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Toward an Effective Indigenous Knowledge Protection Regime Case Study of South Africa

Margo A. Bagley



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CIGI Masthead

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About the Author

Margo A. Bagley is a senior fellow with CIGI's International Law Research Program, where she serves as a member of the traditional knowledge expert working group. At CIGI, she researches issues pertaining to the World Intellectual Property Organization's (WIPO's) draft Design Law Treaty and disclosure of origin requirements for traditional knowledge, genetic resources and traditional cultural expressions, as well as the implications of digital sequence information on genetic resources issues for the Nagoya Protocol's access and benefit sharing regime. Margo also leads case studies analyzing the instituted governance regime for traditional knowledge and genetic resources in South Africa and other countries.

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Margo holds a B.Sc. in chemical engineering from the University of Wisconsin-Madison and a J.D. from Emory, where she was a Robert W. Woodruff fellow.

About the Program

The International Law Research Program (ILRP) at CIGI is an integrated multidisciplinary research program that provides leading academics, government and private sector legal experts, as well as students from Canada and abroad, with the opportunity to contribute to advancements in international law.

The ILRP strives to be the world's leading international law research program, with recognized impact on how international law is brought to bear on significant global issues. The program's mission is to connect knowledge, policy and practice to build the international law framework — the globalized rule of law — to support international governance of the future. Its founding belief is that better international governance, including a strengthened international law framework, can improve the lives of people everywhere, increase prosperity, ensure global sustainability, address inequality, safeguard human rights and promote a more secure world.

The ILRP focuses on the areas of international law that are most important to global innovation, prosperity and sustainability: international economic law, international intellectual property law and international environmental law. In its research, the ILRP is attentive to the emerging interactions among international and transnational law, Indigenous law and constitutional law.

Acronyms and Abbreviations

ABS	access and benefit sharing
BABS	Bioprospecting, Access and Benefit-Sharing Regulations, 2008
CBD	Convention on Biological Diversity
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DST	Department of Science and Technology
IGC	Intergovernmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge and Folklore
IKS Bill	Protection, Promotion, Development and Management of Indigenous Knowledge Systems Bill, 2016
IP	intellectual property
IPLAA	Intellectual Property Laws Amendments Act, 2013
IRCCs	Internationally Recognized Certificates of Compliance
MAT	mutually agreed terms
NEMBA	National Environmental Management: Biodiversity Act, 2004
NGOs	non-governmental organizations
NIKMAS	National Indigenous Knowledge Management System
NIKSO	National Indigenous Knowledge Systems Office
NKSC	National KhoiSan Council
NRS	National Recordal System
PIC	prior informed consent
SASC	South African San Council
THC	Traditional Healers Committee
WIPO	World Intellectual Property Organization

Executive Summary

South Africa has a rich tradition of Indigenous knowledge covering uses of the country's abundant natural resources. South Africa's development of a multi-faceted framework for cultural and genetic resource protection in relation to Indigenous knowledge is a promising source of fruitful insights on the challenges and benefits of implementing such protections. As the first in a series of case studies featuring various models of traditional knowledge implementation in domestic legislation, this paper provides an overview of how South Africa is approaching the protection of traditional or Indigenous knowledge. A central aim of this series is to provide objective evidence and insight into national experiences that could serve to inform and support effective policy development in the field, without endorsing any particular national approach.

South Africa's regime for the protection of Indigenous knowledge has four primary features: bioprospecting regulation and economic development; an innovative Indigenous knowledge documentation system for defensive protection; positive protection through an as-yet-unimplemented *sui generis* initiative; and linkages with the intellectual property (IP) system. Examples of successful benefit-sharing arrangements are limited, but appear to be increasing, facilitated in part by organizations such as the Council for Scientific and Industrial Research (CSIR) that have been assisting interested Indigenous knowledge holder communities in translating their knowledge into engines of economic development. Importantly, government officials appear open to iterative improvement efforts to enhance the practical functioning of programs and adjustments of laws necessary to make the protection of Indigenous knowledge/Indigenous biological resources work in practice for Indigenous knowledge holders, users and South African society at large. Unfortunately, evaluation of the full efficacy of the system will not be possible until new legislation protecting Indigenous knowledge is fully adopted and implemented.

Aspects of the system already in place, however, pose challenges for both Indigenous knowledge holders and users, and the relevant issues are unlikely to be fully addressed for either group in the near term. For example, the daunting permitting

and Indigenous knowledge holder identification and negotiation processes, and the linkage of access and benefit-sharing (ABS) compliance with patent application processing, are particular challenges for users, and may diminish interest in South African resources to the economic detriment of both Indigenous communities and the burgeoning bioprospecting economy. Moreover, the benefits of protection are yet to be realized for the majority of Indigenous knowledge holders, and reaching the full economic potential for this sector will take both time and considerable focused effort to accomplish. Nevertheless, the many positive features of the evolving structure can serve as a credible and progressive model for other countries desirous of creating a protection regime for such valuable and impactful resources.

Introduction

Whether, to what extent, and how traditional knowledge¹ should be protected against misappropriation are questions on which views diverge significantly across the globe. Negotiations in the World Intellectual Property Organization's (WIPO's) Intergovernmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge and Folklore (IGC) are in their nineteenth year, with member states still far from agreement on the traditional knowledge protection draft text.² In the absence of an international consensus on traditional knowledge protection, individual countries, generally those rich in biodiversity and cultural resources, have

1 The phrases "traditional knowledge" and "Indigenous knowledge" can have different meanings, but are used interchangeably in many South African contexts and will be used interchangeably in this paper. See Rachel Wynberg et al, *South Africa's Bioprospecting, Access and Benefit-Sharing Regulatory Framework: Guidelines for Providers, Users and Regulators* (Pretoria: Department of Environmental Affairs, University of Cape Town, 2012) [Wynberg et al, *Guidelines*].

2 See WIPO, *The Protection of Traditional Knowledge: Draft Articles*, WIPO Doc WIPO/GRTKF/IC/37/4 (2018), online: <www.wipo.int/meetings/en/details.jsp?meeting_id=46445>. The significant number of bracketed terms and alternative formulations indicate the level of disagreement on the topic of traditional knowledge protection. See also Peter K Yu, "Intellectual Property Geographies" (2014) 6 WIPO J ("It is therefore no surprise that, after more than a decade and a half, the IGC still has not been able to develop formal instruments on genetic resources, traditional knowledge and traditional cultural expressions...the standard-setting challenges in this rather controversial area should not be underestimated" at 7).

begun developing and implementing protection regimes for traditional knowledge tailored to their distinct national contexts.³ These efforts are creating laboratories of legal experimentation, with the potential for rich insights into the kinds of mechanisms that can provide adequate protection for traditional knowledge while advancing myriad other domestic policy objectives relating to economic development, innovation, foreign direct investment and more.

The focus of this paper is South Africa, one of the most biodiverse countries in the world, with a rich tradition of Indigenous knowledge covering uses of the country's abundant natural resources.⁴ South Africa's development of a multi-faceted scheme for cultural and genetic resource protection covering Indigenous knowledge is an excellent source for fruitful insights on the challenges and benefits of implementing such protections.

The paper begins by describing the international and domestic frameworks relating to South Africa's protection of Indigenous knowledge, in particular in relation to implementation of the Convention on Biological Diversity (CBD)⁵ and its Nagoya Protocol.⁶ It then drills down into each of the four primary components of the protection scheme: bioprospecting and ABS regulation and economic development; Indigenous knowledge documentation for defensive protection; positive protection through a pending *sui generis* regime;

and IP system linkages. Along the way, the paper examines aspects of the system in practice, highlighting examples from South Africa's premier research institute, the CSIR. It also describes the role of Indigenous knowledge holders in the protection processes and explores the issue of what practical difference South Africa's protection regime is making, or is likely to make, in their communities. The paper concludes that countries contemplating creation of their own traditional knowledge protection regimes can find much of value in studying South Africa's approach.

Indigenous Knowledge Protection in South Africa: An Overview

According to one commentator, Indigenous knowledge is "the unique, traditional knowledge existing within and developed around specific conditions of women and men indigenous to a particular geographic area" that is "peculiar to the cultural system of such communities in a given locale."⁷ It "is stored in peoples' memories and activities and is expressed in stories, songs, folklore, proverbs, dances, myths, cultural values, beliefs, rituals, community laws, local language and taxonomy, agricultural practices, equipment, materials, plant species and animal breeds."⁸ It is also "shared and communicated orally, by specific example, and through culture."⁹ Importantly, it is neither inherently static nor old, rather "[i]t is intimately linked with a traditional economy and entails considerable innovation in its attempts

3 See Frantzeska Papadopoulou, *The Protection of Traditional Knowledge on Genetic Resources* (Cheltenham, UK: Edward Elgar, 2018) (lamenting the lack of "concrete structure" in international instruments to guide domestic protection efforts at 276).

4 See Wynberg et al, *Guidelines*, supra note 1 at 5 (citing South Africa as the third most biodiverse country). See also Louzel Lombard, "International Biological Diversity Day—why SA is the 3rd most biodiverse place on Earth", *traveller24* (23 May 2016), online: <www.traveller24.com/Explore/Green/international-biological-diversity-day-why-sa-is-the-3rd-most-biodiverse-place-on-earth-20160523>. See also UNDP & Global Environment Facility, *Conservation and Sustainable Use of Biodiversity on the South African Wild Coast*, PIMS 1767 (2005) ("South Africa is recognized as one of 17 megadiversity countries, mainly due to its extraordinary floristic diversity and the high level of endemism. South Africa occupies about 2% of the world's land area, but is home to nearly 10% of the world's plants (estimated at 23,420 species) and 7% of the reptiles, birds and mammals. Three of the world's 25 most threatened biodiversity hotspots are found within the country's boundaries...[and it] is home to almost 15% of known coastal and marine species" at 5).

5 *Convention on Biological Diversity*, 5 June 1992, 1760 UNTS 79, 31 ILM 818 (entered into force 29 December 1993) [CBD].

