

Review

Understanding the relationship between indigenous (traditional) knowledge systems (IKS), and access to genetic resources and benefits sharing (ABS)

Chimwamuombe Percy^{1*}, Mapaure Isaac^{1,2} and Claassen Pamela²

¹Department of Biological Sciences/ZERI, University of Namibia, P.M.B. 13301, Windhoek, Namibia.

²Research and Publications Office, University of Namibia, P.M.B. 13301, Windhoek, Namibia.

Accepted 10 December, 2010

Indigenous local communities have coexisted with their natural biological resources for millennia. This has entailed that the local people use a great deal of conservation methods to ensure that this coexistence does indeed exist to this present date. Invariably, as this happened, a huge wealth of sophisticated indigenous (traditional) knowledge systems (IKS) has been building up and concurrently been passed on from generation to generation in a manner that modern science is yet to understand fully, later on been able to measure or quantify properly. With the advancement of modern scientific methods and technology, most of these indigenous biological resources are being developed into commercial products, largely without benefiting the very communities that have sustainably managed them over many generations. This paper examines current regulatory frameworks for facilitating beneficiation by local indigenous people from any plant products, raw or value added, that make lucrative, modern and high paying markets, whether in local markets in the cities or export markets. It also highlights the dilemma of dealing with placing ownership of IKS when it comes to dealing with sharing benefits on resources that are naturally cross-frontier *sensu stricto and sensu lato*. The marama bean (*Tylosema esculentum*) will be used as a typical example to highlight some of these issues.

Key words: Countries, communities, indigenous, products, resources, ABS, IKS.

INTRODUCTION

Genetic resources are used to develop products such as new crop varieties, new pharmaceuticals and phytomedicines. Southern Africa, and indeed Namibia and the rest of the developing world is endowed with a vast array of indigenous knowledge and genetic resources that are yet to be put to full potential. The peoples in these areas depend directly or indirectly on these natural resources. For Namibia, the high diversity of flora and fauna in its

two deserts, the Namibia and the Kalahari eco-geographical regions, make it a particular lucrative destination for bio-prospectors and bio-pirates alike. However, another important realization to make is that the full beneficiation from these botanical and zoological, and the often terribly ignored microbial resources can be made if there is a smart partnership with the corporate world, indigenous people and the government sector. It is this partnership that takes long to establish, usually due to lack of trust in the parties and general lack of agreed framework of operation. In this paper, we will attempt to make an examination of the issues surrounding access to genetic resources and benefit sharing (ABS) against the above background. The popular example of *Hoodia gordonii* (Wong, 2007; Wynberg et al., 2009) in the SADC area is a perfect example of ABS scenario where the marginalized San communities are benefiting from

*Corresponding author. E-mail: pchimwa@unam.na.

Abbreviations: ABS, Access to generic resources and benefits sharing; IKS, indigenous knowledge systems; SADC, southern African developing countries; CBD, convention on biological diversity.

Table 1. Status of SADC countries on ABS law

Country	Status
Angola	No ABS law, some control procedure used
Botswana	No ABS law, some control procedure used
Lesotho	No ABS law, some control procedure used
Malawi	No ABS law, some control procedure used
South Africa	ABS law in place
Mozambique	No ABS law, some control procedure used
Zambia	No ABS law, some control procedure used
Zimbabwe	No ABS law, some control procedure used
Mauritius	No ABS law, some control procedure used
Madagascar	No ABS law, some control procedure used
Tanzania	No ABS law, some control procedure used
DR Congo	No ABS law, some control procedure used
Swaziland	No ABS law, some control procedure used
Namibia	No ABS in place, but bill almost finalised, using interim procedure for control

negotiated royalty sharing, albeit, after a long and protracted legal battle. Most of SADC has to learn from this *H. gordonii* example to create enabling policy environments for innovation and equitable benefits sharing when dealing with the biological natural resources. Unfortunately, some people have already started using this example to deny access to the resources and the associated IKS with the concomitant effect of denying benefits to the wider communities. For this reason, there is need for urgency and judicious prudence while dealing with the issues.

CREATING AN ENABLING ENVIRONMENT FOR ABS AND SUSTAINABLE USE OF IKS

The convention on biological diversity (CBD) clearly stipulates that the use of the genetic resources commercially, mostly by the developed nations, should lead to sharing of the benefits derived fairly and equitably with the countries (communities) that provide them (mostly developing nations). In addition, the International treaty on plant genetic resources for food and agriculture (ITPGRFA) and Trade related intellectual property rights (TRIPS) are other instruments that have implications on genetic resources and benefits sharing in one way or the other. All SADC countries are signatories and parties to these international regimes.

