetics.	Kate and Laird (1999)
>3 (per annum)	Range of 6 Southern African Natural Products	Bennett (2006)
61 (per annum)	Plant based medicine sales in 1990	ICTSD (2003:117)

A key feature in the discussion about bio-piracy has been that of the importance of the indigenous Traditional Knowledge (TK) that communities and individuals have about the

useful properties of plants. The association of the knowledge and the plant is core to any successful claim for both ownership of intellectual property and subsequent benefit sharing.

Protection of TK is important for communities because: its loss can lead to erosion of traditional 'ways'; promotion of TK use is desirable to encourage its maintenance; loss of biodiversity as a result of loss of TK (and therefore value of plants) can result in environmental degradation; and, the inherent value of the TK should not be lost to the community that originally identified it.

Traditional communities are potentially vulnerable to bio-piracy because: they often do not have a concept of private ownership; they are unaware or unable to use their rights to TK; and, formal IPR regimes are conducive to bio-piracy in that they favour the literate/aware/enabled over the poor and ignorant.

The results of bio-piracy are: firstly, the traditional stewards of the TK or biodiversity fail to share or gain suitable recognition of their roles; acquisition of IPR excluded traditional users from use; IPR holders dictate the terms of use which leads to a loss of access and control by communities; and, cultivation of plants transferred from wild harvesting to commercial production with no positive spin-off benefits for the community.

To prevent bio-piracy, communities and TK owners need to demonstrate prior art (i.e., that the innovation or knowledge was public before the patent was issued). The form that prior art takes (i.e., written, technical/scientific reports or oral tradition) differs. The USA will only accept written prior art (oral prior art is only accepted if it was within the USA). The EU accepts both written and oral public information. WIPO only accepts written. UPOV defines novelty as something not previously commercialized.

Prior art must be technical in that it has to be sufficient to "guide a skilled person to use the knowledge".

Patenting authorities are passive in that they will give patents unless informed of prior art.

[NB: This is a very important point – countries and individuals need to be pro-active to defend their rights under the international patent system]

[What system should Botswana set up to ensure prior art is recognized?]

2.6.1 State managed and sponsored biopiracy versus external biopiracy?

What is the difference between information collected from farmers by well meaning botanists for national museums and herbaria which is inadequately 'protected' from mining by commercial interests, and just allowing external researchers direct access to communities and resources? There are numerous examples of state sponsored collection of botanical data and associated traditional knowledge, both in Botswana and in the Region (see SADC 2006; SADC 2007). Much of this data has been collected without prior informed consent or ABS agreements as these were not considered the norm until quite recently.

This effort continues in a policy and legal vacuum. SADC, for example, propose a regional ABS data base which will include (amongst many other fields of information): medicinal uses, harvesting and post-harvest practices, drug therapy (including dosage) and chemical properties (SADC 2007:13). Unless legal issues, such as ABS, are resolved before this data is harvested, the risk is that the specific intellectual property at sub-national level will be sub-summed.

[Finding: there is an urgent need for dialogue and national policy on ownership of natural product related TK before distinctions become so blurred that desegregation of ownership is impossible.]

There are numerous datasets on plants and their uses in the region and in Botswana. A review of these local datasets by SADC in 2007 only revealed the relatively poor information held by the Botswana National Herbarium. Many other existing and proposed data sets were identified during this research including ones at the Ministry of Agriculture and one proposed at the University of Botswana. The National Herbarium data does not include information on plant use and is limited in scope. Currently, there is more information on plants and plant use for Botswana in the Pretoria Herbarium collection than in Botswana (Hargreaves, pers comm.). Amateur botanists have been collecting ethnobotanical information since colonial days as demonstrated by the numerous books that have been published. There are a number of private data sets (at least two were identified during the research). There has been a tradition of journalistic ethnobotany in the region and numerous well meaning botanists have 'written up' the useful properties of Botswana plants and published them in international journals over the years. Legally, placing this information in the public domain may not be a bad thing, since it potentially offers *sui generis* protection. However, it could also be argued that such work has 'directed' those seeking useful genetic resources towards plants that grow in environments with weak legal infrastructure to protect the communities that identified the property.

These issues of research ethics need to be aired at a national level and some policy agreed. Ideally, a code of conduct should be developed within which research and publication can be encouraged without causing detrimental impacts.

[Recommendation: the ethics of data collection including PIC, MTA and ABS need to be resolved before more data is collected]

[Recommendation: development and dissemination of a simple code of practice for IPR and natural resources in local languages]

2.6.2 Piracy or paranoia: common misconceptions about biopiracy

Has actual theft of genetic material occurred in Botswana? How much has been “lost”? This research highlighted a) a some common misconceptions concerning biopiracy and b) a number of examples where it seems to have occurred, though often unwittingly (NB: this is still technically theft as ignorance of the law is not a defense, though where a law did not exist the only defense Botswana has is a moral one).

During the key informant interviews and development of the case studies it became apparent that there are some strongly held views concerning bio-prospecting and biopiracy in Botswana. Some examples are discussed here.

a) Overestimation of the real commercial value of genetic resources and TK. The actual value of the genetic resource and associated TK is often wildly over estimated. Stakeholders do not see the costs and risks associated with bringing products to market.

[Recommendation: the costs and benefits of developing natural products into commercial products needs to be explained]

b) It is often thought that strict regulation of IP will protect national interests. This is not necessarily the case. Botswana only has a few endemic species of plants (about 30). Most Botswana plants exist in other countries, so over regulation bears the risk that investors will go to a third country. In many cases, though Botswana has the plant, it is not present in commercial quantities for wild harvesting (i.e., *Hoodia sp.*) or the cost of domestic extraction is higher than other countries in the region (i.e., *Harpagophytum sp.*). Another aspect of this issue is the potential for strict legislation to cause trade deviation as investors go to third countries where the rules are not so strict. However, companies with valuable international reputations do not want to be accused of biopiracy and so having proper rules actually encourages them to invest in your country and so is trade creating.

[Recommendation: Botswana should seek to create an IP environment that balances protection of domestic interests and promotes inward investment in developing products from NPs. These two goals are not necessarily mutually exclusive.]

c) Once a resource has been grown in a third country or patented then there is nothing that the original IP holders can do. There is ample evidence that Botswana flora has been researched, extracted and patented over many years. However, this does not mean that it is necessarily too late to recover some of the lost ground. The retrospective inclusion of the regional San community in the ABS deal for *Hoodia sp.* is a case in

point. Where valuable reputations and brand names are concerned, patent holders may well be prepared to reasonable ABS requests.

[Stakeholders should consider systematically reviewing the research and IP situation for Botswana plants and ‘harvesting’ this by, for example, contacting patent holders.

d) Botswana harvesters get no benefits from the patents on *Harpagophytum sp.* This belief comes from the misunderstanding of the nature of benefits from IP. The very fact that some Botswana people have a market for their *Harpagophytum sp.* has come about because somebody overseas spent some money to research the beneficial properties of the plant and then launched as a commercial herbal remedy²⁰. As mentioned elsewhere, benefits need to be seen as possibly accruing in various forms.

2.6.3 What biopiracy issues should Botswana really be concerned about?

During the key informant issues there were some issues that were not raised that, in the view of the team, should be the subject of discussion and policy. These include: patenting to prevent use (or ‘punitive patenting’), the lag between IP protection and product development which might result in biodiversity loss (termed here ‘patent to product lag’), the balance between promoting bio-prospecting and investment and under valuing intellectual property (or the ‘investment versus value dilemma’), ensuring that the right stakeholders get the benefits due to them from beneficiation, and, finally, realizing that policy must encompass other biological resources and not just ‘veld’ products (the ‘net casting’ issue).

a) Punitive patenting. There is some evidence that biotech companies have been patenting to inhibit access to IP for their rivals. There are a large number of patents on natural products that have never been used to develop commercial products. The Botswana law allows for a compulsory license to be issued domestically for four years from application (or three years from grant). This is fine if an entrepreneur wants to use the plant property in Botswana, but the main aim of punitive patenting is to prevent other large companies using the IP. Domestic exemptions are not helpful in this regard for countries without a large-scale industrial base.

b) IP control leading to biodiversity loss (i.e., *Hoodia sp.*): patent to product lag

It takes time to develop patents launch products, particularly where the regulatory regime is elaborate, such as with foods and medicines. The time lag between applying for patents and then putting a product on the market is a period when the public knowledge of the value plant property could result in its over-harvesting *in situ*. This is certainly the case with *Hoodia sp.* where the patent holders are reluctant to aggressively defend their IP until they have launched a product on the market. In this case, the company concerned hopes to protect its market share by supplying genuine *Hoodia* at prices so low that wild

²⁰ Nb: the patents on *Harpagophytum sp.* are either on extraction methods or on mixtures of the plant extracts with other herbal remedies, many of which are not present in the range states and therefore could not have been the subject of prior art.

harvesting will no longer be viable. However, there is a real concern that in the time between patent application and launch, wild harvesting will eradicate the species *in situ*.

One of the lessons from the Hoodia patent-product lag issue is that there is a need to allow a legitimate trade in natural products to occur in parallel to the patent process to ensure that there is an economic incentive to maintain the *in situ* plant population.

[Recommendation: The IP NP policy should include the possibility of continued trade in the time between patent application and product launch to prevent over-harvesting as long as this does not prejudice the IP rights of the patent holder]

c) The investment versus value dilemma. This refers to the apparently conflicting policy positions of either, encouraging investors to bioprospect by not demanding very high subsequent benefit sharing in the hope that other measures such as job creation will be sufficient to compensate the TK or resource holders, or, insisting on very high proportions of the final market price which deters bioprospecting, research and inward investment.

[Finding: In the view of the team, long term livelihoods and promotion of *in situ* beneficiation of NPs is more developmentally beneficial than cash rewards and ABS schemes should be weighted accordingly]

[Recommendation: a policy that encourages inward investment, research, capacity building, wild harvesting, small scale farming, commercial production and local processing may be the best package to resolve the investment versus value dilemma.]

d) Stakeholder coverage issues. There is a risk that, in the rush to legitimize bioprospecting activities firms will encourage cultural sub-groups to sign ABS agreements without considering who else might own the TK. This is in fact what seems to have happened with *Hoodia sp.* and CSIR/Phytopharm UK. It is only natural for firms to want to meet the joint objective of protecting their reputations by being seen to play fair whilst trying to limit the scope of their exposure to benefit sharing by identifying the smallest possible group of beneficiaries.

e) Stakeholder coverage issues. There is a danger that by concentrating on the obvious veld products not genetic material in general Botswana might miss out on other genetic resources including micro-bacterial or gene level biopiracy. The future value of genetic markers in Botswana biodiversity and the range of commercial property that might be available at the micro-biological level are currently unknown, but could be very large.