6 *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the 1992 Convention on Biological Diversity*, 29 October 2010 (entered into force 12 October 2014) [Nagoya Protocol].

7 Louise Grenier, *Working with Indigenous Knowledge: A Guide for Researchers* (Ottawa: International Development Research Centre, 1998) at 1–2, cited in George Sombe Mukuka, *Indigenous Knowledge Systems and Intellectual Property Laws in South Africa* (PhD Thesis, University of the Witwatersrand Faculty of Science, 2010) at 2–3, online: <<https://core.ac.uk/download/pdf/39667211.pdf>>.

8 *Ibid.*

9 *Ibid.*

to adapt to change.”¹⁰ South Africa’s pending legislation, the Protection, Promotion, Development and Management of Indigenous Knowledge Systems Bill (known as the Indigenous Knowledge Protection Bill)¹¹ defines Indigenous knowledge as “knowledge which has been developed within an Indigenous community and has been assimilated into the cultural and social identity of that community, and includes knowledge of a functional nature; knowledge of natural resources; and Indigenous cultural expressions.”¹² The communal nature of Indigenous knowledge creation means that it does not fit neatly into Western conceptions of subject matter eligible for IP protection. Moreover, biological resources, to which the Indigenous knowledge often relates, have often been viewed as “the common heritage of mankind,” free for unlimited appropriation and use without regard to ownership or sustainability. Yet the value of these resources and this knowledge is incalculable and, without adequate protection, both can be expected to continue to gradually disappear, to the detriment of our global society as a whole.

The International Framework

South Africa’s legal and policy approaches to Indigenous knowledge and Indigenous biological and genetic resource protection largely derives from the framework provided by the CBD and its Nagoya Protocol. The purpose of the CBD is to facilitate the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits generated by the use of genetic resources.¹³ It establishes that genetic resources should be viewed not as the common heritage of mankind, freely available to all, but instead as the property of sovereign nations who make access to them available under principles of prior informed consent (PIC), mutually agreed terms (MAT), and fair and equitable benefit sharing.¹⁴

The CBD also requires parties to “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge.”¹⁵ It also requires parties to encourage “the equitable sharing of the benefits arising from the utilization of such knowledge,” in accordance with national law.¹⁶ The CBD has 196 members and went into effect in 1993. South Africa signed the convention in 1993 and became a party in 1996.

In 2010, the parties to the CBD adopted the Nagoya Protocol on Access and Benefit Sharing to the Convention on Biological Diversity, which came into effect in 2014. The protocol was necessary because, while the CBD obligated parties to facilitate access to their genetic resources, and to fairly and equitably share benefits arising from the utilization of such resources with provider countries, it provided almost no detail on how ABS, PIC and MAT should be accomplished in practice. It is a binding agreement,¹⁷ and is “the instrument for implementation of the access and benefit sharing provisions” of the CBD.¹⁸

The Nagoya Protocol specifies that benefits arising from genetic resource utilization shall be shared in a fair and equitable way with the providing party on MAT,¹⁹ and requires all parties to, *inter alia*, ensure that only legally acquired genetic resources and associated traditional knowledge are utilized in their jurisdictions, to monitor user compliance via checkpoints, and to allow for ABS contract disputes to be resolved in court. It also provides for certain government-issued permits to serve as Internationally Recognized Certificates of Compliance (IRCCs); this is evidence that genetic resources and associated traditional knowledge have been accessed in accordance with

10 *Ibid.* See also John Harrington, “Kenya: Traditional Medicine and the Law”, Africa Research Institute (13 April 2016) (“traditional medicine practices are not fixed; they are constantly evolving. The knowledge is ‘traditional’ only in the way that it is transmitted” at para 1), online: <www.africaresearchinstitute.org/newsite/blog/kenya-traditional-medicine-and-the-law/>.

11 B68-2016, *Protection, Promotion, Development and Management of Indigenous Knowledge Systems Bill* (S Afr), 2016 [IKS Bill].

12 *Ibid* at c 1.

13 CBD, *supra* note 5, art 1.

14 *Ibid*, arts 3, 8, 15. See also Cynthia M Ho, “Biopiracy and Beyond: A Consideration of Socio-Cultural Conflicts with Global Patent Policies” (2006) 39 U Mich JL Ref 433 at 473.

15 CBD, *supra* note 5, art 8(j).

16 *Ibid.*

17 Conference of the Parties to the Convention on Biological Diversity, *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization*, Dec VI/24/A, UN Doc UNEP/CBD/COP/6/20 (2002), online: <www.cbd.int/decisions/?m=cop-06&d=24>.

18 *Nagoya Protocol*, *supra* note 6, art 4(4). See also Thomas Greiber et al, “An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing” (2012) IUCN Envtl Pol’y & L Paper No 83 (emphasis added).

19 *Nagoya Protocol*, *supra* note 6, arts 5, 7.

ABS/PIC/MAT.²⁰ While the protocol does address PIC/MAT/ABS for the utilization of traditional knowledge associated with genetic resources, the language is generally weaker than that relating to genetic resources alone.²¹ However, the protocol does oblige parties to endeavour to support Indigenous and local communities in activities that relate to fair and equitable benefit sharing and to “establish mechanisms to inform potential users of traditional knowledge associated with genetic resources about their obligations.”²²

One important result of the protocol was the creation of an ABS Clearing-House where interested parties can quickly and easily find information about the ABS laws of each member state, including who to contact (the ABS National Focal Point) in a particular country to obtain ABS/PIC/MAT information. It also is the repository for a list of IRCCs issued by member states to applicants.²³ South Africa ratified the protocol on January 10, 2013, and at the time of this writing had issued 24 IRCCs, most of them in 2018.²⁴

While implementing the CBD and the Nagoya Protocol, the South African approach goes significantly beyond both by regulating ABS/PIC/MAT for Indigenous biological resources, not just genetic resources. Indigenous biological resources are defined as including “any living or dead organism of an indigenous species, any genetic material or derivatives of such organisms, or any chemical compounds and products obtained through use of biotechnology that have been altered with genetic material or chemical compounds

found in indigenous species.”²⁵ By contrast, the CBD and Nagoya Protocol define genetic resources subject to PIC/MAT/ABS as “material of actual or potential value containing functional units of heredity.”²⁶ South Africa’s regulation of bioprospecting and ABS thus also ensnares some biotrade, which has proven problematic.²⁷ Another important difference between the CBD and South Africa’s approach is that under the CBD, ownership of genetic resources vests in the state. In South Africa, ownership of genetic and biological resources runs with ownership of the land on which the resources are found.²⁸

The South African Domestic Framework

South Africa’s cultural and genetic resource protection scheme has several components that, when fully implemented and operationalized, could operate together to achieve superior economic, cultural and sustainable outcomes in the implementation of the CBD and Nagoya Protocol, and, importantly, to provide protection for Indigenous knowledge and Indigenous biological resources.²⁹ The key components are:

→ bioprospecting and ABS laws and regulations for foreign and domestic users of Indigenous biological resources and associated Indigenous

20 *Ibid*, art 17.

21 See *ibid*, arts 5, 7, 16. For example, article 5 states that “benefits arising from the utilization of genetic resources...shall be shared in a fair and equitable way,” but only that “[e]ach Party shall take legislative, administrative or policy measures, as appropriate, in order that the benefits arising from the utilization of traditional knowledge associated with genetic resources are shared in a fair and equitable way” (emphasis added).

22 See *Nagoya Protocol*, *supra* note 6, art 12. Such a mandatory benefit-sharing provision for associated traditional knowledge was considered during the protocol negotiation, but did not make it into the final compromise text. See *Berne Declaration, Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization: Background and Analysis* (2013) at 20.

23 Access and Benefit-Sharing Clearing-House, “South Africa”, online: <<https://absch.cbd.int/countries/ZA>>.

24 *Ibid*. The increase in issued ICCs may indicate the approval system is becoming more efficient, demand for South African Indigenous biological resources is increasing, or both.

25 Wynberg et al, *Guidelines*, *supra* note 1 at 3.

26 See *CBD*, *supra* note 5, art 2.

27 See Rachel Wynberg, Sarah Laird, Jaci Van Niekerk & Witness Kozanayi, “Formalization of the Natural Product Trade in Southern Africa: Unintended Consequences and Policy Blurring in Biotrade and Bioprospecting” (2015) 28 *J Society & Nat Resources* 559 (noting, for example, that “[a]lthough the trade in *Pelargonium* raw material could be viewed as biotrade, rather than bioprospecting, the broad definition for ‘bioprospecting’ in the Biodiversity Act meant that the industry would be subject to the conditions of the national ABS legislative framework” at 568) [Wynberg et al, “Formalization”]. Biotrade is often thought of as trade in natural products, branded as such and sold with little to no value added. However, according to the United Nations Conference on Trade and Development (UNCTAD), biotrade is a broad term that “refers to those activities of collection, production, transformation, and commercialization of goods and services derived from native biodiversity under the criteria of environmental, social and economic sustainability” (UNCTAD, “About BioTrade”, online: <<https://unctad.org/en/Pages/DITC/Trade-and-Environment/BioTrade.aspx>>).

28 See Wynberg et al, *Guidelines*, *supra* note 1 at 11. See also Neil R Crouch et al, “South Africa’s bioprospecting, access and benefit-sharing legislation: Current realities, future complications, and a proposed alternative” (2008) 104 *SAJ Science* 355 at 357.