Many countries have adopted a regional approach of identifying training needs and equipping various stakeholder groups in ABS matters. From 2005 to 2006, a resolution to utilize the existing centres of excellence in various ABS aspects to train different stakeholder groups was taken and since then some activities have taken place in that regard, needless to say the participation of the indigenous peoples themselves was low, such

meetings and trainings have been attended by government officials. In other countries, little has happened, due to lack of adequate financial resources and other administrative hindrances, therefore progress has been slow. The key training areas that were identified included legal frameworks, bio-prospecting, natural product value addition, indigenous knowledge systems, project management and resource valuations. At the moment, there are a variety of uncoordinated activities on ABS aspects in the SADC region.

In line with these efforts, the SADC countries have started to develop *sui generis* systems that can allow people to develop a basis for future legal systems to protect the knowledge and resources. It is however, important to mention that for effective participation in ABS policy formulation, there is no blueprint for participation that will be generic enough to custom fit every country situation. Every country will have to design a mode of participation that best suits its situation. The SADC countries are at different levels of readiness with the ABS laws (Table 1) and therefore different levels of preparedness in dealing with requests on accessing genetic resources by potential partners. In such situations of lack of ABS law, *ad hoc* procedures are in place, and these do not always give the best responses. In fact, in many cases requests have been delayed or totally disapproved. Most countries are waiting for the finalisation of the international regime in Nagoya, Japan so that they can develop their laws that will not be in conflict with the international regime.

In South Africa, a multi-stakeholder reference group including provincial governments and community based organizations was convened to participate in drafting the ABS policy document. Local communities were brought into the consultation process (Swiderska, 2001). In Namibia, an Interim bio-prospecting council has been set up to deal with ABS matters while the relevant bill is being processed into law.

We have noticed in Namibia and elsewhere the recalcitrance by people to share genetic resources and indigenous knowledge. The current behaviour of rural communities and other marginalized societies to sharing their resources and indigenous is a certain indicator that the existing ABS and intellectual property rights (IPR) platforms are not appropriate and inadequate for benefit sharing and defending the rights and resources of the local communities and indigenous peoples. The traditional knowledge is usually shared and the holders of the knowledge in communities have no right to commercialize for personal gain; this is a worrying matter to them, especially when community gain is not in sight. The big worry is when one community refuses to share their IKS and denies access to their resources while the other community across a river or national frontiers agrees to all. Such cases result to major conflicts that are hard to resolve. Our view at this stage is that, there is need for massive awareness campaigns in matters of IKS and ABS.

These campaigns should be targeted for the communities that live with these resources every day.

Genetic resources, as stated in the CBD, belong to states on whose territory where such resources are found, implying a possibility of dual or multilateral ownerships as some of the resources occur across current political boundaries that do not respect geological and eco-geographical settings. This makes them similar to mineral resources or oil. However, there are some slight variations. It is these variations such as exploitation procedures and the evolution of the patent laws that complicate the matter somewhat. Governments of many SADC states are still struggling to finalize their ABS laws. Many are still stuck in getting all inclusive and good definitions for terms such as: access, community, mutually agreed terms, benefit sharing and genetic resources. These are genuine issues that governments need to deal with soberly in order to avoid delays or deny benefits to local communities due to lack of proper ABS regulations. Cis-markets (in country cities) and trans-markets (export) are eagerly waiting for some of these products to reach them and in turn help in poverty alleviation in our local communities who are the true custodians of these resources.

Stakeholder participation in ABS policy formulation generates awareness and capacity so that when a country is approached, the relevant stakeholders are ready to establish a fruitful ABS agreement without incurring delays which can deter a potential partner. In addition, the distinction between scientific knowledge generation, abstract research and bio-prospecting is still hazy for others. Whichever way, these will be sorted out, taking care not to delay too much as this can cause participation fatigue as has been the case in a number of countries where the participation of local communities has become hard to get, especially in situations where the consultation meetings/workshops have to take place in urban centres, far way from homes of the local rural communities.

At the moment, the encouragement is that all matters should be taken cautiously to avoid future long and expensive legal battles. Yes, ABS laws are urgent issues for many countries in the developing world and enabling environments have to be established for innovation, and development to take place in a participatory interactive bottom-up approach, to ensure ownership of the policies that result thereof. One good new example to discuss is the case of marama bean (*Tylosema esculentum*) (Keegan and Van Staden, 1981), where innovation and development is still immensely required.