2.6.4 Botswana examples of intellectual property ‘theft’ or biopiracy.

This section repeats some of the examples of so-called biopiracy mentioned to the team and adds to these some further known patent activities on indigenous Botswana plant species that the team is aware of. The individual instances are classified as either ‘true’

meaning that the respondent actually undertook the activity; ‘plausible’, suggesting that several respondents mentioned it or had it on ‘good authority’ and ‘rumour’ when the instance was purely hearsay.

2.6.5 Suspicions of bio-piracy among stakeholders

The Botswana stakeholders identified the following example of possible bio-trade which may or may not be defined as bio-piracy.

- a) Ministry of Agriculture has regularly sent samples of live plants and seed to collections throughout the world on request [True] and has recently send both seeds and TK to Key Gardens in the UK under a MTA [True].
- b) There are known large collections of seeds and plants in USA, UK and Japan. It is rumoured collections in Australia and Israel. [Plausible]
- c) A Namibian entrepreneur has threatened to sue a Botswana entrepreneur for using the registered trade name “Kalahari Truffle” in Germany. [Plausible]
- d) Ministry of Agriculture has undertaken widespread collection of genetic material and related ITK and placed this on a database with international access under a MTA. [True]
- e) A ‘plane loaded with seeds and plant samples flew out of the country. [Rumour]
- f) CSIR came here in the 1970’s and made large scale collections of plants and TK [Plausible]
- g) Patents have been made of Grapple and Hoodia [True] so now we cannot benefit from them [Rumour].
- h) Private people have talked to communities and recorded their TK [True]
- i) Samples of pearl millet and sorghum seeds have been sent to US Universities for breeding or drought resistant varieties and identification of valuable genetic markers by Ministry of Agriculture in Botswana [True]
- j) Samples of Resurrection tea have been sent to a French company without a Materials Transfer Agreement and now they have patented its properties [True]
- k) Commercial users ... very frequently exploit biological resources and traditional knowledge associated with them (EIA 2007) [Rumour]
- l) Biopiracy has become rampant (EIA 2007) [Rumour]

m) Samples of wild water melon seeds have been sent to the Nara Institute of Science and Technology in Japan by the Department of Agricultural Research under a Letter of Conditions of Loan MTA [True]

2.6.6 Known examples of patent activity

The following are examples of patents on Botswana biological resources not mentioned during the research but known to the authors and probably not based on specific Botswana TK or samples.

a) Numerous patents on Devil's Claw (*Harpagophytum sp.*) and its extracts (Bennett 2006). Most of the Devil's Claw traded in the world does so outside patent protection. Only a few companies sell extracts and mixed products under patent protection. Schwabe of Germany is an example of a company that has adopted this strategy.

b) Baobab (*Adansonia digitata*) leaf extract as an emollient (skin softener) for cosmetics. Patented by Cognis Germany in 1997 (McGowan 2006:36).

c) Myrrh (*Commiphora sp.*), frankincense (*Boswellia sp.*) and *Ximenia Americana* patented as slug repellents for use in a propriety product called 'Slug Barrier'. (US Patent 20050163815)

d) Tamarind (*Tamarindus indica L*) extract for prevention and treatment of sunburned skin (US patent 6251878 of 2001) (McGowan 2006:24)

e) Bitterleaf (*Vernonia amygdalina*) extract for use against cancer has been patented in the US (6849604 of 2005) by Jackson State University in Mississippi (McGowan 2006:30)

f) *Swartzia madagascariensis* (PauRosa) has been patented in the USA (5929124 of 1999) for the immune boosting benefits of its extract as identified by the University of Lausanne, Switzerland from samples taken in, amongst other countries, Zimbabwe. The patent rights have been sold to Galileo Pharmaceuticals of the US under a benefit sharing deal with the National Herbarium of Zimbabwe who will get 50% of the 1.5% royalty of the University of Lausanne. The problem is that the plant is widespread, so why should Zimbabwe get the benefit (Raghavan 2001). [NB: this plant has also been extensively researched for its anti-fungal qualities]

g) A processed form of Marula (*Sclerocarya birrea* Subsp. *Caffra*) oil, called Marulene, has been patented (and had its trade name registered) as a cosmetic ingredient. The development of a novel, stable processed marula oil product was originally financed by the Government of Namibia in the early 1990's under a consultancy which included writing up the technical data in a format that could be patented. In the early 2000's the Namibian natural product stakeholders located an EU based cosmetics company interested in launching Marulene worldwide, but who wanted to ensure the ownership of

the intellectual property to stop others launching rival products. The demands for Marulene from this company were going to be more than Namibia could supply, so a regional supply contract was offered. After much debate, a novel approach to managing the intellectual property was agreed. The EU Company would pay most of the costs of registering the patent worldwide in return for a share in the patents ownership with a regional Intellectual Property Trust consisting of supplier groups. The Namibia's benefit share would be that they would always get first offer of market share.

Why might this be called biopiracy by Botswana? It could be argued that the regional stakeholders involved did not have authority to negotiate away market rights for marula and that this should have been a government responsibility.

h) Hoodia (*Hoodia sp.*). The South African Centre for Scientific and Industrial Research (CSIR) and a UK Company, Phytopharm PLC, holds patents on three Hoodia sub-species, two of which (*H. gordonii* and *H. currorii*) have been found in Botswana. The patents related to an extract of three Hoodia subspecies with an active ingredient called P57 that has proven efficacy for appetite suppression. They have also patented Hoodia for various gastric ailments. The TK was collected in association with the plants by CSIR in the 1960s during a large scale survey of useful plants, the information from which they are still harvesting to date (Martinus Horak, pers comms). Subsequent to their patent application, the holders signed an ABS agreement with representatives of the San community. The main reason that they were forced into signing this ground breaking ABS agreement was that they had mentioned the San as owning the prior art in the application without consulting them.

The Hoodia story raises a number of interesting questions. Firstly, why should it be only the San who benefit from the commercialization of Hoodia? Many argue that the properties of Hoodia were commonly known. Secondly, does the amount of benefit sharing really reflect the value of the product? Some argue that the potential returns to commercialization are so big that they will dwarf the actual benefits finally received. Counter to this is the concern that development of these products is both expensive and highly risky, with no risk being taken by the beneficiaries.

i) Marama Bean (*Tylosema esculentum*). Has been patented as a skin cream (Lezdey and Wachter 1999) and a phyto-estrogen (Kelly 2003) (see Case Study below).

j) Resurrection Plant (*Myrothamnus Flabellifolia*). Has been patented as a skin medicine (Gilles, Moser et al. 2004) and for use in biotechnology applications for its ability to improve drought resistance and storage properties (Londesborough, Tunnella et al. 2000) (see Case Study at below).

2.6.7 Conclusion – has biopiracy occurred in Botswana?

As defined, there has been biopiracy in Botswana. However, to date there are almost no examples of large amounts of money having been made from Botswana biological resources or TK. This is not to say that resources taken in the past will not pay dividends

in the future. The amount of patenting activity and TK collection without PIC discovered during this short period of research suggests that there may be much more that could be found by a more thorough research initiative. It also points to the need for a comprehensive system of bio-resource IPR protection in Botswana.

[Finding: Botswana has suffered from various forms of biopiracy, both state organized and privately funded]

[Recommendation: more research is needed to identify all patent and research activity that has already occurred so that a) compensation might be sought; and, b) gaps can be plugged to the benefit of Botswana]

[Finding: The value of biopiracy to date is probably a fraction of the potential value of biological resources in Botswana.]

[Recommendation: Botswana should put in place a system to discourage biopiracy and promote bio-beneficiation]

2.6.8 How can biopiracy be prevented?

Apte (2006:46) writing from the perspective of the Indian non-government sector, proposes three methods of preventing biopiracy:

- a) Ban IPRs on biological resources;
- b) Nurture traditional practices and endorse community rights for traditional healers, small farmers and indigenous peoples and communities; and,
- c) Work towards the amendment of the TRIPS agreement to include four key principles of the CBD i.e.,
 - i) Disclosure of geographic source

This refers to the obligation of patent applicants to disclose the geographic origin of the material used to develop the novel idea.

- ii) Prior informed consent (PIC)

This is documentary evidence that the traditional holders of the biological resource and knowledge have agreed to its use.

- iii) Equitable benefit sharing from commercial gains

This refers to an agreement between the traditional biological resource owner, the holder of the traditional knowledge and those that bring the product to the market for commercial gain that an agreed and fair proportion of the profit should be returned to the stakeholders.

- iv) International harmonization of requirements for proving prior art and recognition of oral tradition as prior art.

This refers to the fact that key countries in international trade interpret prior art in very different ways.

The primary advantages of the TRIPS Agreement are that it is universal (i.e., all members of the WTO are bound by it) and it has a strong enforcement mechanism.

One could argue that, though it is true that the TRIPS Agreement has enforceable rules, the capacity of developing countries to use these rules may render them at a disadvantage. If you look at the relative application of dispute mechanisms under the General Agreement on Tariffs and Trade (GATT) Agreement, developing countries have brought very few disputes to the system. Botswana has not the dispute mechanism of the WTO to date. Within the Southern African Region, only South Africa has brought

disputes to the WTO. Nevertheless, the deterrent of the possibility of recourse to a dispute mechanism may be sufficient to deter much unwanted activity.

An important element of preventing or at least mitigating biopiracy [or rather encouraging a system of commercial use that is sustainable and fair] is ensuring that the traditional holders of the knowledge of biological resource gain a fair proportion of the final commercial value of their resources. This process is called Access and Benefit Sharing (ABS) [see next section].

2.6.9 What action should be taken in Botswana?

Botswana needs to review existing patent and research activity and where necessary consider taking retro-active action such as suggesting companies do ex ante benefit sharing to 'clean-up' their acts.

If an agreed, pragmatic, policy and legal structure for bio-beneficiation was in place, it might promote increased bio-prospecting activity in Botswana. This should be the aim of any future project.

Existing state owned datasets of TK need to be properly managed and the various departments involved should agree a standard operating procedure.

[Recommendation: IP code of practice should be developed and disseminated]

[Recommendation: Formulate a National Biotrade Framework (like the Biosafety Framework)?]

The process of approving research activity in Botswana seems to be fragmented and confused. Few respondents interviewed knew who was responsible for issuing research permits, what types of research required permits and what the rules were concerning IPR and research in Botswana. No central register of research exists (or was identified by the team) so it is not possible to trace previous research activity with IPR loss. Most of those interviewed admitted that much research had been conducted without a research permit. There seems to be no element of public scrutiny (or even debate) surround ethical issues relating to issuance of research permits.

[Finding: The Botswana research permit system in its current form is not protecting either IPR, TK or biodiversity]

[Recommendation: The permit system for research and the method of keeping records needs to be reviewed. The national system for setting research policy and governing research ethics should engage civil society in future.]