29 The South African regime is complex, and a full discussion of its many facets is beyond the scope of this paper. Nevertheless, this overview should provide a useful introduction to innovative initiatives in a system that could, when fully adopted and implemented, serve as a model for other countries contemplating Indigenous knowledge protection.

knowledge, administered by the Department of Environmental Affairs (DEA), with rights relating to Indigenous knowledge and Indigenous biological resources positively conferred on certain communities by the Constitution. This component has been in place since 2004 and, as a result, increasing numbers of bioprospecting permits are being secured relating to South African Indigenous biological resources and benefit-sharing agreements are being concluded, including several facilitated by the South African CSIR;

- the deployment of a traditional knowledge collection, documentation and publication system, through the creation of a National Indigenous Knowledge Systems Office (NIKSO), a new National Indigenous Knowledge Management System (NIKMAS) and a National Recordal System (NRS), all under the auspices of the Department of Science and Technology (DST);
- IP protection for Indigenous knowledge through a combination of selective implementation of the Intellectual Property Laws Amendment Act of 2013, and the introduction of substantive patent examination and a patent application disclosure of origin requirement, all under the Department of Trade and Industry's Companies and Intellectual Property Commission; and
- *sui generis* Indigenous knowledge protection through the Indigenous Knowledge Protection Bill, to be administered by the DST.

All four of these components comprise critical features of the protection scheme, although the IP and *sui generis* elements are still in the pre-implementation stage.³⁰ The approach reflects a concerted effort to remedy the prior lax regime that allowed so much of the country's valuable resources to be expropriated without

30 See the conclusion to this paper. A report by the ABS Capacity Development Initiative captures succinctly the challenges with the South African construct: "South Africa has made significant progress in developing the policy and legislative instruments necessary to guide and regulate the commercial or industrial exploitation of Indigenous biological/genetic resources and/or associated traditional knowledge for bioprospecting and/or biotrade in the country, but is faced with challenges with the application and implementation of these instruments, while at the same time stimulating the growth of this economic sub-sector in the country." ABS Capacity Development Initiative, *National Study on ABS Implementation in South Africa* (2014) at 1 (commissioned in conjunction with the government of South Africa) [ABS Initiative, *National Study*].

adequate compensation or recognition. As Neil Crouch and co-authors explain:

Historically, a lack of bioprospecting legislation and associated regulations has permitted almost unconstrained access to South African bioresources, with materials being harvested, sometimes in destructively excessive quantities, and being exported to research and development nodes abroad, for innovative value addition, and off-shore financial benefit. The consequence has been that the country as a whole, including traditional knowledge (TK)-holding communities and bioresource providers, have not benefited equitably from the commercial and other gains derived from local bioresource commercialization.³¹

The framework is considered highly important to South Africa and its economic and cultural future, as South Africa is home to approximately 10 percent of the world's plant, reptile, avian, mammalian and coastal marine species, and its people have a rich base of knowledge regarding traditional uses of these resources.³² Each of the components will be described in turn.

Bioprospecting, ABS, Indigenous Knowledge and Economic Development

Access to South Africa's Indigenous knowledge typically begins with bioprospecting, as such knowledge often relates to Indigenous biological resources. The process of obtaining permits to access those resources, along with permission from Indigenous knowledge holders, can be time-consuming, complex and fraught with difficulty. Nevertheless, signs of progress abound, with

31 Crouch, *supra* note 28 at 355.

32 See Wynberg et al, *Guidelines*, *supra* note 1 (noting that South Africa boasts "an incredible biological diversity of 10% of the world's plants, 7% of the world's reptiles, birds and mammals, 15% of known coastal marine species, and one entire floral kingdom within its borders" at v).

Figure 1: South African Bioprospecting Permit Requirements

ACTIVITY	TYPE OF PERMIT	RELEVANT LAW	ISSUING AUTHORITY
Nationally (in South Africa)			
Research other than bioprospecting conducted in South Africa	This does not need a bioprospecting permit, but may need a collection and/or research permit from the relevant authority	Exemption notice	Relevant province or government agency with jurisdiction or land ownership (e.g. SANParks, SANBI, Department of Public Works)
Bioprospecting (discovery phase)	None required – notification procedure	NEMBA and BABS Regulations	Notify Minister using prescribed form
Bioprospecting (commercialisation phase)	Bioprospecting permit	NEMBA and BABS Regulations	Minister
Internationally (outside South Africa)			
Export for research other than bioprospecting	Export permit	TOPS/CITES and BABS Regulations	MEC
Export for bioprospecting (discovery phase)	Discovery phase export permit	NEMBA and BABS Regulations	Minister
Export for bioprospecting (commercialisation phase)	Bioprospecting, biotrade, or integrated bioprospecting/biotrade permit	NEMBA and BABS Regulations	Minister

The Minister refers to the Minister of Water and Environmental Affairs. The MEC refers to the Member of the Executive Council of a province who is responsible for the conservation of biodiversity in that province.

Source: Wynberg et al, *Guidelines*, supra note 1 at 44. Used with permission of the DEA.

notable improvements under way in the permitting system, and the increasing development and use of community protocols for interacting with Indigenous knowledge holders, with the goal of enhancing economic development through proper exploitation of Indigenous knowledge and Indigenous biological resources. This goal is also being facilitated through the work of organizations such as the South African CSIR, which is playing a unique role in building community capacity to monetize the value of these important cultural and biological resources.

Bioprospecting Regulation

The National Environmental Management: Biodiversity Act, 2004 (NEMBA)³³ and the Bioprospecting, Access and Benefit-Sharing Regulations, 2008 (BABS Regulations), as amended by the BABS Amendment Regulations 2015, were promulgated by the South African government

to implement the CBD.³⁴ Both the NEMBA and the BABS Regulations are administered by the national DEA and create a rigorous approval process for persons interested in bioprospecting activities involving Indigenous biological resources and Indigenous knowledge.

As Figure 1 shows, bioprospecting is divided into two phases: a discovery phase and a commercialization phase. The discovery phase involves research on the potential of the resource to be of commercial value. The commercialization phase begins after identification of some commercial development potential in the resources.

33 *National Environmental Management: Biodiversity Act 2004* (S Afr), No 10 of 2004 [NEMBA]; *Bioprospecting, Access and Benefit-Sharing Regulations, 2008* (S Afr), No R 138 of 2008 [BABS Regulations].

34 A helpful and detailed history of South Africa's ABS system and its development is provided in Rachel Wynberg, "One step forward, two steps back? Implementing access and benefit-sharing legislation in South Africa" in Charles R McManis & Burton Ong, eds, *Routledge Handbook of Biodiversity and the Law* (New York: Routledge, 2017) at 199–205 [Wynberg, "One step forward"].

Permits are not required in the discovery phase for projects taking place in South Africa; only a notification to the DEA is sufficient. However, permits are required in order to access Indigenous biological resources for discovery phase projects taking place outside South Africa and also for commercialization phase projects, which include filing a patent application even before a product is on the market. Permits are also required for exporting Indigenous biological resources outside of South Africa for research of any kind, regardless of phase.³⁵ Penalties for non-compliance can be severe and include fines of up to 10 million ZAR (South African rand) or three times the commercial value of the activity, and imprisonment for up to 10 years.³⁶ A permit is not required to access Indigenous knowledge; however, PIC must still be obtained from the competent Indigenous knowledge holder(s) for use of the knowledge in research or commercialization projects.³⁷

PIC is required for widely available Indigenous knowledge as well as knowledge that is secret or closely held. As the *Guidelines* explain:

Traditional knowledge [under the Act and Regulations] relates to the discovery or use of indigenous biological resources. People who do not belong to the indigenous community that has developed or discovered this knowledge could also be aware of this knowledge through learning of it from books, articles, media, or interactions with community members. Traditional knowledge that is not exclusively known by the indigenous community...is commonly referred to as being in the “public domain.” However, the fact that this traditional knowledge is in the “public domain” does not imply that the indigenous community...no longer has any rights over it. On the contrary, any use of this knowledge for bioprospecting would require the

consent of the indigenous community which has developed or discovered it.³⁸

The choice of the phrase “public domain” in this context is not ideal, as that language is widely understood in the IP context to mean that the subject matter is no longer protected by exclusive rights under a particular regime (such as patent or copyright) in a given country.³⁹ A more accurate phrase would be “publicly available,” as much publicly available information is understood to still be subject to exclusive rights, such as the information disclosed in an issued, non-expired patent document within a particular territory.

The South African permitting scheme has generated complaints on both sides of the process. Some users of the system consider the permitting process “onerous,” and the regulations “impracticable and unnecessarily restrictive,” generating legal uncertainty for users of genetic resources, in broad-scale screening endeavours in particular.⁴⁰ As analyzed by Wynberg:

The seemingly inefficient permitting process has also emerged as a central concern. As of 2014, only 15 bioprospecting permits had been issued...by mid-2017 this had increased to 53...suggesting increased efficiencies in the system... Onerous permit requirements, for example, have led to the creation of monopolies in some instances (for those companies who do receive permits) with negative impacts on communities and other companies (who do not receive permits).⁴¹

On the other side, the DEA notes that applications may be incomplete or improperly filled out, causing processing delays.⁴² In recent years, the DEA has taken several steps to improve the process, including holding workshops and seminars on the system in various parts of the country, translating

35 The legislation excludes certain resources and activities from its purview, such as human genetic resources, exotic animals, plants or other organisms, non-commercial research conducted in South Africa, trade in commercial products purchased from a retailer and aquaculture activities for consumption purposes. *Ibid* at 60.

36 NEMBA, *supra* note 33; BABS Regulations, *supra* note 33. Non-compliance comprises not only failure to obtain a permit but also engaging in activities beyond the scope of the permit.

37 Wynberg et al, *Guidelines*, *supra* note 1 at 33–36.

38 *Ibid* at 13.