MARAMA BEAN: A NEW ADDITION TO THE LIST OF CROPS BEING DEVELOPED

Marama bean, a wild tuber-producing and non-nodulating legume, is native to Namibia, Botswana and the Kalahari sandy regions of Southern Africa. It is part of the staple

food diet of the indigenous people of this region. Marama bean seeds and tubers are edible after roasting and cooking, respectively. The seeds have high protein, fatty acids and essential oil content while the tubers have high starch and protein content either comparable or surpassing conventional domesticated crops. The potential of this plant for malnutrition alleviation and bolstering food security in the region has been recorded and therefore marama bean needs to be developed to bring improvement in food security (Graham and Vance, 2003). Furthermore, the plant has other ethno-botanical uses.

The plant is widely used by the Khoisan and Bantu people of Southern Africa, including Namibia, Botswana, Angola and South Africa. The plant has a huge potential to address the problem of malnutrition and hunger in Namibia and other dry areas of Southern Africa. Unfortunately, marama bean is not yet cultivated but occurs in the wild (Figure 1), its seeds and tubers are gathered from the wild. Generally, the plant is low yielding and produces few seeds (one to two seeds per pod). So, collecting seed in the wild is not a sustainable way of reducing the malnutrition problems of this Southern African region. The plant needs to be developed into a crop and further developed into desirable cultivars that are high yielding and early maturing. Ethno-botanical uses are well practiced in the San communities and have recently been exposed to the scientific communities and companies, leading to registration of patents.

Now, there are already more than four registered patents in USA, Canada and other countries on marama and its products (Lezdey and Wachter, 1999). Is it a good development or a bad one? Is it morally correct to register biomedical or genetic patents? Are the San people going to benefit from the existing list of patents or not, if not why? Is the existing precedent of the *H. gordonii* a bad one or good one? Is patenting now an issue of rewarding luck rather than enterprise (Bobrow and Thomas, 2001)? Who has good answers to these questions? These are critical questions that need to be addressed. It feels like it is a good development to have marama patent, however, there is still need to be convinced that any financial and developmental benefits will be able to trickle fairly to the indigenous marginalized San groups of this region once full beneficiations are up and going. Certainly, while answers to the above questions are being developed, one does not wish to have a repeat of the legal battle as was the case with the *H. gordonii*.

CONCLUSION

Our considered view is that while answers to the above questions are being worked out fairly, the marama bean populations are declining due to over harvesting and other anthropogenic activities, and climate change is not making the situation better. Therefore, there is urgent



Figure 1. A wild patch of *Tylosema esculentum* (marama bean) with bright yellow flowers in the Omipanda area of Epukiro in Eastern Namibia.

need for marama domestication programme to conserve and utilize this genetic resource and to provide marama as an adaptable crop of choice in sandy and arid agro-environments. New crop variety development is an important area of ABS relevance, particularly considering the worldwide food crisis that is currently striking the globe. Development partners are urged not to develop fatigue in this matter, otherwise the wish to achieve some of the millennium development goals like hunger and poverty reduction will remain unattained, yet the possibility and potential are great.

There is a definite need to develop ABS laws in the SADC region that will allow maximum benefits sharing and for poverty eradication and growth in the society. Without that enabling research and legal environment, it will be a huge task to ensure that the poor and marginalized people can benefit from these resources and knowledge that they have conserved since the beginning. Indeed, there are rogue corporate parties out there that are focussed to commit biopiracy and exploitation.

REFERENCES

- Bobrow M, Thomas SM (2001). Patents in the genetic age. *Nature*, 409: 763-64.
- Graham PH, Vance CP (2003). Legumes: importance and constraints to greater use. *Plant Physiol.* 131: 872-877.
- Keegan AB, Van Staden J (1981). *Tylosema esculentum*, a plant worthy of cultivation. *South Afr. J. Sci.* 77: 387-387.
- Lezdey J, Wachter A (1999). Dermatological and cosmetic compositions containing marama bean extract. United States Patent 5869063. <http://www.freepatentsonline.com/5869063.html>.
- Swiderska K (2001). Participation in policy-making for access and benefit-sharing: case studies and recommendations. *Bio-briefs No. 2*: 1-4.
- Wong C (2007). *Hoodia gordonii* Review. <http://altimedecine.about.com/od/popularhealthdiets/a/hoodia1>.
- Wynberg R, Schroeder D, Chennells R (2009). (editors). Forthcoming. *Indigenous Peoples, Consent and Benefit-sharing. Learning from the San-Hoodia Case*. Springer, Berlin