2.7 Access and Benefit Sharing

This section explains Access and Benefit Sharing (ABS) in the context of research into biological resources and international trade. The team is aware that a very recent consultancy has also looked into these issues (EIA 2007) and does not want to repeat this effort. Therefore, we have confined ourselves to explaining the main ABS issues for the sake of completeness and providing some comment on the draft report from the perspective required by the client, i.e., civil society.

ABS is the process of accessing and using biological resources and traditional knowledge. The concept is enshrined in the CBD but not in trade law (i.e., TRIPS) and many countries are struggling to reconcile a domestic desire for legislation with the practicalities of implementation.

Types of benefit sharing include: money, usually through trust funds for communities; non-monetary, including employment, training and sourcing guarantees; and, a combination of these.

Trust funds are the most common solution to sharing benefits among a disparate community. Their primary advantages are:

- They can be long-term;
- They are (usually) neutral, transparent and public; and,
- The process of developing a trust fund can in itself be enabling for communities.

The problems that have been experienced with ABS agreement so far include:

- a) Most Prior Informed Consent (PIC) agreements have been with government acting on behalf of communities;

[Recommendation: Civil society needs to engage with the issue of PIC and MTA responsibility being devolved to Government. Is Government fully concerned with the specific interests (i.e., of minority communities or women)?]

- b) Some communities can be excluded by ABS agreements;

Botswana has an example of this where the San have an ABS agreement on Hoodia sp.

[Recommendations: Policy on ownership and rights to ABS needs to clarify the issues of groups/state verses individual/community biodiversity and TK rights]

- c) Communities do not have specialist negotiation skills and may not extract the best deal;

[Recommendation: If communities are unable to negotiate themselves, the capacities of third parties to negotiate on their behalf need to be enhanced and a code of practice agreed among state non-state actors]

- d) Businesses find it much easier to deal with research institutes and national governments than with local communities, this means that many ABS agreements have migrated to this level; and,

Commercial interests naturally follow the path of least resistance (and lowest cost). International best practice suggests that agreements negotiated from community upwards are the most robust in the long term.

[Recommendation: Botswana ABS policy should be inclusive i.e., it should promote PIC to the community level and not assume that national bodies will always act in the best interests of all parties.]

- e) It has been found that for some communities the idea of financial reward is anathema because the resources are public goods. [No evidence of problems with financial rewards in Africa though!].

[Recommendation: Botswana should adopt a pragmatic approach to defining benefits which should include a case by case (as opposed to generic) system and acceptance of all forms of non-monetary benefits as appropriate.]

One of the key issues that these problems encountered with ABS agreements highlights is the national versus community IPR ownership debate [i.e., if one ethnic group clearly owns the IPR or the biological resource, why should the benefits be shared by the entire nation and visa versa. The CSIR/Phytopharm/WIMSA ABS agreement for Hoodia sp. is a case in point since a) the biological resource is demonstrably not aligned with present (or even past) San community locations and other traditional groups, such as the Nama people, have similar evidence of prior art to the San.]

The debate over the nature and scope of ABS agreements has been somewhat skewed to some extent by the emotional fallout of the anti-globalisation lobby in the aftermath of the failed Seattle Ministerial Conference of the WTO. There have also been some very visible examples of blatant biopiracy (i.e., the preemptive patenting of Enola Beans in the USA (ICTSD 2003:118)) which have fueled the conspiracists. The reality is that most reputable international companies do not wish their expensively developed trade name to be besmirched by bad publicity (as happened to Phytopharm in the Hoodia case), but would much rather work within rules that protect their own commercial interests from risks of criticisms. The element that is seldom heard in this debate is the degree of risk that firms must take to bring products to markets and these risks have to be part of any equation that solves the ABS problem, since without risk-taking there would be no products brought to market and no benefits to share.

Lessons from ABS agreements in India

- Need to reach all members of the community (not just leaders, men etc)
- Need to involve the beneficiaries in the wider negotiations (i.e., not just local level agreements but also at the level of rule making i.e., CBD and TRIPS)
- Long term non-monetary benefits (i.e., employment and capacity building) essential.
- Land tenure a crucial element of the process because of the potential for outsiders over-harvesting, the possibility the harvesting for traditional use might be prevented and the likelihood of cultivation outside the range.
- Local communities were found to have a very low negotiating capacity.
- Great difficulty was experience assigning value to TK.

2.7.1 Some comments on the draft Botswana ABS document

This research seeks to contribute towards the debate on Access and Benefit Sharing initiated by the SADC Regional Bio-diversity Programme in its draft report (EIA 2007). This report reviews Botswana legislation from the stand point of ABS and it is notable that the terms of reference make no mention of IPR. The report recommends that Botswana: a) develop ABS legislation; and b) fund a new Division in the Department of Environmental Affairs to administer this legislation which should eventually be self funding.

We would like to make the following observations on this strategy.

- A good observation is made that communities are currently poorly prepared to negotiate ABS arrangements. However, we do not agree with the author's recommendation that "all negotiations on biological resources access and use should be done between the entity seeking access or use and the state acting on behalf of the community" because we believe that this would stifle private enterprise. We believe that a more pragmatic solution should be sought that promotes the capacity of communities to manage their resources and negotiate their own beneficiation arrangements within a structured national framework. In particular these rules should recognize traditional custodial relationships and promote stewardship be local people.

[Recommendation: Civil society should encourage the relevant authorities to adopt ABS negotiation on the basis of enabling communities and not devolve this blanket power to the state. A national system of ABS agreement endorsement should be put in place to ensure consistent and fair application of the ABS policy, but this body should be constituted from both state and non-state actors and its deliberations should be open to public scrutiny and review.]

- Nowhere in the world have the institutional arrangements for ABS become self financing.

[Recommendation: Most NPs are open access and the knowledge to some extent commonly held. Those holding this knowledge or dependent upon access to NPs are very frequently both the poorest and most vulnerable. For this reason, civil society should lobby government to ensure that the ABS system finally implemented is based upon a charge structure that reflects this constituency. The team agrees that some charges will promote ‘ownership’ and ‘responsibility’, but believes that cost recovery is not supportable on economic grounds as the cost to the state of providing alternative livelihoods to those benefiting from commercialization of NPs would far exceed the overheads of a well run ABS institution in Botswana]

- No recommendations are made concerning key aspects of benefit sharing policy: what kinds of benefit sharing are acceptable; what are the time spans, how will disputes be arbitrated (particularly at the international level); what mechanism should be put in place to share benefits, etc.

[Recommendation: civil society needs to engage with the development of ABS policy to ensure that the needs of their constituents are fully met.]

- The report is silent on how protective the proposed ABS legislation should be; should it strongly protect the rights of all Botswana to the exclusion of external investments.

[Recommendation: a balanced ABS legislation that both promotes investment and discourages biodiversity loss and biopiracy would be the ideal solution in Botswana. Civil society should consider lobbying for this as a principle in the final ABS policy]

- The crucial question of who the TK belongs to is not discussed. Solutions range from individuals, such as specific traditional healers, to ethnic groups living within the range of a genetic resource to the whole country.

[Recommendation: An informed and inclusive public discussion on this issue is needed before a final ABS policy is drafted.]

- There is no discussion of the relationship between the CBD and TRIPS (though both are mentioned) and the possibility of developing a mechanism that achieves compliance with both these agreements and therefore has ‘teeth’. Two further crucial issues under this heading are not dealt with: disclosure of geographical origin, the definition of prior art and the principle of state verses individual rights.

[Recommendation: it would be appropriate for BOCONGO to consider supporting a position that included full disclosure of geographical origin in patents, a definition of prior art that allows oral tradition and the promotion of stakeholders rights above those of the state]

The absence of a publicly endorsed national trade policy and functional system for civil society engagement with on-going trade negotiations constrains the quality and depth of

Botswana engagement in international debate and trade negotiation. Because there is no national position on these issues or civil society engagement, those attending the crucial negotiation meetings are not speaking up or forming alliances with other like-minded countries.

Though it is outside the remit of this research, the lack of engagement of Botswana civil society with on-going trade issues is illustrated by these concerns.

[Recommendation: BOCONGO should consider seeking funds to set up a trade research activity to allow it to develop suitable positions on behalf of its members and promote these into the national trade policy and negotiating strategy]

The absence of a publicly agreed national trade policy and functional consultation mechanism is a major concern and should be corrected.

[Recommendation: BOCONGO should lobby for the development of a national trade policy and consultation mechanism as a matter of urgency]

- Economic appraisal of the various options proposed is needed to allow policy decisions to be made. This should have been recommended by the report.

[Recommendation: The terms of reference for any further work on ABS policy should include consideration of the relative costs and benefits of the various options proposed from the point of view of both the state and beneficiaries]

- There is no discussion of how legal ownership of TK might be established so that benefit sharing can be on the basis of proven rights. The importance of this issue is alluded to (page 11) but no specific recommendations made.

[Recommendation: A pilot community based TK registration system is proposed as a possible solution to establishing legal ownership to TK and prior art]

- The issue of state issuance of permits for research and extraction of genetic material and TK without consultation with communities is rightly observed. However, an opportunity to encourage a public debate on state versus community rights to genetic resources was missed.
- The three key examples of ABS cited in Botswana (the Millennium Seed Bank and Department of Agricultural Research, the UB Herbarium and DAR/Japan water melon research) only mention benefit sharing as capacity building (i.e., PhD places). The author correctly observed that the contribution of individual communities to these projects remains unrecognized and unrewarded but does not recommend that this issue is subject to public debate.

The recommendation above that a system of public scrutiny and broad definition of benefits would go some way to resolving these problems.

- The report espouses the merits of the African Model Law 2000, but fails to observe that no country in the Southern African region (including Botswana) has yet passed this legislation.

Plant Breeders Rights are discussed above. The current legal vacuum needs to be filled.

- The statement on page 15 that “local communities...have not benefited from its commercialization” is not completely true. Many of these communities have sold grapple and this in itself is a sharing of the benefit. One could argue that the proportion of benefit sharing does not adequately reflect the TK, but not that there is no benefit sharing. This statement by the author suggests that s/he needs to re-consider the definition of benefits further.

Some issues are contained in the report that are prescient, but not reflected in the recommendations are:

- Issues relating to land tenure cannot be easily divorced from any discussion of ABS and should be part and parcel of a public dialogue on ABS policy.

As discussed in this report, one interpretation of the NP resource ownership issue is that the state owns all plants unless they only exist on state, tribal and freehold land. This viewpoint could make it important that agreement is reached on the relative NP IPR ownership rights under different land ownership regimes, of which Botswana has several (i.e., state land, reserves, forests, conservancies etc).

[Recommendation: agreement land tenure issues and related IPR/TK need to be included in any final ABS policy]

- The CBD does not require countries to implement specific legislation for ABS, only a suitable system. More options for Botswana should be weighed.