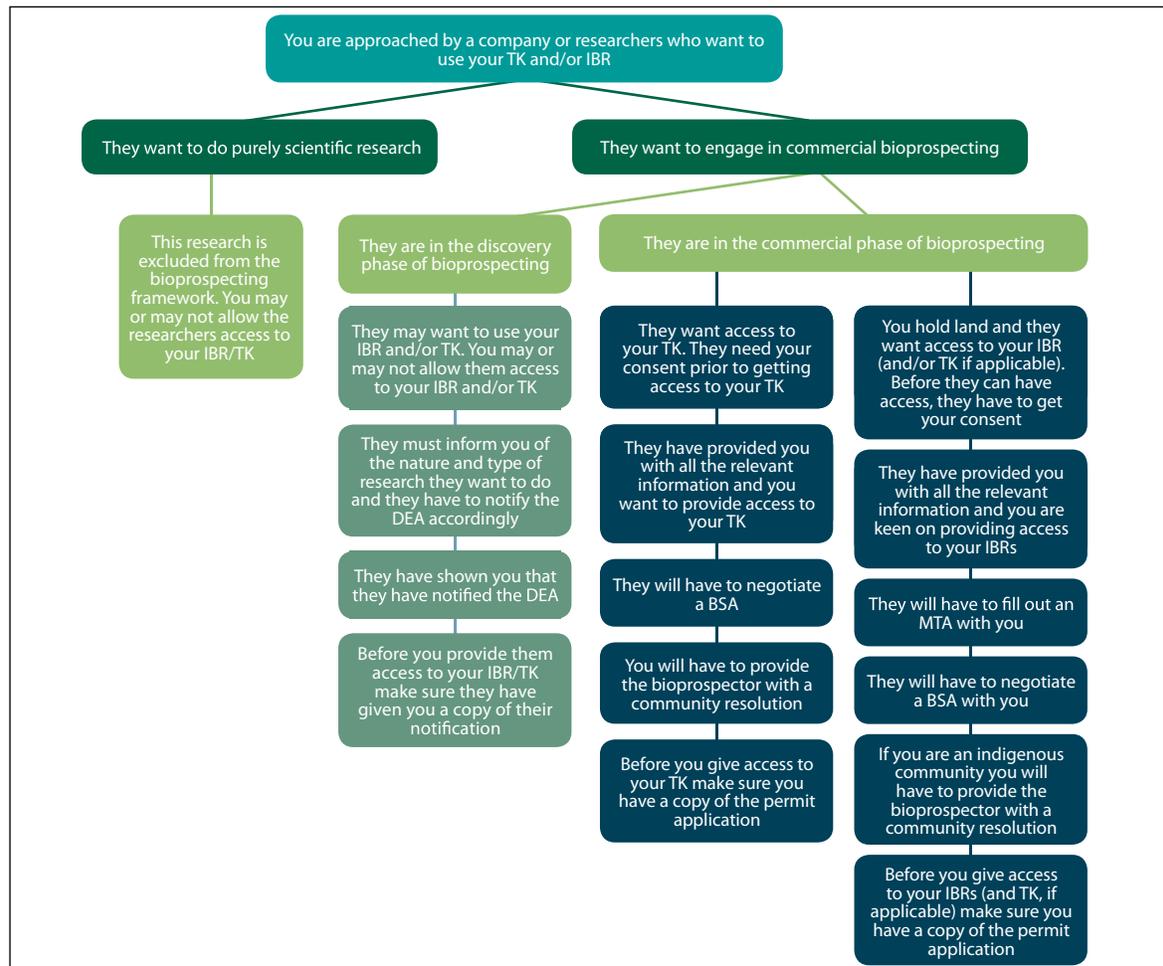
39 See generally Ruth Okediji, “Traditional Knowledge and the Public Domain” CIGI, CIGI Papers No 176 (15 June 2018) at 4, online: <www.cigionline.org/publications/traditional-knowledge-and-public-domain>. See also Chidi Oguamanam, “Wandering Footloose: Traditional Knowledge and the ‘Public Domain’ Revisited” (2018) 21:5-6 J World Intell Prop 1–20 (describing IP-based conceptions of the public domain that denigrate the notion of protection of traditional knowledge).

40 See e.g. Crouch et al, *supra* note 28 at 355.

41 Wynberg, “One step forward”, *supra* note 34 at 208.

42 See ABS Initiative, *National Study*, *supra* note 30.

Figure 2: ABS Process Overview



Source: Wynberg et al, *Guidelines*, *supra* note 1 at 20. Used with permission of the DEA.

the regulations and guidelines into all 11 official languages, creating a National ABS Clearing-House information portal, and commissioning a visually appealing and more accessible guide to the ABS system.⁴³ Nevertheless, the permitting process can still be daunting, in particular for small entities. Even for large entities, traversing

the requirements and obtaining a permit may take several months. According to DEA personnel, the number of permit applications had increased to 30 per year as of 2017, with processing times of 120 days or fewer if applications are complete.⁴⁴

Where bioprospecting involves use of Indigenous knowledge, the Indigenous biological resource permitting process may not be the biggest hurdle. Rather, identifying and obtaining consent from the relevant Indigenous knowledge holder(s) may be a far more complicated undertaking.

43 *Ibid* at 28. See Wynberg et al, *Guidelines*, *supra* note 1. Another helpful set of guidelines created by the African Union/New Partnership for Africa's Development through its Southern Africa Network for Biosciences, hosted by CSIR, is the *Traditional Knowledge and Plant Genetic Resources Guidelines* (2012), online: <http://nepadsanbio.org/sites/default/files/2017-01/Traditional_Knowledge_and_Plant_Genetic_Resources_Guidelines_-_NEPAD_SANBio.pdf>. These guidelines "focus on the role of major players in the management of IPRs, traditional knowledge and Plant Genetic Resources (PGRs) at different levels, including national and regional policymakers, legislators, and institutions," and elaborate "actions to be taken by institutions...since their day-to-day activities have a direct influence on access and use of traditional knowledge and plant genetic resources" at ix).

44 However, the process can be delayed if extensive consultations with Indigenous knowledge holders are required and/or the holders are difficult to identify.

Indigenous Knowledge Holder Interaction

Figure 2 instructs Indigenous knowledge holders on appropriate steps for interested parties to obtain access to their Indigenous knowledge and/or Indigenous biological resources (if land owners). The DEA assists Indigenous knowledge holders in negotiating PIC/ABS agreements upon request.⁴⁵ In addition, non-governmental organizations (NGOs), such as Natural Justice and the German GIZ ABS Capacity Development Initiative, also often work with Indigenous knowledge holder groups in developing community protocols, also known as bio-community protocols or BCPs.⁴⁶ These protocols are documents that specify how interested parties may interact with a community, and also identify the community's priorities. For example, the protocol being developed by and for the Khoi and San communities identifies priorities such as constitutional recognition,⁴⁷ land rights, women and youth, Indigenous language recognition,⁴⁸ and economic development, in addition to IP rights.⁴⁹

Such protocols are important for providing information that can facilitate legal certainty, efficiency and fair terms in PIC/MAT/ABS negotiations and help ensure that, as far as

possible, all relevant parties are consulted.⁵⁰ However, they can be challenging to develop; the KhoiSan community protocol process, for example, began in 2013 and is still ongoing.⁵¹ Part of the challenge is often the lack of knowledge pertaining to ABS issues, especially in areas with low levels of literacy. Natural Justice and the ABS Initiative are both working with community leaders, communications experts and others to develop and deploy ABS communication materials appropriate to a wide variety of Indigenous knowledge holder situations, to raise awareness and facilitate community protocol development.⁵²

Another ongoing challenge is the determination of who owns the Indigenous knowledge and thus has a right to share in the benefits it generates. Such ownership disputes may require government intervention to achieve resolution, as multiple communities may share the same knowledge (including communities across geographical borders), and the uncertainty over who potential users should approach can significantly delay the conclusion of a benefit-sharing agreement.⁵³ For example, the multinational corporation Schwabe Pharmaceuticals negotiated a benefit-sharing and product supply agreement with a Xhosa group in one part of South Africa regarding *Pelargonium sidoides*, a plant with a variety of traditional uses

45 *Ibid* at 22.

46 A community protocol is a charter developed by an Indigenous community, outlining customary laws and norms that provide guidelines to the government and potential bioprospectors on how to engage the community and the community's decision-making processes. Wynberg et al, *Guidelines*, *supra* note 1 at 21.

47 The Khoi and San are not constitutionally recognized as the Indigenous peoples of South Africa. They are, however, "the most marginalised ethnic groups in South Africa. They retain and continue to use their Indigenous San and Khoi languages, elements of their traditions, culture, customs, economy, knowledge systems and way of life." G Wachira Mukundi, *South Africa: Constitutional, Legislative and Administrative Provisions Concerning Indigenous Peoples*, Country Report of the Research Project by the International Labour Organization and the African Commission on Human and Peoples' Rights (Geneva: ILO Publications, 2009) at 3, online: <http://parcsa.co.za/docs/indigenous_people.pdf>.

48 For example, the Nama language of the Khoe is not one of the officially recognized languages in the country, although the Constitution does indicate that the state should take steps to "elevate the status" of and "advance use of" Indigenous languages such as Nama. *Constitution of the Republic of South Africa, 1996*, No 108 of 1996, ss 6(2), 6(5)(a)(ii).

49 Natural Justice & ABS Capacity Development Initiative, *Experiences and Lessons Learned from the Development and Implementation of Community Protocols and Procedures: Contribution to the First Assessment and Review of the Effectiveness of the Nagoya Protocol* (2017) at 10 [Natural Justice & ABS Initiative, *Experiences*], online: <www.cbd.int/abs/submissions/assessment/naturaljustice-abs-initiative-en.pdf>.

50 For example, if only traditional leaders are consulted, the actual holders of the Indigenous knowledge may not reap the benefits of their valuable contribution. See Wynberg et al, "Formalization", *supra* note 27.

51 Although the protocol is incomplete, the effort to create it is thought to have contributed to the successful rooibos benefit-sharing agreement with Nestlé, concluded in 2014, as well as achieving the recognition of the Khoi and San as holders of Indigenous knowledge for several economically valuable Indigenous biological resources in addition to rooibos, such as devil's claw, honeybush and buchu. *Ibid* at 11. The protocol is also evolving to include greater involvement of local KhoiSan communities. To be effective, community protocols should be tailored to a particular community's circumstances and objectives. However, several efforts are under way to create templates that could provide a foundation for more efficient protocol development.