There is already a proposal to include an ABS clause in the new Industrial Property Act as this would be consistent with the WIPO model law. ABS could also be part of the proposed Environmental Management Bill, as is being suggested in South Africa. The Ministry of Communications, Science and Technology wishes to have the mandate for TK included in its legislation, another option for Botswana.

[Recommendation: the option to include ABS in other legislation instead of making it stand alone should be thoroughly reviewed]

- Botswana needs to agree on its own definitions of some of the key concepts at play with ABS and Biodiversity. The report rightly recommends that a narrow definition of biological resources as only genetic resources is probably not the best solution for Botswana.

- The report highlights that SADC already has an instrument that could be used for managing ABS regionally, the SADC Protocol on Forestry, but does not include this observation in the recommendations.
- The report observes that stakeholders are unaware of the international debate on ABS and specifically the provisions of the CBD. This should be the basis of a recommendation for more awareness training and capacity building.
- The report rightly suggests a need for a standardized research approval system with a stipulation for clarity on management of TK (page 18), but does not go on to formulate a suitable recommendation.

These issues are covered in the recommendations of this report.

2.7.2 Resource versus Knowledge and ABS

Key informants interviewed during this research in several cases rationalized the public ownership and management of NP benefits by explaining that the physical resource (i.e., the plant) is common property, but the associated traditional knowledge can be specific to an individual and therefore should be compensated. The team accepts this argument. However, there is a special dilemma for NPs and this concerns community's ability to protect the resource *in situ*. There is a risk that, in protecting specific TK through public disclosure, wild populations of the valuable plant near to the original TK holders will be eradicated or that cultivation *ex situ* will render wild resources valueless. Unless deliberate measures are taken to ensure livelihoods are created in the locations of the plant resources, there is a high possibility that the original resource managers will loose out even when there is a national benefit in terms of monetary and non-monetary benefits. This issue needs to be considered when policy on ABS is agreed.

[Recommendation: the issue of maintenance of *in situ* biodiversity needs to be a basic principle of ABS arrangements to ensure traditional biodiversity stewardship]

2.7.3 Conclusions – ABS

Most countries in Southern Africa are struggling with implementing a suitable and cost effective ABS mechanism. Botswana needs to learn from this regional experience. In particular widespread public education on the issue and consultation is needed before laws are set in place. A system that a) reflects Botswana unique circumstances and b) balances promotion of commercial NP development whilst protecting biodiversity and promoting livelihoods should be the objective. The consideration of ABS and its role within the policy making and trade negotiating fabric in Botswana highlights some systemic problems with the local trade and multi-lateral treaty negotiating process. These need to be addressed if Botswana public interests are to be best served. Civil society should lobby for greater inclusion in policy formulation and development of negotiation positions. In order to achieve this, there is a need for a greater spread of public knowledge on these issues.

2.8 What are the alternatives for promotion of bio-beneficiation?

This section considers the options open under multi-lateral and domestic law for the protection of TK and IPR and the promotion of sustainable and equitable use of biodiversity in Botswana.

2.8.1 Patents

It has been argued that biological resources and TK are collectively held by communities and are therefore not patentable because the patent system is designed for individuals. Other problems for communities with patents are that they have to provide evidence of a single act of discovery (which can be difficult if the discovery was many generations ago), they require written technical evidence, they are expensive to apply for and even more costly to enforce.

ICTSD (2003:121) refute these arguments. Firstly, it is possible for groups and individuals to own patents. Group ownership can be in the form of a trust (i.e., the Marulene Trust). Secondly, the single act of discovery can be overcome if a non-obvious modification to the original knowledge is shown. Thirdly, they note that corporations usually patent collectively (not individually) so there is no reason why a community cannot do so. Fourthly, they note that it would be possible to qualified experts to translate TK into patent applications (if costly). Finally, they observe that it is true that the cost of creating and maintaining patents would be beyond the means of most communities. They go on to suggest some solutions:

- Communities apply for patents
- Communities and companies share patent ownership with the company applying on behalf of the community
- Companies file patents, but community members are named as the inventors with contractual rights to compensation.

What are the costs of applying for a patent in Botswana (for residents)?

- Attorney costs for completing the application
- Application fee (P100 – P200)
- Prosecution
- Renewal fees (1st anniversary P25, 2nd anniversary P100, thereafter P20 per annum until 20th anniversary)
- Cost of enforcement (especially in third countries)
- Risk of making non-novel or too broad claims resulting in weak patents and long application processes.

The patent system [in all countries – not just Botswana] tends to favour the corporate sector. There are almost no examples of communities successfully challenging patents though there are some of governments doing so on behalf of communities. It could be argued that ignoring the international patent system does not help communities in the

long run. [A system that enables communities to benefit from and, probably most important, protect themselves from, patenting of their TK and biological resources is a necessary evil.]

2.8.2 Petty patents and utility models

Botswana's Industrial Property Act allows for petty patents (literally 'small' patents). These are simple in that no proof of innovative step is needed and much cheaper than full patents. Petty patents would allow local IPR protection that could later be used as clear evidence of prior art in negotiation with third parties opening the possibility of at least recovering a reasonable proportion of lost IP. There is no evidence that anyone in Botswana has ever used this route for IPR protection for NPs and so not much experience is available locally.

[Recommendation: Stakeholders should initiate a petty patent application to 'test' the system.]

2.8.3 Trade secrets (undisclosed information)

Many countries have legislative acts that prevent the theft of trade secrets. Under these laws, information that is not public is a firm's secret. ITK could be collected in a register as a closed access database and sold under contract for commercial use with proper ABS.

This method could use the undisclosed information sector of the TRIPS Agreement to release commercial potential and share benefits.

The best example of this in the region is the Centre for Scientific and Industrial Research (CSIR) database in South Africa.

Botswana does not have a trade secrets act. However, the practice of courts is that they resort to common law where the legislative acts are silent on a particular point and develop case law. TRIPS provisions on trade secrets are present in the second schedule of the Industrial Properties Act, so this route for IPR protection may have merit.

[Recommendation: Stakeholders in the NP sector should be made aware that non-disclosure is the most cost effective method of IPR protection.]

2.8.4 Geographical indications (GIs)

The TRIPS Agreement defines GIs 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". [TRIPS Article 23] These indications are conveyed to the custom through a label that distinguishes the product from others. Markets for GI are often niche and they often confer premium prices.

The key features of GIs are: they refer to goods (and not services); they do not protect the idea or the process, but simply identify and differentiate the products in the market (the so called product-place link); there must be a special link between the origin, quality, reputation or special characteristic of the product; the intellectual property remains public; the scope of protection is limited to controlling who makes the products and where the product may be made; and, the rights, once obtained, can be kept in perpetuity.

[NB: the central legal argument upon which the defense of GIs is based is one of 'distinctive signs'. It should be noted that there are other types of distinctive signs that are protected by TRIPS including trademarks and trade names]

Currently there are two levels of GI protection: general and extended (for wines and spirit. The protection under the extended system is much greater than the general system and there is a heated on-going debate about increasing the number and range of products protected by the extended system. Discourse on GIs is mandated under the WTO Doha Declaration [reference] and so must be part of the final conclusion of the current round of GATT negotiations. Therefore, it is important that member states express their views.

Botswana has no policy on GIs and no plans to develop legislation²¹. In the absence of a position on this issue, the Government of Botswana (GoB) is a hostage to fortune in the on-going Doha Development Round negotiations at WTO. At the very least, it would be worth taking a strategic position on GIs if only as a possible future bargaining tool.

[Recommendation: GoB should agree a national position on GIs and express this position at international fora.]

GIs are potentially very attractive for both promoting and protecting IPR in natural products because, uniquely, they recognize and highlight product identify and clearly differentiate the product in the market. This is not the case with patents for example (the consumer is generally disinterested in the patents applying to a final product).

What contributes to the appeal of GIs in developed countries and why do they work?

The key elements to a successful GI are:

- Coordination between all firms producing to ensure a consistent product
- Institutions capable of monitoring quality codes
- Policy measures to promote and protect products
- Aggressive and organized protection from generic reproduction of the product
- High standards of quality control, marketing and market information.

A GI system would require:

- Strong community organizations covering the whole area of the product

²¹ NB: there are provisions in the Industrial Property Act that annex the TRIPS Agreement, but these provide an inadequate legal and institutional framework for implementing GIs domestically.

- Collaboration among the range states
- National and regional standards [cross-border issues not resolved in case history – no examples yet of cross-border GIs]
- National infrastructure (registration system) has to be set up
- Generic use of GIs for natural products remains an unresolved issue that as to be addressed (i.e., could you stop others using the Marula name outside its original range?).
- Relationship between GIs and other distinctive signs would have to be resolved (i.e., when is a GI different from a trade mark?)
- The consumer preference for the product needs to be established – this is not necessarily the case for raw materials. Most existing successful GIs are finished products (Parma ham, Tequila, Scotch Whisky etc).
- GIs on products with prior trade marks is not allowed (so you would have to be careful that nobody has already got a trade mark on ‘Kalahari’).

The ICTSD argue that “for...developing countries, GIs would appear to have real potential for developing and exploiting lucrative markets for natural products” (ICTSD 2003:113). This has recently been supported by the United Nations Conference on Trade and Development (UNCTAD) BioTrade Initiative who conclude that “GIs are an instrument that can be used to provide such incentives for marketing of products elaborated through traditional and environmentally friendly methods, thus promoting the conservation and sustainable use of biodiversity” (Oliva 2007). Oliva observes that several domestic laws could be invoked to protect GIs including consumer protection law, unfair competition law, laws for the protection of certification marks and, if necessary, specific GI law [does Botswana have any of these?]. Internationally, GIs are governed by the strong systems of both WIPO and TRIPS.

Advantages of GI specific to promoting biodiversity and community development objectives include:

- Focus on community empowerment and identity
- Connect traditional practices to sustainable use of biodiversity
- Encourage and reward high quality standards
- Promote community control over individual monopoly
- They are not time bound.

Counter arguments to the use of GIs and the current drive to extend the system are that they are a deliberate attempt by developed economies to create protected monopolies, limit market access and prevent competition. Rangnekar (2007 (forthcoming)) gives five further reasons why the current excitement about the use of GIs to protect IPR for natural products might be tempered. Firstly, the use of GIs for multiple levels of protection (i.e., of traditional knowledge, promoting local economic control and enabling sustainable development) in the absence of other policy measures may be asking too much and can lead to resource capture (he cites the example of Tequila in Mexico where it is the large multi-nationally owned companies that have benefited from the GI rather than local communities). Secondly, he observes that TRIP production under Article 23 is dependent

on prior protection of the indication by the country (or countries) of origin, so much ground work would be needed to initiate GIs in Botswana. Thirdly, he reiterates the problem of developing what he called a club of producers to ensure compliance with strict production rules and the high cost of making consumers aware of these rules which could be very difficult for the range states for natural products. Fourthly, he notes that, just because a successful GI has been registered, it does not mean that value will be shared along the supply chain or between firms or communities involved in an equitable way. This issue has been largely overlooked in the GI debate to date. Fifthly, he reiterates that GIs are indications and therefore cannot fully protect TK (unlike patents for example) and so must be part of a wider system of TK protection. Finally, he sagely observes that GIs are a marketing tool and that their benefits are largely derived from protecting and promoting the ‘indication’. He notes that for a lot of commodities (i.e., tea and coffee) such high marketing costs have led to market and supply chain consolidation which may not be in the best interests of community development and equity.