52 See Natural Justice & ABS Capacity Development Initiative, *Expert Workshop: Developing ABS Communication Materials for Indigenous Peoples and Local Communities – Report* (2018), online: <www.abs-initiative.info/fileadmin/media/Events/2018/29_January_-_1_February_2018_Limuru_Kenya/Kenya_IPLC_Expert_Workshop_CEPA_Report_01-2018.pdf>.

53 See e.g. DEA, *Traditional Knowledge Associated with Rooibos and Honeybush Species in South Africa* (2014) (reporting on the identification of the San and Khoi peoples as originators of Indigenous knowledge associated with rooibos and honeybush and instructing affected industries to negotiate benefit-sharing agreements with the NKSC). See also Yu, *supra* note 2 (describing a variety of scenarios in which competing claims may arise); Roger Chennells, "Traditional Knowledge and Benefit Sharing After the Nagoya Protocol: Three Cases from South Africa" (2013) 9 *Int'l Env't & Development J* 169 [Chennells, "After Nagoya"].

that is also widely sold in Europe as a respiratory treatment by the name of Umckaloabo. Later, a group of opponents, including a different Xhosa community, launched a successful challenge to Schwabe's European patent applications relating to *Pelargonium sidoides*, leading, among other things, to the matter of rightful Indigenous knowledge ownership concerning the plant being addressed by the DEA in conjunction with both communities.⁵⁴

The Nagoya Protocol obligates parties to "endeavour to support" the development by Indigenous peoples and local communities of community protocols relating to "access to traditional knowledge associated with genetic resources and the fair and equitable sharing of benefits arising out of the utilization of such knowledge."⁵⁵ While the absence of a community protocol may not always be fatal to a negotiation, it can stymie and delay progress in various ways. For example, in response to a request for information on the effectiveness of the Nagoya Protocol in relation to the development of community protocols and fair and equitable benefit sharing, Natural Justice described the impact of the absence of a community protocol on one negotiation in this way:

While the process without a community protocol advanced quickly in the beginning, there were significant drawbacks at later stages....Engaging with community representatives that have no clear mandate for decision-making [and] signing contracts can create conflict in the community and even halt the entire process....Especially when financial resources are involved, roles and responsibilities of the stakeholders need to be clearly defined and widely accepted. Community protocols play a vital role in defining these roles...and thus contribute to more straightforward negotiations with communities that speak with one voice.⁵⁶

In addition, the protocols and outside assistance may help to rectify the negotiating imbalance that might otherwise exist between the Indigenous

knowledge holders and third parties, especially large foreign multinational corporations.⁵⁷

Economic Development

The biodiversity framework implemented by the DEA is strategically focused on achieving positive and sustainable economic outcomes through leveraging the value of Indigenous biological resources and associated Indigenous knowledge. The plan sees these resources as abundantly available yet underutilized tools for fuelling the engine of economic empowerment for individuals, communities and thus the South African economy overall.⁵⁸ There is a strong desire for these resources to not only be recognized as having value, but also to contribute meaningfully to GDP.⁵⁹

According to the South African Biodiversity Economic Strategy, the wildlife and bioprospecting industries contributed approximately 3 billion ZAR to GDP in 2013.⁶⁰ The goals of the strategy are simultaneously pecuniary and aspirational: "The strategy aims to contribute to the reduction of poverty in rural areas through the development and capitalisation of resources and hidden skills currently available in areas where the poorest South Africans live, thus incorporating marginalised communities into the greater biodiversity economy."⁶¹

Noting that the current bioprospecting industry has only reached approximately 20 percent of its potential, the strategy sets an industry growth

⁵⁷ *Ibid.*

⁵⁸ But see Graham Dutfield, "Traditional Knowledge, Intellectual Property and Pharmaceutical Innovation: What's Left to Discuss?" in Matthew David & Debora Halbert, eds, *The SAGE Handbook of Intellectual Property* (London, UK: SAGE Reference, 2015) (questioning, at least in the pharmaceutical context, the relevance of much traditional knowledge to current drug development approaches).

⁵⁹ This is, of course, one of several objectives. As Wynberg et al note: "[E]fforts to formalize the natural product sector have often grown from the lofty goals of promoting environmental sustainability and equity for producers, and the more prosaic intention of generating public revenues, or getting a cut for the state of what are perceived to be profitable activities" ("Formalization", *supra* note 27 at 560).

⁶⁰ See ABS Initiative, *National Study*, *supra* note 30, for some additional examples of ABS agreements covering South African Indigenous knowledge and biological resources. Excluded from the DEA's market sizing is a significant informal bioprospecting sector value chain in South Africa, largely relating to traditional medicines and estimated at a value of 2.9 billion ZAR per year. See DEA, *Bioprospecting Economy: Biodiversity at a Glance* [DEA, *Bioprospecting*], online: <www.environment.gov.za/projectsprogrammes/bioprospectingeconomy>.

⁶¹ DEA, *The Biodiversity Economic Strategy* (2016), online: <<http://thegamechanger.co.za/home/biodiversity/how-do-we-guarantee-growth/>>.

⁵⁴ Chennells, "After Nagoya", *supra* note 53 at 170.

⁵⁵ *Nagoya Protocol*, *supra* note 6, art 12(3).

⁵⁶ Natural Justice & ABS Initiative, *Experiences*, *supra* note 49 at 20.

rate goal of 10 percent per annum by 2030.⁶² The growth in demand for “natural,” “green” and “ethically sourced” consumer products in recent years may prove a boon to South Africa’s goals for its bioprospecting economy.⁶³ However, the current lack of domestic capacity to engage in many of the sophisticated value-added raw material transformations that add profitability to finished products means that South Africa may be missing out on a significant portion of the higher profits that the country’s Indigenous biological resources may ultimately generate in foreign markets.⁶⁴

As noted earlier, an unusual feature of the South African system is that it goes beyond the minimum requirements of the Nagoya Protocol by providing protection to Indigenous biological resources in addition to genetic resources. This approach, for example, allowed for negotiation of the historic agreement between the National KhoiSan Council (NKSC) jointly with the South African San Council (SASC) and Nestlé regarding rooibos, one of the most economically lucrative Indigenous biological products in the country.

Aspalathus linearis, or rooibos (also known as red bush), a plant with antioxidant and other medicinal properties that is indigenous to western South Africa, was harvested and used for centuries by the Khoi and San peoples before knowledge of its many medicinal benefits became widely known. Traditional and more recent uses of rooibos include for digestive and skin ailments, and for anti-aging, nervous tension and anti-tumour

treatments.⁶⁵ In 2009, the NGO Berne Declaration (known as Public Eye since 2016) discovered that multinational conglomerate Nestlé had filed five patent applications relating to uses of rooibos and honeybush to treat inflammatory disorders, and for skin and hair-related products.⁶⁶ This news raised a biopiracy uproar that ultimately resulted in a benefit-sharing agreement between the company, the NKSC and the SASC, facilitated by the NGOs Natural Justice and the Berne Declaration, and with assistance from the DEA.⁶⁷ Nestlé has already made at least two payments into the Bioprospecting Trust Fund that have been distributed to the NKSC and the SASC pursuant to the agreement.⁶⁸

A critical part of the agreement process involved identifying and formally endorsing the Khoi and San as the rightful holders of rooibos Indigenous knowledge. The DEA commissioned a study on the origins of rooibos and honeybush Indigenous knowledge that confirmed that the San and Khoi were the first users of rooibos and the first people groups to live in the areas where the plants are endemic.⁶⁹ Nestlé and the SASC signed the benefit-sharing agreement shortly after release of the study results in early 2014 and the NKSC signed later that year, after the convening of a national conference regarding the agreement held with the 30 communities represented by the NKSC.⁷⁰

However, there are many other players in the South African rooibos industry, and, after years of effort to get other companies to the table,⁷¹ further negotiations are now under way to create

62 DEA, *National Biodiversity Economy Strategy* (2016), online: <www.environment.gov.za/sites/default/files/reports/nationalbiodiversityeconomystrategy.pdf>.

63 See DEA, *Bioprospecting*, *supra* note 60 (“Internationally the natural plant and organic sector is considered to be the fastest growing sector of the agribusiness industry. Growth in sales of nutritional products in the U.S. alone increased from US\$15 billion in 1999 to US\$23 billion in 2002”). See also Daniel F Robinson & Margaret Raven, “Identifying and Preventing Biopiracy in Australia: Patent Trends for Plants with Indigenous Australian Uses” (2017) 48 *Australian Geographer* 311 (“In the last 20 years, there has been an increasing commercial interest in exploring options for the use of native plants for food, food additives, botanical medicines, and related purposes.”)

64 See e.g. Rachel Wynberg, Judith Silveston & Cyril Lombard, “Value Adding in the Southern African Natural Products Sector: How Much Do Patents Matter?” in *The Economics of Intellectual Property in South Africa* (WIPO, 2009) (“South Africa and her neighbors have historically exported their biodiversity in the form of raw plant material, traded as bulk commodities with little or no processing, technological input or other value adding before export” at 19) [Wynberg, Silveston & Lombard, “Value Adding”].

65 Lesle Jansen, *Rooibos Restitution* (Natural Justice, 2017), online: <www.abs-initiative.info/fileadmin//media/Events/2017/6-10_March_2017__Dakar__Senegal/12_Jansen_Rooibos_Restitution.pdf>.

66 See Natural Justice, “Rooibos Robbery: A Story of Bioprospecting in South Africa” (video), online: <<http://naturaljustice.org/video/rooibos-robbery-a-story-of-bioprospecting-in-south-africa/>>.

67 This agreement between the NKSC, SASC and the Nestlé conglomerate, facilitated by Natural Justice, the Berne Declaration and others, is an excellent example of the beneficial negotiating assistance certain NGOs can provide to Indigenous knowledge holders.

68 See Jansen, *supra* note 65.

69 DEA, *Traditional Knowledge Associated with Rooibos and Honeybush Species in South Africa*, online: <www.polity.org.za/article/dea-report-of-the-study-conducted-on-the-traditional-knowledge-associated-with-the-rooibos-and-honeybush-species-in-sa-2015-05-19>.