[Branding and standards based systems of protection. What about branding – does this not achieve the same aim as GIs? Why not brand and protect Botswana Marula – much cheaper and easier than setting up a GI system. Such a brand would be a standard based system.]

2.8.5 Trade Marks and Copyright

The team found some evidence that NGO’s developing NP products have not registered their trade names or logo’s.

[Recommendation: BOCONGO should develop a simple flyer explaining to its members the importance of registering trade mark and logo’s]

2.8.6 Conclusions – what should Botswana use to protect its ITK and biodiversity?

The options for protection IPR for NPs have been described in detail and their pros and cons outlined. The conclusions of this research are as follows:

Patents, particularly local patenting, should be encouraged as these afford real protection for IP. A simplified local patenting system is in place and mechanisms to promote its use should be developed. However, most patents on NPs novel steps, costs and technologies that are beyond the capacity of domestic investors and researchers.

The team remains skeptical about the practical benefits of elaborating a national GI registration system for NPs, though the *prima facie* case for supporting such a system seems strong. Further research is required. In particular case studies that demonstrate the costs and benefits.

Trade secrets are the simplest and best way to protect IP and the public should be made aware of this.

Until such time as a working *sui generis* IP protection system is put in place, open access to IP and TK should not be allowed (and should certainly not be sponsored by government).

A community owned register to TK would provide evidence of prior art and proof for the basis of benefit sharing claims. It would also make a good starting point for possible future GI registration as well as potentially linking geographic origin with geographic disclosure when this issue is finally resolved at TRIPS.

[Recommendation: A pilot community IP register system should be initiated with a view to expanding this nationwide should it prove successful]

[Recommendation: In the view of the team, Botswana should adopt the following IP policy positions:

- promote patent application through awareness training, capacity building and, if necessary, public subsidy
- not fully support the implementation of a world wide register of GIs until the implications and relative benefits are better understood
- strongly support the inclusion of geographic disclosure of origin in patent applications in the TRIPS agreement
- urgently put in place some form of protection for plant breeders and farmers.]

SECTION 3: Case studies

3.1 Introduction

The team conducted two case studies to illustrate issues on IPR and NPs. The case study selection method and research framework are shown at Annex VI. Two case studies are offered here, the first concerns the Resurrection plant (*Myrothamnus Flabellifolia*) and the second, Marama Bean (*Tylosema esculentum*).

3.2 Summary of case study findings

Both case studies reveal example of unmanaged bio-prospecting activity in Botswana that has led to both patenting and cultivation of indigenous species in third countries. The general absence of ABS standards or a code of practice and/or a coordinated national research management system has meant that, in these cases, the degree of IPR protection offered was inadequate.

3.3 Resurrection plant case study

3.3.1 Resurrection plant (*Myrothamnus Flabellifolia*)

This small bush or tree grows in rocky outcrops on the 'hard veld' (but not on sand) throughout the region including Zimbabwe, Namibia, and South Africa. It is wild harvested and used/sold locally for use as a tea because it is said to be "good for diabetics". In Namibia, the Topnaar people use an oil extract obtained from the plant as a tea flavourer because it contains camphor and eucalyptols. There is anecdotal evidence that the plant contains novel sugar forms, which might explain the connection that the plant has with diabetes. It is also widely rumoured to have aphrodisiac properties. On products marketed locally by Kgetsi Ya Tsie, a womens Trust based in Lerala, claims are made for traditional use against "strokes, high blood pressure and severe headache" which seems to be code for various womens ailments (though it was said that in some areas that resurrection tea is not allowed for women for reason of propriety!). Nobody in Botswana seems to know if there is any research to support these claims. The most obvious international saleable quality of the plant is its 'miraculous' blooming once the apparently dead stem is placed in water. This makes it potentially valuable as a novel ornamental plant.

There has been a lot of scientific research on the *M.flabellifolia* because of its drought resistant strategy and ability to recover from drying.

There have been several efforts to cultivate Resurrection plants in Botswana with limited success.

It is said that samples of Resurrection tea were sent to a French company in 2000, but it seems that no materials transfer agreement was signed between the parties. There does not even seem to be a local record of the companies name.

[Demonstrates the importance of everybody knowing about the MTA]

It is believed that the French company has: a) patented the plant; and, b) cultivated it and widely sold it in Europe. This activity was described as 'hijacking'.

The reality seems to be that Botswana has been part of a systematic and regional research programme into the use of *M.flabellifolia* as a key ingredient in a proprietary skin care product. A French company, Cognis-France, launched a skin care product in 2005 (<http://www.fr.cognis.com/>) using an extract of *M.flabellifolia* called "PA Reviviscience", which keeps skin moist and protects against heat, cold and sun. Patents have been files in the USA²² and EU for cosmetic and pharmaceutical use of *M.flavellifolia* extracts (McGowan 2006:18).

²² US Patents 20040081714 and 20040109880 of 2004.

Taking small samples such as this is often part of the commercialization process for natural products. Its purpose is to a) investigate the genetic range of the species and b) identify potential varieties with high yields of active ingredients for breeding and cultivation purposes. Companies have also been known to use such sample for genetic finger-printing (or simple visual referencing) to allow the source of future supplies to be identified (Martin Bauer, pers comms).

There are two US patents that mention *M.flabellifolia* specifically. The first, referred to above is for an extract taken from a range of nine different plants that have the resurrection property (i.e., recover from totally drying out)²³ and for which claims are made that they “regulate the water metabolism of the skin”, “protect [the skin] against harmful environmental influences [including protection of skin and hair against ultra violet radiation]” and that they are active substances for “protection of the skin and hair against free radicals” (Gilles, Moser et al. 2004). Crucially, there is no mention in the ‘prior art’ section of the patent that any previous knowledge was found of using *M.flabellifolia* for these purposes.

The second patent discovered during the rapid patent search is for the use of genetic material from a range of different resurrection plant species for “protecting staple plants against drought, high salinity or temperature extremes and for improving the storage properties of harvested plants including green food stuffs, picked fruits and ornamental plants” (Londesborough, Tunnela et al. 2000). The inventors are a group of scientists from Finland and the “Assignee” (i.e., the owner of the intellectual property) is the British Biotech company BTG International. The patent is for the identification of genetic markers for Trehalose, which could then be ‘pasted’ into the genes of crops to make them more stress resistant and which could be harvested as a valuable preservative (a potential alternative to sucrose for which the world market is enormous). There is no mention of prior art (i.e., that the people in Botswana knew that this plant had drought resistance properties).

[Demonstrates need for a wider look at which Botswana genetic resources have already had patent and product development activity with a view to *ex ante* ABS propositions (as was successfully achieved with Phytopharm and *Hoodia sp.*) Fighting a patent once granted is probably beyond the mean of Botswana, but companies value their public images and it may be possible to ‘embarrass’ them into agreements.]

3.3.2 Kgetsi Ya Tsie Trust and Resurrection Tea

Kgetsi Ya Tsie started operations in 1999 and now works in 26 villages with 1,500 members of which 831 are fully paid up and registered. The Trust was started to market Mopane caterpillar, but has branched out into several other wild harvested natural products including several local teas, wild melon and marula products.

²³ There are a number of plants with the resurrection characteristic, including mosses; *M.flabellifolia* is said to be the only angiosperms (flowering plants) in this group that has the novel property mentioned in the patent.

Of particular interest to this research is the effort of the organization to collect the intellectual property of locally based traditional healers. In 2003 they held a workshop where the traditional healers and Conservation Board got together with the Trust to review local plants for their medicinal properties. It was during this workshop that the IP for resurrection tea was identified. Subsequently, once the product was marketed, the Trust has been accused of failing to share the benefits of the sale of tea with those traditional healers that were present at the workshop.

Access to traditional gathering areas in the nearby hills for *M.flabellifolia* is granted by the local tribal authority since access to the area is traditionally strictly controlled. Efforts have been made to designate areas for cyclical (i.e., harvest one year and leave the next) and seasonal harvesting (i.e., only harvesting after the seeds have set) but this has not always been adhered to.

[Nb: Resurrection tea has the usual monitoring and resource management problems of wild harvested products including over-harvesting, destructive harvesting methods and problems controlling access to resources by outsiders. Improved, self-managing, stewardship models are needed and Botswana should initiate research and pilot schemes]

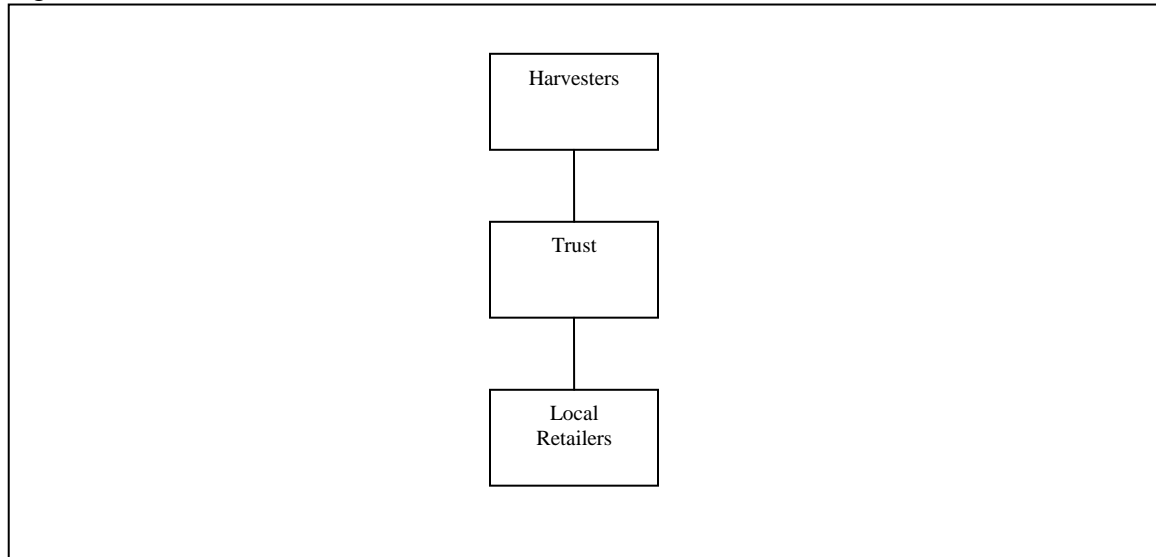
The Trust were (and still are) uncertain how to deal with IP issues. Traditional healers now refuse to give more information because they feel that they were cheated. A second workshop called in 2004 to gather more TK was boycotted by the traditional healers.

[Finding: Demonstrates the importance of an agreed ABS and PIC policy and method in Botswana]

The Kgetsi Ya Tsie Trust has also made progress in developing a brand and identify for its wild harvested products. However, other aspects of IP are little understood; the Trust has not registered its trade name or copyrighted its trade image. They now complain that a former Trust manager is using a very similar image for his Swazi product marula products and they are unable to do anything about this.

[Registrar of companies needs to explain to organizations the importance of trade names and trade marks]

Figure 1: Value chain for resurrection tea



Source: Kgetsi Ya Tsie pers comms

The value chain for Resurrection tea is both ‘short’ (i.e., it has few stages) and narrow (i.e., there are relatively few players at each stage excepting the harvesters.). Members of the Trust harvest and dry leaves and these are collected from their homes for a payment of P43/kg. The trust then wholesales the tea in branded 100g bags to retail outlets in Botswana for P8.50/100g (or P85/kg). The product is retailed at .50 and P35.00 per 100g in Gaborone (P275-350/kg). Harvesters are, therefore, receiving 12-13% of the retail price of the product, a proportion that compares very favourably with other herbal remedies such as *Harpagophytum procumbens* (“Grapple”) which have much more complicated and disperses value chains²⁴. The current annual demand for Resurrection tea from the Trust is about 100kg, making the trade worth P4,300 at the community level. Currently Resurrection tea is retailing for between P27. Anecdotal evidence suggests that it is particularly popular in pharmacies though the packaging is more tailored to the tourism market.

[Recommendation: the group might be advised to look at repackaging the product so that it meets the standards of other herbal remedies sold in pharmacies]

There is often a large perception gap between the actual value of trade in a natural product and the expectations of the local community. In this case, one can see that, even if traditional healers had agreed an ABS deal, there would be little to share around. Very few natural product businesses reach a scale where they are even self sustaining. Kgetsi Ya Tsie has been dependent upon donor and government support for both capital and recurrent expenditure. Long overdue re-branding and packing about to be conducted will be financed by a donor. Despite large scale orders from international buyers for some of their products (at ‘bulk’ prices) they have not been able to respond by up-scaling.

²⁴ Bennett [Bennett, B. (2006). Devil’s Claw Feasibility Study (draft), Regional Trade Facilitation Programme.] demonstrates that the retained value for harvesters from the Devil’s Claw value chain is 1.1% of actual retail value.

[Issue: If these natural product businesses are already struggling to succeed, how will they manage to add the cost of IP to the equation?]

[Recommend: a comprehensive search for existing IP and technical knowledge on *Myrothamnus Flabellifolia* is needed.]

3.4 Morama Bean Case Study

3.4.1 Morama Bean (*Tylosema esculentum*)²⁵

Tylosema Esculentum is a legume renown for its large, tuberous root, that growth throughout the region in dry sandy conditions. It is a traditional source of emergency water supply. The plant produces small, oil bearing ‘beans’ much like ground nut or bambara which are a popular and nutritious wild harvested food. Morama bean has a very high content of mono unsaturated oleic acid (48%)²⁶. There have been a number of attempts to cultivate morama and in recent years it has been the subject of quite a lot of academic interest because of drought resistant properties and novelty (it is said to be the world’s largest leguminous plant).

The bean contains a potentially interesting, high protein, food oil. Morama bean meal has possibilities as a snack food in the form of a spreadable morama “butter”. Due to its novelty, good eating qualities and positive embedded qualities (i.e., from the Kalahari, associated with traditional nomadic lifestyle) morama bean has potential as a confectionary nut. Like many such products, its flavour is enhanced by roasting. Most harvesting is done for personal consumption, though some seems to be traded in local markets seasonally. In 2005 it is said that 100g of roasted morama beans was selling in Gaborone for P2 (i.e., a retail price of P20/kg).

Very little seems to be known in Botswana about the IP associated with Morama. A regional morama project is about to start financed by the European Union in association with the University of Botswana and other regional academic institutions. This project does not seem to have included an element of IP management.

[Recommendation: GoB should ensure that all research projects concerning indigenous plants satisfy IP and ABS criteria in future before research approval is granted.]

3.4.2 Thusano Lefatsheng

The NGO Thusano Lefatsheng has been working on developing a technical package for morama cultivation since 2002. They have been collecting seeds from communities, but have not signed any PIC or ABS agreements for this material.

[Recommendation: Local researchers are unaware of the importance of ABS, IP and TK. It is important that government officials lead by example in this regard when collecting genetic material. A national code of practice for collecting genetic material would be a good starting point.]

²⁵ Nb: Older literature often refers to this plant as *Bauhenia esculentum*.

²⁶ Oleic vegetable oils, such as coconut and palm have attractive melting and consistency attributes which make them useful for confectionary (they ‘melt in the mouth’ well and have good ‘feel’) and cosmetic (the skin seems to absorb them easily).

As part of its development strategy, Thusano Lefatsheng wanted to develop an oil extraction and morama butter micro-enterprise to provide a market for the morama once its collection and cultivation was initiated. The NGO filed a patent for the extraction of oil from morama beans in RSA in 1991. This seems to be the only current Botswana initiated natural product patent to date. The patent surrounds dealing with the problem of the bitter flavour inherent in morama by emulsifying the bean before oil extraction. Thusano Lefatsheng have continued to pay the annual patent fee because they do not want the patent to lapse despite the fact that they have never utilized the know-how. There is no Botswana patent, so it would be possible for a rival to use the technology locally with impunity. This patent will lapse in four years time.

[NB: recommend the importance of local patenting first and support for local entrepreneurs to patent locally]

3.4.3 Value chain for Morama beans

Currently there is no formal value chain for morama bean and its by-products, though it is hoped that this will emerge from the EU project.

3.4.4 Morama – patents and bio-prospecting activity

A rapid patent search identified two patents for *Tylosema esculentum*. The first, a US patent of 1999, concerns the specific use of morama beans for a skin treatment in cases of injury of inflammation to the skin (Lezdey and Wachter 1999). It is also claimed to be good for “chapped skin” and “reducing wrinkles...wind burn and sun burn” and can be used in skin preparations or shampoos. The assignees are a US based company called Protease Sciences Inc of Voorhees, New Jersey. The specific amount of morama bean extract needed to have the effect is said to be between 1% and 10% by weight. The Latin name of the plant is consistently miss-spelt through out the patent. There is no mention of prior art in the patent and clearly the US Patent Office did not require it.

[Recommendation: There is a need for a system to alert Botswana stakeholders to patent activity on their biological resources]

A second, less obvious, patent on *Tylosema esculentum* is for the use of natural glycosides extracted from leguminous plants (such as Morama) for the treatment of “breast cancer, pre-menstrual syndrome or symptoms associated with menopause by administration of phyto-estrogen” (Kelly 2003). This patent was posted in the USA by an Australian Biotech company Novogen Research. There is no mention of prior art. Patents such as these that blanket a whole species would be difficult to contest because of the range of different plants and countries involved, unless, of course, there is clear evidence of prior art with Morama.

Quite apart from Moramas potential novel properties, it is an interesting and much researched potential food source which has the attractive elements of being high in protein and the ability to grow in poor, sandy soils. There is clear evidence that the

Australian Government supported a project to collect Morama [sic] from Botswana in 1999 which has led to commercial production in the Perth area (Francis and Campbell 2003). To quote C M Francis of the Australian Rural Industries Research & Development Corporation:

“Morama, a native of Botswana where it is prized by people of the Kalahari desert for the protein and oil content of its very large seeds (20-30 gm), is successfully growing in Perth. Vegetative growth is very vigorous during the summer months arising from a massive underground tuber. Winter dormant, it is clearly tropical and under our summer conditions has yet to set seed. A promise of additional seed from Botswana following Ms Campbell's visit in 1999 has not been forthcoming but it is yet possible seed will be produced from the plants growing locally.”
(Francis and Campbell 2003:viii)

In other words, Ms Campbell seems to have left Botswana with a sample of Morama beans for commercial exploitation without considering PIC or MTA, let alone benefit sharing. The report goes on to crow that Ms Campbell successfully took oil samples to Europe and America for discussions with commercial partners.

The plants now growing in Perth were collected by a student, Brian Monaghan, who was working with Thusano Lefatsheng in 1995 (Fletcher 1998:2; Francis and Campbell 2003:15).

SECTION 4: Proposal for a Natural Products IP Project

4.1 Botswana Biotrade Support Project (BBSP)

(DRAFT)

Introduction

A programme of support to develop a suitable national framework for beneficiation of natural products is proposed under the title “Botswana Biotrade Support Project (BBSP). An outline of the project including its logical framework and some indicative activities and costs are given below.

Programme Logic

Problems

Key problems identified with IP and NPs are:

- There is evidence of uncontrolled bio-prospecting and ‘bio-piracy’ in Botswana both by domestic institutions and external parties.
- The rights and obligations of resource owners are still unclear. In particular, the fundamental principles of access and benefits sharing have not been agreed.
- Knowledge of IPR issues is not widespread and this threatens livelihoods and biodiversity.
- Many aspects of policy related to natural product bio-beneficiation (i.e., sustainable management for community economic benefit) have yet to be put in place or have lapsed including: research management and control, harvesting and export permitting, ABS, stewardship and land tenure arrangement.
- Fragmentation of policy and legislation threatens coordination of the NP sector and therefore the potential for its contribution to biodiversity and sustainable livelihoods.
- Issues relating to international agreements (both environmental and trade) that are important to the development of the NP sector are not currently being addressed by the relevant Botswana competent authorities or negotiating bodies.

Objective

The overall and specific objectives of the project are:

Wider objective:

- To reduce rural poverty and encourage trade by promoting the sustainable production and marketing of natural products from *in situ* resources and small-scale cultivation.

Specific objectives:

- To increase the capacity of civil society to engage in domestic and international policy development and trade negotiation.
- To ensure equitable and safe ABS.
- To encourage investment in the NP sector within a framework that protects the IPR and TK of stakeholders.
- To prevent further bio-piracy and recover lost value of NPs.
- To promote policy coordination through engagement with stakeholders.

Result(s)

The expected results of the project are:

- Programme contributes to a trade regime, at national, regional and international levels, that is conducive to the promotion of the natural products sector
- Programme increased domestic capacity to equitably and sustainably manage IP and TK for NPs
- Programme promotes investment in the NP sector.

Indicators

Indicators that the project results have been achieved are:

- IPR for NPs included in national policy papers and negotiation positions
- Regular meetings of coordinating bodies (trade, biodiversity, IPR, ABS)
- Volume, range and value of NPs entering trade through sustainable management substantially increased.