70 See Jansen, *supra* note 65.

71 Rooibos industry players initially dismissed and denigrated the DEA report’s findings, but eventually entered negotiations with the NKSC. See Rachel Wynberg et al, “Formalization”, *supra* note 27.

an industry-wide ABS agreement that likely will subsume the Nestlé contract. Although rooibos tea would normally be viewed as a commodity, and its export as biotrade, it is an Indigenous biological resource and its use as a medicinal tea is based on a traditional use. As such, its utilization for commercial goods, including tea, medical products and cosmetics, is bioprospecting: “use of an Indigenous biological resource based upon traditional uses.” This means that the rooibos industry is engaged in the commercialization of rooibos, defined as “the multiplication of Indigenous biological resources through cultivation, propagation...or other means to develop and produce products, such as drugs...food flavors, fragrances, cosmetics, colours and extracts.”⁷²

While the new negotiations were originally intended primarily to benefit KhoiSan rooibos farmers in the Wupperthal, Cederberg region, that may be changing. Partially as a result of a report by the South African Human Rights Commission that, among other things, criticized the NKSC as insufficiently representative of all KhoiSan in the country,⁷³ new public consultations are in the process of being scheduled across South Africa to ensure that any industry-wide agreement has the necessary KhoiSan community PIC.

Not surprisingly, the broad definition of Indigenous biological resources covered by the bioprospecting law also has a downside. As described by Sarah Laird and Rachel Wynberg, the requirement of a bioprospecting permit for products widely viewed as commodities can wreak havoc on the fortunes of local harvesters and traders, with little or no additional benefits flowing to Indigenous knowledge holders. They cite the example of baobab oil, a South African biological resource that had been widely traded prior to the introduction of the bioprospecting regulations. As they explain:

The question of whether or not baobab oil falls into an ABS ‘category’ revolves largely around its utilisation. Some think it is a commodity, but others believe activity claims attached to the oil gives it ‘functional food’ or cosmetic status, thus triggering ABS requirements. At present, developing a baobab oil product in South Africa not only needs to meet a variety of measures and standards, but also requires a bioprospecting permit which is issued upon proof of benefit sharing and PIC. Any new R&D on the oil would require a renegotiation of ABS terms. These measures have failed to generate additional benefits for local groups, and instead have resulted in added bureaucracy for local harvesters and traders, as well as companies, some of whom have halted marketing of baobab products due to legal uncertainty.⁷⁴

The authors further note that “the best intentions for ABS policy-making can undermine rather than enhance local livelihoods if they are based on unrealistic views of harvesting, trade and markets.”⁷⁵

Both foreign and domestic entities seek bioprospecting permits from the DEA. Interestingly, the CSIR has successfully obtained several permits and is supporting several projects, in various stages of completion, that involve the commercialization of Indigenous knowledge or Indigenous biological resources from South Africa. As one of South Africa’s premier research institutions, and an entity that has received the third highest number of bioprospecting permits in South Africa,⁷⁶ CSIR’s path to successful permit and ABS outcomes merits a closer look.

72 See *BABS Regulations*, *supra* note 33, s 4(1)(b) [Commencement of GN R138: 1 April 2008], online: <www.unodc.org/res/cld/document/regulations-on-bio-prospecting-access-and-benefit-sharing-2008_html/REGULATIONS_ON_BIO-PROSPECTING_ACCESS_AND_BENEFIT-SHARING.pdf>. See also Jansen, *supra* note 65.

73 South African Human Rights Commission, *Report of the South African Human Rights Commission: National Hearing Relating to the Human Rights Situation of the Khoi-San in South Africa* (2016), online: <[www.sahrc.org.za/home/21/files/National%20Hearing%20Report%20on%20the%20Humn%20Rights%20of%20the%20Khoi-San%20-%2014%20March%202018%20\(003\).pdf](http://www.sahrc.org.za/home/21/files/National%20Hearing%20Report%20on%20the%20Humn%20Rights%20of%20the%20Khoi-San%20-%2014%20March%202018%20(003).pdf)>. Section 7.5.1 of the report recommended that “relevant departments must immediately initiate broad public consultations, no later than 3 months of the issuing of this report, with Indigenous communities with a view of addressing concerns over the composition and status of the National Khoi-San Council.”

74 Sarah Laird & Rachel Wynberg, “Access and Benefit Sharing in a Time of Scientific, Technological and Market Change: Essential Lessons for Policy-Makers” (2017) at 20, online: <www.researchgate.net/publication/316464344_Access_and_Benefit_Sharing_in_a_Time_of_Scientific_Technological_and_Market_Change_Essential_Lessons_for_Policy-Makers>.

75 *Ibid.*

76 See DEA, *Bioprospecting permits issued by the Minister of Environmental Affairs to date* (2018), online: <www.environment.gov.za/sites/default/files/docs/bioprospectingpermits_23july2018.pdf>.

South Africa's CSIR: Facilitating Indigenous Knowledge Commercialization and Benefit Sharing

CSIR is a parastatal organization established by the South African Parliament in 1945 as a science council, responsible for conducting multidisciplinary research and technology development. It receives approximately 40 percent of its funding from Parliament each year through the DST, and works with a range of educational and research institutions, private sector companies and local communities on projects across a range of scientific fields, including biosciences, health, energy, defence and the digital environment. The largest research organization on the African continent, CSIR employs approximately 2,000 science, engineering and technical staff, including more than 350 with doctoral degrees.⁷⁷

CSIR's earliest ABS interaction with Indigenous knowledge holders, involving *Hoodia gordonii*, a plant endemic to southern Africa, was problematic, with CSIR's handling of the matter widely criticized for a lack of legitimate, informed engagement with the San people regarding patenting, licensing and marketing of hoodia as an appetite suppressant.⁷⁸

The San have long used the hoodia plant to stave off hunger on long treks, and that knowledge has been widely available since at least the 1930s, before CBD obligations were in place.⁷⁹ CSIR researchers studied hoodia for many years and identified a key compound called P57 that showed clinical efficacy as an appetite suppressant.⁸⁰ After obtaining a patent on P57 in 1996, CSIR entered

licensing agreements to commercialize products, but did not engage in negotiations with the San before or during the patent and licensing processes. In fact, CSIR officials reportedly considered the San to be extinct.⁸¹ When the San learned of the patent in 2001, they challenged it and confronted CSIR regarding the lack of PIC in a dispute that generated significant media attention. Ultimately CSIR and the San reached a benefit-sharing agreement, completed in 2003, which specified that the San would receive six percent of the payments CSIR received in relation to hoodia.⁸² The hoodia debacle influenced both CSIR's reassessment of its approach to interacting with Indigenous knowledge holders, as well as aspects of South Africa's scheme for the protection of Indigenous knowledge and Indigenous biological resources.⁸³

Researchers at CSIR have incrementally developed a best practices approach to engaging with Indigenous knowledge holders, including identifying relevant communities and leaders within those communities, to facilitate equitable benefit sharing, often in conjunction with the DEA. CSIR representatives also focus on interacting with leaders and other community members in the manner appropriate to each specific community including, for example, wearing the proper attire and complying with other forms of respect that conform to the protocols of that particular community. The development of long-term, cooperative relationships is beneficial to both the communities and CSIR, and can streamline future negotiations over additional knowledge uses.

CSIR has secured several bioprospecting permits from the DEA, and has entered multiple benefit-sharing agreements involving Indigenous biological resources and related Indigenous knowledge.⁸⁴ CSIR also focuses on developing entrepreneurial and economic opportunities for Indigenous knowledge-holding communities to exploit sustainably the value inherent in various native plants with

77 See CSIR, online: <www.csir.co.za/facts-and-figures>.

78 See e.g. Chennells, "After Nagoya", *supra* note 53; Rachel Wynberg, "Hot Air Over Hoodia" (2010) *Seedling* 22 [Wynberg, "Hot Air"], online: <www.grain.org/article/entries/4047-hot-air-over-hoodia> (noting that Rachel Wynberg was the first person to publicize the CSIR hoodia patent and its link to the San after coming across it in 1997 and researching the plant's traditional uses); Rachel Wynberg, Doris Schroeder & Roger Chennells, *Indigenous Peoples, Consent and Benefit Sharing: Lessons from the San Hoodia Case* (Springer, 2009); WIPO Academy, Case Study: Hoodia Plant, (WIPO, 2008), online: <www.wipo.int/export/sites/www/academy/en/about/global_network/educational_materials/cs1_hoodia.pdf>.

79 See e.g. Viviana Munoz Tellez, "Recognising the traditional knowledge of the San people: The Hoodia case of benefit-sharing" (2006), online: <www.ipngos.org/NGO%20Briefings/Hoodia%20case%20of%20benefit%20sharing.pdf>.

80 *Ibid.* See also Chennells, "After Nagoya", *supra* note 53; Wynberg, "Hot Air", *supra* note 78.

81 Chennells, "After Nagoya", *supra* note 53.

82 *Ibid.*

83 See e.g. Munoz Tellez, *supra* note 79.

84 One of several promising bioprospecting endeavours that is the subject of research and patenting activity at CSIR involves extracts and compounds isolated from plants of the genus *Elephantorrhiza*, also known more commonly as eland's bean, elandswortel and so on, for treatment of benign prostatic hyperplasia, a major public health condition that affects many men over age 50, and 80 percent of men aged 70 to 80. See "Management and Treatment of Benign Prostatic Hyperplasia", US Patent No 9,061,023, PCT Patent No PCT/IB2008051330 (8 April 2008).

Indigenous knowledge-based uses. In addition, representatives meet at least annually with communities with whom CSIR has benefit-sharing agreements to explain the contents of the DEA-mandated progress reports under the agreements.