Means of Verification

It is proposed that these indicators are verified by:

- National and regional plans and policy documents
- Minutes of coordinating committee meetings and proceedings of policy development workshops.

Risks and assumptions

The risks/assumptions, therefore, associated with achieving the proposed result are that:

- Natural factors such as drought will not prevent the benefits accruing;

Activities

The following activities are proposed:

- Initiate a process of identifying and protecting TK through community TK registers
- Develop an agreed code of practice for IP management, ABS and research approval for government and non-state actors as an interim measure before legislation is put in place.
- Complete a wider exercise to identify further examples of potential biopiracy and support GoB to seek redress.
- Develop a Biotrade education programme for both communities and government staff.
- Promote more / deeper collaboration among government departments on bio-trade issues.
- Work towards a unified Botswana policy on Biotrade, IP and ABS and ensure that this policy is reflected in Botswana trade policy and trade negotiating positions.
- Encourage patenting where appropriate.

Proposed BBSB Budget (Pula)

Item No.	Action	Unit	Cost per Unit (P)	Quantity	Total (P)
1	Pilot Community Register				
1.1	Develop and test community registration process	Lump sum	100,000	1	100,000
1.2	Seek legal advice	Consultant days	5,000	5	25,000
1.3	Develop programme for wider implementation of pilot	Lump sum	50,000	1	50,000
	Sub-total				175,000
2	Develop IP code of practice				
2.1	Draw up draft code	Consultant days	5,000	10	50,000
2.2	Test with stakeholders	Lump sum	20,000	1	20,000
2.3	Test at workshop	Lump sum	20,000	1	20,000
2.4	Print and distribute	Lump sum	20,000	1	20,000
	Sub-total				110,000
3	Research more bio-piracy examples				
3.1	Fund research	Consultant days	6,000	10	60,000
3.2	Publish results	Lump sum	20,000	1	20,000
	Sub-total				80,000
4	Develop biotrade education material	Consultant days	5,000	10	50,000
4.1	Develop messages	Consultant days	5,000	10	50,000
4.2	Test messages	Consultant days	5,000	5	50,000
4.3	Print and distribute	Lump sum	20,000	1	20,000
4.4	Write up article on Botswana IP and Natural products to raise international awareness	Consultant days	6,000	10	60,000
	Sub-total				230,000
5	Hold biotrade information day for negotiators				
5.1	Develop presentations	Consultant days	5,000	5	25,000
5.2	Fund workshop	Lump sum	20,000	1	20,000
	Sub-total				45,000
6	Fund patent and petty patent application				
6.1	Design criteria for funding and selection process	Consultant days	5,000	5	25,000
6.2	Fund selection meeting (s)	Lump sum	20,000	1	20,000
6.3	Fund	Lump sum	500,000	1	500,000
	Sub-total				545,000
	Contingency	%	10		107,500
	TOTAL				1,182,500

Annex I: Terms of reference

Description of activities

The service provider will undertake the following tasks *inter alia*:

- a) Identify all existing agreements to which Botswana is a signatory that contain elements of intellectual property relevant to trade in indigenous plants.
- b) Locate the competent authority for application of each agreement and establish the current state of play with regard to national implementation, the proposed time-scale for full implementation and what might be done to assist the process.
- c) Collate all relevant legislation with regard to intellectual property and assess it with specific regard to development of indigenous plant opportunities.
- d) Where possible, compare the approaches adopted and the progress achieved in Botswana to addressing the issue of intellectual property management with its primary competitors (notably South Africa and Namibia).
- e) Consult widely along the value chains for indigenous plants to assess the know-how, needs and capacity gaps sector-wide.
- f) Develop case studies of specific indigenous plants to illustrate the potential costs/benefits of an improved/amended intellectual property regime for indigenous plants.
- g) Propose activities for funding that will address the needs of the sector to meet the overall objective.
- h) Present a summary of the findings and recommendations to a focus group of key stakeholders at a small workshop.

Outputs/deliverables

The following outputs will be delivered:

- A comprehensive document that: maps the existing intellectual property regime for indigenous plants; identifies gaps that can be filled; and, specifies actions necessary to achieve the objective of having a vibrant, sustainable and equitable indigenous plant trade sector.
- A short workshop report recording the views of key stakeholders on the findings and proposed actions.

- Case studies of selected indigenous plants that illustrate intellectual property issues.
- A short costed programme of future activities for funding.

Annex II: Programme of activities

Date	Action
1	Depart UK
2	Arrive Botswana
3	Team preparation meeting
4	Meeting with Reference Group
5	Review of literature and preparation of background paper
6	Review of literature and development of research methodology
7	Organisation of final workshop, requesting interviews, collection of literature, meeting with BTPP
8	Meeting with DEA, CBD contact point and Chair of Traditional Healers Association
9	Department of International Trade, Department of Agricultural Research, University of Botswana, Veld Products and private sector
10	Field trip to Permaculture, Serow
11	Field trip to Kgetsi Ya Tsie, Lerala
12	Development of case studies and rapid patent search
13	Review of regional IP legislation
14	National Herbarium, Bocongo, Registrar of Companies, various natural product retail outlets (Pharma South, Botswana Craft)
15	Botswana Agricultural Marketing Board, Attorney Generals Office
16	Ministry of Communications, Science and Technology, Botswana Chamber of Commerce, Industry and Manpower, Botswana Technology Centre, Inspection of workshop venue.
17	Public holiday – Report writing and documentation review
18	Department of Agricultural Research Forestry and Range Management, Department of Environmental Affairs SADC Regional Biodiversity Project Ministry of Health, Drug Regulation Unit Registrar of patents – review of existing patents in Botswana
19	Preparation of Report
20	Preparation of Report
21	Presentation of findings to Reference Group Preparation of workshop presentation(s)
22	Workshop
23	Wrap-up meeting Travel to UK
24	Arrive UK

Annex III: Persons met and key informant interviews

Date	Name	Designation
3/5/7	Frank Barsh	DED, Department of Forestry and Range Resources
3/5/7	Javelani Mthethwa	Trade Directorate, SADC
3/5/7	Richard Masundire	Senior Economist Food Security Early Warning System, SADC
4/5/7		Reference Group (see below)
7/5/7	Tebogo Seleka	Senior Research Fellow Botswana Institute for Development Policy Analysis
8/5/7	Tebogo Matlhare	Thusano Lefatsheng
8/5/7	Khulekani Mputo	Principal Natural Resources Officer, Department of Environment and Agriculture
8/5/7	Tsalano Kedikikwe	Assistant Natural Resources Officer, Department of Environment and Agriculture
8/5/7	Mentusi Sekonofu	Chair, Botswana Demaka Association (traditional healer)
9/5/7	Ms Nthomiwa	Director, Department of International Trade
9/5/7	Tekane Tekane	Department of International Trade
9/5/7	Tlhalonganyo Ounce Ofentse	Research Officer, National Plant Genetic Resources Centre, Department of Agricultural Research
9/5/7	Dr Nelson Torto	University of Botswana
9/5/7	Douglas Thamage	Veld Products Research and Development. Gabane
9/5/7	Frank Taylor	Natural products entrepreneur, Gabane
10/5/7	Russell Clark	Permaculture, Serowe
11/5/7	Mrs Masego Mmipi	Kgetsi Ya Tsie Womens Trust, Lerala
14/5/7	Dr Bruce Hargreaves	Principal Curator: Natural History, Department of National Museum, Monuments and Art Gallery
14/5/7	Mr Mophuting	Principal Commercial Officer, Registrar of Companies
14/5/7	Barulaganye Mogotsi	Programmes Manager, BOCONGO
15/5/7	Masego Mphathi	Chief Executive Officer, Botswana Agricultural Marketing Board
15/5/7	Daphne Matakaga	Deputy Attorney General
15/5/7	Rumbi Chinyoka	Principal State Counsel
15/5/7	Tshenogo Regumogeng	State Counsel
15/5/7	Idah Motsamai	Senior State Counsel
16/5/7	Keitseng Nkah Monyatsi	IPR Officer, Department of Science and Technology, Ministry of Communications, Science and Technology
16/5/7	Anthony Tema	Head Research & Monitoring, Department of Forestry and Range Resources
18/5/7	Dr Mmasera Manthe	Director, Agricultural Research
18/5/7	Dolina Malepa	Department of Environmental Affairs
18/5/7	Dr Enos Shumba	SADC Biodiversity Support Programme, Regional Programme Manager
18/5/7	Mr Ogopotse	Registrar of Companies
18/5/7	Nkosanah Nick Ndaba	Acting Managing Director, Botswana Technology Centre

Members of reference group

Name	Name of Organisation
Pinkie Kebakile	BIDPA/BTPP
Masego Kruger-Gaadingwe	Veld Products Research & Development
Mphemelang Kethoilwe	University of Botswana

Name	Name of Organisation
Hornby Tumisang	LEA
Julia Dithlong	DEA
Baboloki Tlale	BOCONGO
Tebogo Matlhare	Thusano Lefatsheng
Bonatla Tsholofelo	Kalahari Conservation Society
Goitseone Lebonetse	Department of Wildlife and National Parks

Annex IV: Results of consultation – workshop report

Introduction

A one day workshop for stakeholders was held at the Fairground Conference Centre on 23rd May 2007. There were a total of 25 participants representing a wide range of both state and non-state actors. A full list of participants can be found below. The workshop programme is also given below.

Objective

The purpose of the workshop was a) to validate the research findings; and, b) to initiate discussion amongst stakeholders about implementation of the research recommendations. A schedule for completion of the final report was also agreed.

Discussion

This section highlights some of the issues raised by workshop participants.

Many IP stakeholders do not speak English. This highlights the need to translate key documents into the vernacular.

The adequacy of TRIPS Article 27.3(b) was questioned in terms of protection of Traditional Knowledge.

Whether patents could protect Traditional Knowledge was questioned.

It was observed that a Botswana court has recently judged that international treaties “only have persuasive value” in Botswana law.

Many questions were asked about Hoodia sp. and its associated patents. It was explained that the patent holders are not obliged to protect their patent and this is why there are many products being sold that appear to contravene the patents.

The consultants were asked to explain how *sui generis* systems have been applied in other countries.

The team was asked to explain the relevance of international conventions and treaties that Botswana has signed and gaps that have been identified. This was done.

It was generally agreed that the national research permit system is not working very well.

The location of this research in a national process of agreeing a suitable IP management system for NPs was discussed. It was explained that this was a ‘pre-policy’ phase that had been initiated by civil society.

There was discussion surrounding the legal position of harvesting and export permits for protected plant species. The real position is still opaque and the bi-annual reappointment of the Board by the Minister of Environment has now lapsed.

Some participants doubt whether the basis premise of Community Based Natural Resource Management (CBNRM) in Botswana is proven (i.e., that allowing communities to sell their natural resources promoted conservation).

The workshop discussed the issue of resource and TK ownership at length, with some participants calling for Constitutional change to clarify the situation. In particular, the view of some was that “the state should own the resources because they have the resources to deal with issues like over-harvesting and patenting”. This position would seem to support the research team’s view that the Botswana state takes a paternalistic stance towards NPs and IP.

The way forward

One suggestion for the way forward was that the Ministry of Environment should act as a focal point for implementing the recommendations of the final report and that they should then set ‘competent authorities’ to deal with specific issues. Since, there was no alternative position this would seem to have been adopted.

The plenary requested the consultants to draft the proposed ‘code of practice’ and ‘legislation’. It was pointed out that this was well beyond the terms of reference for the work and therefore could not be done. However, the research team suggested that this could be part of the project proposal.

Timetable for report completion

The following timetable for completing the report was agreed.

Draft Report submitted by Consultants to BOCONGO	1 st June
Distribute Draft Report to reference groups and workshop participants	1 st June
Comment (in ‘track changes’) submitted to Consultants	8 th June
Submission of final report	15 th June

List of workshop participants

Name	Gender	Organisation Name and Address	Tel	Cell	Email
1. Sinah Selelo	F	Drugs and Regulatory Unit- Ministry of Health	3632064		sselelo@gov.bw
2. Anthony Tema	M	Department of Forestry and Range Resources	3954050	71610488	antema@gov.bw
3. Bernard Lesolame	M	Veld Products Research and Development	3947377		veldprod@info.bw
4. Monthusi Sekonopo	M	Botswana Dingaka Association		71668293	
5. Julia Dithlong	F	Department of Environmental Affairs	3902050		jkejang@gov.bw
6. M. Manthe- Tsuangeng	F	Department of Agricultural Research	3668174		Mmanthe- tsuangeng@gov.bw
7. Masego Mmipi	F	Kgetsi ya Tsie	4954013	71830171	kyt@botsnet.bw
8. Pearl D. Lebatha	F	Botswana College of Agriculture	3650102/8	72155533	plebatha@bca.bw
9. Yvonne Chilume	F	Chilume and Co.	3916391	71325456	ychilume@hotmail.com
10. Tebogo Matlhare	M	Thusano Lefatsheng	5905680	72565920	thusanol@info.bw
11. Ben Bennett	M	NRI, UK			Ben.bennett@gre.ac.uk
12. M.G. Nthomiwa	F	Ministry of Trade and Industry	3190243		mnthomiwa@gov.bw
13. K.N. Monyatsi	F	Ministry of Communication (Department of Research Science and Technology)	3613100		kmonyatsi@gov.bw
14. Titus Makosha	M	AEET	4922050/1	72103443	aeet@aeet.org.bw
15. Lemogang Ngakaemang	F	Dipabalwanageng Trust		71497425	
16. Tebogo B. Seleka	M	BIDPA	3971750	71555965	tseleka@bidpa.bw
17. Siphwe Dube	F	Kalepa Community Trust		71425825	
18. Alice Mogwe	F	Ditshwanelo-The Botswana Centre for Human Rights	3973742	71309468	admin.ditshwanelo@info. bw
19. Bonatla Tsholofelo	M	Kalahari Conservation Society	3974557	72741980	clo-co@kcs.org.bw
20. Richard Magweregwe	M	BOCOBONET	3185081	74214898	bocobonet@mega.bw
21. Boitshepo Chube	F	BOCONGO	3911319		boitschube@yahoo.co.uk
22. Resego Mogasha	F	BOCONGO	3911319		
23. Abel Mabei	M	BOCOBONET	3185081		bocobonet@mega.bw
24. Barulaganye Mogotsi	M	BOCONGO	3911319		mogotsib@bocongo.org. bw
25. Kesego Sekonopo	F	Botswana Dingaka Association		7221958	

Workshop programme

Time	Activity		Output
8:30 – 9:00	Arrival/registration		
9:00 – 9:15	Welcome address	Tebogo Matlhare, Chair of Reference Group	
9:15 – 9:30	Introduction of participants		
9:30 – 10:30	Presentation of findings	Mssrs Bennett & Chilume	Participants known the findings of the consultancy
10:30 – 10:45	Plenary – clarifications	Mssrs Bennett & Chilume	Participants clear up any errors or misunderstandings
10:45 – 11:00	Tea Break		
11:00 – 12:00	Presentation of findings (continued)	Mssrs Bennett & Chilume	Participants consider the recommendations of the consultancy
12:00 – 13:00	Plenary - discussion	Mssrs Bennett & Chilume	Validation of key findings and recommendations
13:00 – 14:00	Lunch		
14:00 – 14:15	Introduction to workshop	Mssrs Bennett & Chilume	Participants know exactly what is expected from them in the group work
14:15 – 15:15	Workshop – group work	Participants	Key issues identified during the review of the consultant’s findings are discussed by stakeholders in detail.
15:15 – 15:30	Tea Break		
15:30 – 16:00	Report back	Participants	The plenary shares the results of group work
16:00 – 16:45	Conclusion and wrap up	Mssrs Bennett & Chilume	Clarification of the timetable for completion of the report
16:45 – 17:00	Closing remarks		
17:00	Closure	Tebogo Matlhare, Chair of Reference Group	Vote of thanks

Annex V: Guide questions for key informant interviews

What is your organizations position on IPR?

What is the national policy on IPR?

Are you familiar with natural products and their markets?

Do you know what special issues that natural products have with regard to IPR?

How would you go about protecting the TK and IPR for natural products in Botswana?

Can you describe the process for obtaining IPR (forms, costs, approval, appeal etc).

How much influence do you have over Botswana IP policy?

What actions/system do you think would best serve the IP interests of all players in the Botswana natural products sector?

Annex VI: Case Study Methodology

Case studies are an inductive research tool: they allow insight into research questions through revealing a range of potential answers and further directions for inquiry. In order to address the question of which might be the most appropriate method of protecting the intellectual property and associated traditional knowledge for Botswana's natural products, it was decided to conduct two case studies. This section considers the method for selecting the case studies and the tools used to then elucidate the case studies chosen.

Identification of case studies

The Reference group for the consultancy, consisting of representatives of both government and non-government sectors in the environment, natural products and community development spheres, were asked to identify suitable candidates using the following criteria:

Table 1: Case study selection criteria

Criteria for selection	Reason
Currently in trade	Possibility of researching different points in the value chain
Good prospect of future trade	Potential for adding future value by IPR protection
Representative of different commodity groups (i.e., medicinal versus food)	Recognising a IPR issues in different commodities where research and marketing costs differ
With clear local identity	Increased potential for 'uniqueness'
Relatively easy to access harvesting community within timeframe of consultancy	Practicality of research effort.

On the basis of these criteria, the reference group short-listed six case study candidates and these were discussed. The outcome of the discussion is shown in table 2.

Table 2: Candidate case study natural products and arguments for and against their selection

Natural product	Arguments for and against selection
Indigenous teas - Lippia(s) - Resurrection plant	Clear evidence of TK. Good market potential. Ease of access for interviews. Local identify. Some current trade.
Truffles	Clearly indigenous, high market value, not a plant, difficult to locate value chain outside season. Only patchy trade.
Morama beans	Good market potential. Existing Botswana patent on extraction. Some local trade.
Hoodia	Excellent market potential. Existing patents outside Botswana. No current trade but much interest. Difficult to reach potential production areas. Much existing research (therefore considered 'over-researched' by the reference group)
Marula	Current production of oil. Existing patent on Marulene with a regional trust. Production very distant from Gaborone. Botswana supply limited.

On the basis of this discussion it was decided that Morama beans (*Tylosema esculentum*) and Resurrection Plant (*Myrothamnus Flabellifolia*) should be the focus of research.

Value chain analysis

The method used to evolve the case studies was based upon value chain analysis. This method involved entering the value chain for a particular product than following the chain through a series of interviews that reveal how the chain works. This so called 'snowball' method of research relies upon identifying key informants who then locate new informants along the chain for supply and demand. The limited current trade in the products identified for case studies in Botswana and in particular the very few traders in natural products in Botswana meant that the value chains are relatively short and narrow. The value chain analysis research process can be summarised by the following steps.

- Locate entry points
- Describe value chain including all players/stages and cost/benefits at each level
- Identify key success factors
- Locate power and governance within the chain structure

The importance of serendipity in the investigative process is highlighted. Each interview has the potential to lead on to another key informant who may have crucial insight.

Interviews

Interviews were conducted using a semi-structured interview method allowing the researchers to follow leads as they arose during the interview process. Key questions in the semi-structured interviews were:

- What are the unique properties of the product?
- What is the likely market (location, scale, scope, requirements)?
- How does the current market structure work?
- What are the costs of production and marketing and the values/prices at each stage in the value chain?
- Who sets price and standards?
- What is the range of the product?
- Who manages harvesting?
- What is the potential for cultivation?
- What quality control, standards and processing is necessary?
- What TK is associated with the product and who holds it?

The interviews were recorded and the results encoded as a narrative.

Annex VII: Selected key laws

1. The Constitution of Botswana, Laws of Botswana, 2002:
2. Industrial Property Act Cap 68:03
3. Copyright and Neighbouring Rights Act Cap 68:02
4. State Land Act Cap 32:01
5. Tribal Land Act Cap 32:02
6. Wildlife Conservation and National Parks Act Cap 38:01
7. Forest Act Cap 38:03
8. Agricultural Resources Conservation Act Cap 35:06
9. Seeds Certification Act Cap 35:07

Annex VIII: Agreements to which Botswana is signatory

1. World Trade Organisation (WTO)
2. Convention Establishing the World Intellectual Property Organisation (WIPO)
3. Paris Convention for the Protection of Industrial Property (1883)
4. Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (1977)
5. The Hague Agreement Concerning the International Registration of Industrial Designs (1925)
6. Lisbon Agreement for the Protection of Appellations of Origin and their International Registration (1958)
7. Madrid Agreement Concerning the International Registration of Marks (1891) Protocol Relating to that Agreement (1989)
8. Patent Cooperation Treaty (PCT) (1970)
9. Locarno Agreement Establishing an International Classification for Industrial Designs (1968)
10. Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks (1957)
11. Strasbourg Agreement Concerning the International Patent Classification (1971)
12. Vienna Agreement Establishing an International Classification of the Figurative Elements of Marks (1973)
13. Agreement on Trade-Related Aspects on Intellectual Property Rights (TRIPS)
14. Convention on Biological Diversity (CBD), Cartagena Protocol On Biosafety
15. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
16. Southern African Development Community Protocol on Trade
17. Southern African Customs Union
18. The African Convention on the Conservation of Nature and Natural Resources (The Algiers Convention)
19. The United Nations Convention on the Law of Sea
20. The United Nations Convention to Combat Desertification (CCD)
21. The Convention on Wetlands of Importance as Waterfowl Habitat (Ramsar Convention)

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