In the mid 1990s, the Traditional Healers Committee (THC), a group representing traditional health practitioners in all South African provinces except the Western Cape, approached CSIR officials with a tantalizing offer: they would share information regarding at least 20 different Indigenous biological resources with qualities having considerable economic potential, as part of a royalty-bearing benefit-sharing agreement. Indigenous medicinal plants, a subset of Indigenous biological resources, are used for health care or cultural practices by more than 70 percent of the South African population. In addition, the more than 200,000 traditional health practitioners in the country use upwards of 3,000 different species of Indigenous plants in their work.⁸⁵ Thus, it is not surprising that the information about various plants shared by the THC is bearing fruit. As illustrated by the following examples, CSIR's collaboration with the THC led to a benefit-sharing agreement, completed in 2003, covering traditional knowledge on multiple plants, as well as to CSIR obtaining bioprospecting permits for the most promising plants, conducting confirmatory research and sharing benefits in various forms with Indigenous knowledge holders and local communities.

Lippia Javanica

Probably the most successful of the CSIR ABS agreements based on the THC information relates to the *Lippia javanica* plant. Also known as lemon bush or fever tree, *Lippia javanica* is a hardy, fast-growing medicinal shrub that can be widely found in southern Africa. The bush produces several volatile oils, including linalool, myrcene and caryophyllene, and contains compounds that display antiseptic and anti-inflammatory activity. Traditionally, the oils have been used to repel insects and treat skin rashes, coughs and other bronchial complaints.

CSIR researchers confirmed the insect-repellent effects of *Lippia javanica* after being made aware of the oil's beneficial properties by the

THC. They found that tetrahydroperillic acid derived from the plant's oils displayed "marked, and in fact superior, insect and particularly mosquito repellent properties, and a prolonged activity, when compared to other mosquito repellent agents."⁸⁶ They also discovered that *Lippia javanica* from certain geographical areas contained higher concentrations of important active compounds than plants from other areas.

CSIR also obtained a South African patent on January 13, 1997, and CSIR personnel from the Office of Enterprise Development and Creation, with DST funding, established a community enterprise based on the commercial cultivation of *Lippia javanica* in Giyani, Limpopo Province. They trained community members in how to conserve and harvest the plants, distill the oil from stems and leaves of the plants, and provide quality control for the oil through the CSIR Biosciences Division. They also helped the community enterprise find an industry partner, Zollhaus International, to develop and commercialize an insect repellent candle from the discovery.

The community-owned project has created at least 35 jobs, providing employment for members of the Maswanganyi and Mabunda communities in Giyani. The community workers are involved in all parts of the commercialization process: plant cultivation and harvesting, oil distillation and candle making at the Giyani manufacturing centre, which has an output potential of 400,000 candles per year.⁸⁷ Benefits to the local community members include employment, technology transfer and proceeds from the sale of the oil to the candle manufacturer. Moreover, the benefit-sharing agreement between the THC and CSIR specifies that six percent of the royalty CSIR receives from its separate licence to the manufacturer,⁸⁸ relating to sales of the mosquito repellent candles sold under the "Fever Tree" brand, goes to the THC for distribution to the knowledge holder communities.

The project appears to be a positive example of government facilitation (DST, CSIR and the national biodiversity legislation) between industry (Zollhaus

85 See Johannes van Staden, "Ethnobotany in South Africa" (2008) 119 J Ethnopharmacology 329; Ben-Erik van Wyk, Bosch van Oudtshoorn & Nigel Gericke, *Medicinal Plants of South Africa* (Pretoria: Briza Publications, 2009).

86 South African Patent No ZA 95/5853.

87 Phakamani Xaba & Rosalie McVay, "The Lemon Bush", *Veld & Flora*, Botanical Society of South Africa (September 2010) at 132.

88 Although the terms of the licence agreement are confidential, the DEA has a copy of the licence agreement, as well as the benefit-sharing agreement, and audits CSIR's revenues annually to ensure compliance with both agreements.

International) and the Indigenous knowledge holding communities.⁸⁹ The Fever Tree line is expanding with new product extensions such as additional candle scents including sandalwood and vanilla, a liquid electric heater and scented liquid refills that can be used with other heater brands.⁹⁰

African Ginger

Another CSIR initiative based on THC information relates to *Siphonochilus aethiopicus*, or African ginger, a plant highly valued for its therapeutic properties, which include anti-inflammatory and immune-suppressing activity.⁹¹ Traditional uses include the treatment of a wide variety of ailments ranging from asthma to menstrual pain. Now CSIR, after generating new data and important pharmaceutical indications for African ginger in the treatment of asthma and other bronchial conditions (through research including animal studies), is soon to begin the first phase of clinical testing of the plant extract.⁹² Although African ginger is already a commercially successful crop in South Africa, it is hoped that if an African ginger product ultimately achieves the necessary regulatory marketing approvals for asthma, it will provide not only an important treatment for a life-threatening condition, but also significant value-added revenues that will be shared with Indigenous knowledge holder communities.

Molomo Monate

One of CSIR's most promising ABS agreements concerns *Sclerochiton ilicifolius*, more commonly

known as molomo monate,⁹³ a plant endemic to northeastern South Africa. The plant contains monatin, a non-caloric natural sweetener purported to have between 1,400 and 3,000 times the sweetening power of cane sugar.⁹⁴ Such an additive would be very appealing to manufacturers in the multi-billion dollar diet soft drink industry, among others.⁹⁵

CSIR researchers investigated the properties of the plant over many years, obtained patent protection,⁹⁶ and negotiated a licence agreement with US-based multinational food additive giant Cargill. In 2012, CSIR also procured one of the first bioprospecting permits granted by the DEA and identified the relevant Indigenous knowledge holding communities for benefit sharing. Cargill also obtained a bioprospecting permit from the DEA and is seeking patent protection on, among other things, beverage compositions containing monatin.⁹⁷ After a lengthy process including assistance from the DEA, CSIR was able to identify which communities were the rightful holders of Indigenous knowledge relating to the plant, and entered benefit-sharing agreements with the Seleka and Shongoane Indigenous communities of Lephalale in Limpopo Province. These agreements call for 10 percent of CSIR's milestone and royalty licensing income (five percent per community) to be paid into the Bioprospecting Trust Fund for distribution to the communities. In 2015, CSIR deposited 2.6 million ZAR to the fund, from milestone payments

89 CSIR, DST, Association of University Technology Management, "Technology Transfer: Moving University Research from the Laboratory to the Market to Make the World a Better Place" (video), online: <www.youtube.com/watch?time_continue=1&v=zaDjdsbh8mM>.

90 See Fever-Tree products, online: <www.fever-tree.co.za/products.php>.

91 Gerda Fouche, Schalk van Rooyen & Maria Teresa Faleschini, "Siphonochilus aethiopicus, a traditional remedy for the treatment of allergic asthma" (2013) 3 Intl J Genuine Traditional Medicine. See also RA Street & G Prinsloo, "Commercially Important Medicinal Plants of South Africa: A Review" (2013) 2013 J Chemistry, doi:org/10.1155/2013/205048 (identifying African ginger as "one of the most important medicinal species with a long history of traditional use and one of the most popular of all traditional medicinal plants of southern Africa").

92 Gerda Fouche, R Nthambeleni, Schalk van Rooyen & Jeremiah Senabe, "Siphonochilus aethiopicus, a novel herbal ingredient for the management of asthma and allergies" (2014) 80 Planta Medica, doi:10.1055/s-0034-1394771.

93 The phrase translates to "nice mouth" in the Sotho dialect. See Amanda Basson, "Local Plant Healthy Alternative to Sugar", *Northern News* (2 April 2016), online: <www.noordnuus.co.za/articles/news/36185/2016-04-02/local-plant-healthy-alternative-to-sugar>.

94 See Garreth Van Niekerk, "No-Carb African Plant Could be World's Healthiest Sweetener", *Huffington Post* (22 November 2017).

95 See Daniel Engber, "The Quest for a Natural Sugar Substitute", *The New York Times Magazine* (1 January 2014). The article does note, however, that critical technical challenges will need to be overcome for monatin to be a truly viable product, as it develops a particularly foul smell upon degradation.

96 See "Production of monatin stereoisomers", US Patent No 8076107 (1 October 2007), claiming a sweetening composition for food and beverages isolated from the roots of the *Sclerochiton ilicifolius* plant.

97 See "Natural sweetener and methods of manufacturing thereof", US Patent Application Publication No US 2005/0106305 A1 (4 February 2008).

made in 2004, 2006 and 2013, and the monies were distributed to the communities in 2016.⁹⁸

Not surprisingly, receiving monetary benefits can create opportunities and challenges. While some communities with CSIR benefit-sharing agreements have improved their standards of living, such as being able to adequately feed and educate their children (providing future opportunities), there may not be agreement on how the funds should be used, and there may be many claimants. For example, the 1.3 million ZAR received by the Shongoane had to be divided among nine villages.⁹⁹ Nevertheless, the possibility, and occasional reality, of communities being able to share in the benefits reaped from their Indigenous knowledge has the potential to transform, over time, the economic prospects for some portion of South African Indigenous knowledge holders.

CSIR and the Evolving ABS Landscape

CSIR also is leading the way in recognizing the need to renegotiate ABS agreements in view of changed conditions. When CSIR first negotiated its benefit-sharing agreement with the THC in 2003, which included both *Lippia javanica* and African ginger, there was no national bioprospecting law, there were no community protocols, and consequently no meetings took place with the actual communities that were also holders of knowledge regarding the covered plants. Moreover, funds generated pursuant to the agreement were not transferred to the national Bioprospecting Trust Fund (which did not exist at that time) as the law now requires, but instead were transferred to the THC.

Although the agreement later was amended to specify that funds would be deposited into the Bioprospecting Trust Fund, CSIR officials recognized the need to ensure that all relevant Indigenous knowledge holders were included and that the terms were fair and equitable in light of the bioprospecting legislation and the Nagoya Protocol. They also concluded that because the research and commercialization activities were in different stages and might be vastly

different for each plant species, separate benefit-sharing agreements should be negotiated for each disclosed Indigenous biological resource.

CSIR is now in the process of developing new ABS agreements for each species, setting up consultations to involve all relevant Indigenous knowledge holder communities. This scenario illustrates the value of the bioprospecting legislation in creating a structure that facilitates fair processes and legal certainty so that Indigenous knowledge holder communities can effectively participate in PIC/MAT/ABS processes concerning their Indigenous knowledge or Indigenous biological resources.

The importance of the role played by CSIR in facilitating economic development opportunities for Indigenous peoples and local communities cannot be overstated. CSIR can provide scientific validation of traditional knowledge benefits, IP acquisition, licensing support, assistance in identifying a commercial partner and more. These types of assistance efforts should not be seen as interfering with the independence and autonomy of the traditional knowledge holders, but rather supporting it. In fact, the assistance can be seen as analogous to the roles that small business incubators and accelerators, and even some aspects of the US Small Business Administration¹⁰⁰ and other such entities, play in facilitating entrepreneurial success for small and medium-sized enterprises.

The benefit-sharing agreement negotiated by the Khoi and San for rooibos, for example, is valuable and important, and the assistance of lawyers and NGOs in developing fair agreements is essential.¹⁰¹ However, it is not clear that community members are garnering any meaningful amount of additional revenue that engaging in value-added enterprises related to rooibos products generate. Rachel Wynberg, Judith Silveston and Cyril Lombard identify several factors contributing to low levels of value-adding activity, including “market access, buyer dominance, a lack of strategic alignment among producers, and insufficient technical and

98 See News24 Correspondent, “Limpopo Communities Get Royalties for Non-Carb Sweetener”, News24 (23 June 2015). See also CSIR, Press Release, “The CSIR Shares Milestone Payments with Two Lephalele Communities” (23 June 2015), online: <www.csir.co.za/csir-shares-milestone-payments-two-lephalale-communities>.

99 Tebogo Tlhako, “‘Molomo-Monate’ Funded,” *Mogol Post* (1 April 2016), online: <www.mogolpos.co.za/news/molomo-monate-funded/>.

100 See US Small Business Administration, online: <www.sba.gov>.

101 See Kabir Bavikatte, Susanne Heitmüller, Valérie Normand & Morten Walløe Tvedt, “How (Not) to Negotiate ABS Agreements” (2014) GIZ ABS Capacity Development Initiative at 16, online: <www.abs-initiative.info/fileadmin/media/Knowledge_Center/Publications/ABS_Agreement/How_not_to_negotiate_Access_and_Benefit_Agreements_20140711.pdf>.

financial capacity.”¹⁰² As the *Lippia javanica* example illustrates, having an entity such as CSIR engaged in the traditional knowledge exploitation process can be of immeasurable value in terms of increasing capacity and levelling the buyer-producer playing field. CSIR’s involvement may simply reflect a recognition that having deep knowledge or a good product is not enough to guarantee marketplace success and remuneration for small businesses/traditional knowledge holders. As such, allowing traditional knowledge-holding communities to avail themselves of additional fit-for-purpose resources can significantly increase their chances for socio-economic success and development.

Indigenous Knowledge Documentation and “Defensive” Protection

Arguably the most innovative feature of South Africa’s Indigenous knowledge protection system is the NRS. The NRS is an ambitious and massive undertaking to record, in various multimedia formats, Indigenous knowledge directly from the knowledge holders spread throughout the country. Designed by the DST as a “defensive anti-appropriation strategy,” the NRS is a key tool for implementing the 2004 South African Indigenous Knowledge Systems policy’s goals for recognizing, developing, affirming and protecting Indigenous knowledge.¹⁰³

Indigenous knowledge is normally transmitted orally, between generations. However, in many communities, such knowledge has been, or is in danger of being, lost due to migration patterns of young people moving from rural to urban areas seeking a better life.¹⁰⁴ This can lead to a generational disconnect with Indigenous practices, creating a lacuna the NRS seeks to fill.

The initial focus of the NRS is on African traditional medicine and Indigenous foods, with the possibility of expanding to other types of Indigenous knowledge over time.¹⁰⁵ The NRS is supported by the NIKMAS, a digital repository for the collected knowledge that will preserve and protect the information in a catalogued, searchable format, while allowing controlled dissemination according to strict criteria. CSIR and the NIKSO of the DST collaborated in the development of NIKMAS and the NRS.¹⁰⁶

There are four key steps in the NRS process. The first step is finding the knowledge holders. DST works with and through Indigenous Knowledge System Documentation Centres that are linked to communities across the country, to train and deploy an army of Indigenous knowledge recorders. These recorders are generally young people who are actually members of local communities in each province, who are tasked by DST with finding out who in their communities holds knowledge relevant to traditional medicine or food.¹⁰⁷ Next, the Indigenous knowledge recorders use photography, videography, audio, NIKMAS questionnaires and other tools to document the knowledge holders actually sharing the information. The recorders also verify the information with other community members (who may add to the knowledge being documented) to create a shared understanding of what will be included in NIKMAS.¹⁰⁸ Importantly, by using these various multimedia forms, the context for the Indigenous knowledge is retained, facilitating its preservation, utility and economic benefit potential to the community.

Third, the information is added to NIKMAS, along with relevant metadata such as the name of the knowledge holder(s), the geographical origin of the information, the Indigenous biological resource(s) to which it relates and additional updatable community information as desired.¹⁰⁹ Finally, the knowledge is classified and catalogued within the

102 Wynberg, Silveston & Lombard, “Value Adding”, *supra* note 64 at 18.

103 EP Amechi, “Leveraging Traditional Knowledge on the Medicinal Uses of Plants Within the Patent System: The Digitisation and Disclosure of Knowledge in South Africa” (2015) 18:1 Potchefstroom Electronic LJ 3072 at 3075. See also DST, Indigenous Knowledge Systems policy (2004), ch 1, online <www.dst.gov.za/images/pdfs/IKS_Policy%20PDF.pdf>.

104 See Anna Keune, “The National Recordal System” (video), online: <<https://vimeo.com/29857669>>.

105 See DST, “About NIKMAS”, online: <<https://nrs.dst.gov.za/about>>.

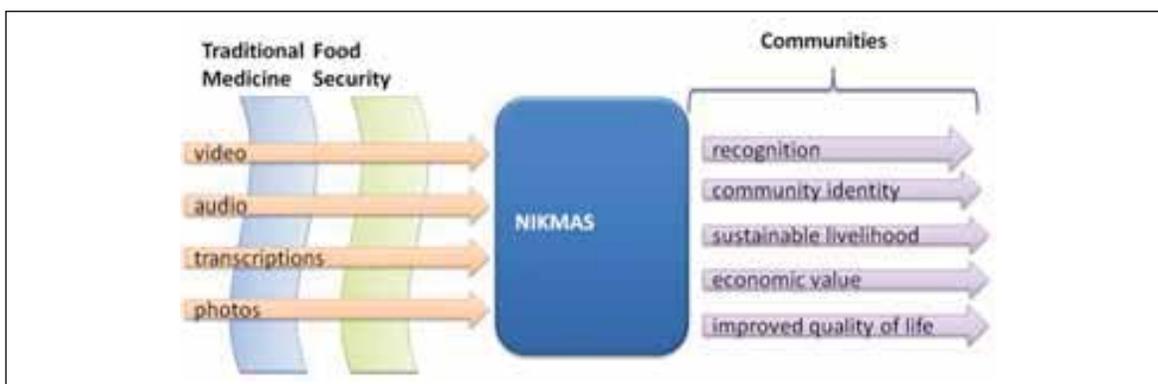
106 See Bandile Sikwane, “National Recordal System: Safeguarding the Future of Indigenous Knowledge through ICT” (2015) 8 CSIR ScienceScope 60.

107 Prior to such knowledge collection, a representative community body is contacted (or organized) to give consent for the collection of the Indigenous knowledge and to set parameters for its dissemination and use. See Riette Pretorius & Hennie Bezuidenhout, “National Recordal System IK Holder Catalogue Process” (2011), online: <<https://researchspace.csir.co.za/dspace/handle/10204/5749>>.

108 See Keune, *supra* note 104.

109 *Ibid.*

Figure 3: Rural Community Benefits of NRS



Source: Riette Pretorius & Hennie Bezuidenhout, “National Recordal System IK Holder Catalogue Process” (2011), online: <<https://researchspace.csir.co.za/dspace/handle/10204/5749>>. Used with permission.

NIKMAS system, including with international patent classification codes, and made publicly searchable, to the extent dissemination has been approved by the knowledge holders.¹¹⁰ Once Indigenous knowledge is classified and catalogued, it is also linked, where appropriate, to other documentary data regarding the Indigenous biological resources, such as pharmacopoeia entries for medicinal plants, scientific publications and protected species lists.¹¹¹

It also is designed to be a resource for patent examiners to avoid the erroneous granting of patents on non-novel subject matter, and also as a source for research leads (with necessary benefit-sharing agreements) for scientists.¹¹² As shown in Figure 4, there are four levels of access for NIKMAS. Community members and Indigenous knowledge holders can access their information and modify or update it as necessary, in conjunction with an audit chain for authentication. The general public can access and search non-confidential Indigenous knowledge in the repository. Patent offices and others who apply and complete PIC and benefit-sharing intent agreements, also have limited or restricted access to confidential information. To have full access to confidential information for a specific Indigenous knowledge entry, an individual scientist would need to complete a further application and vetting process for that specific entry.¹¹³

¹¹⁰ See Yonah Seleti, “The National Recordal System” (presentation), online: <www.wipo.int/edocs/mdocs/tk/en/wipo_ipk_ge_2_15/wipo_ipk_ge_2_15_presentation_yonah_seleti.pdf>.

¹¹¹ *Ibid.*

¹¹² *Ibid.*

¹¹³ See DST, “Application for Limited Confidential Access” [DST, “Application”], online: <<https://nrs.dst.gov.za/applications/statistics>>.

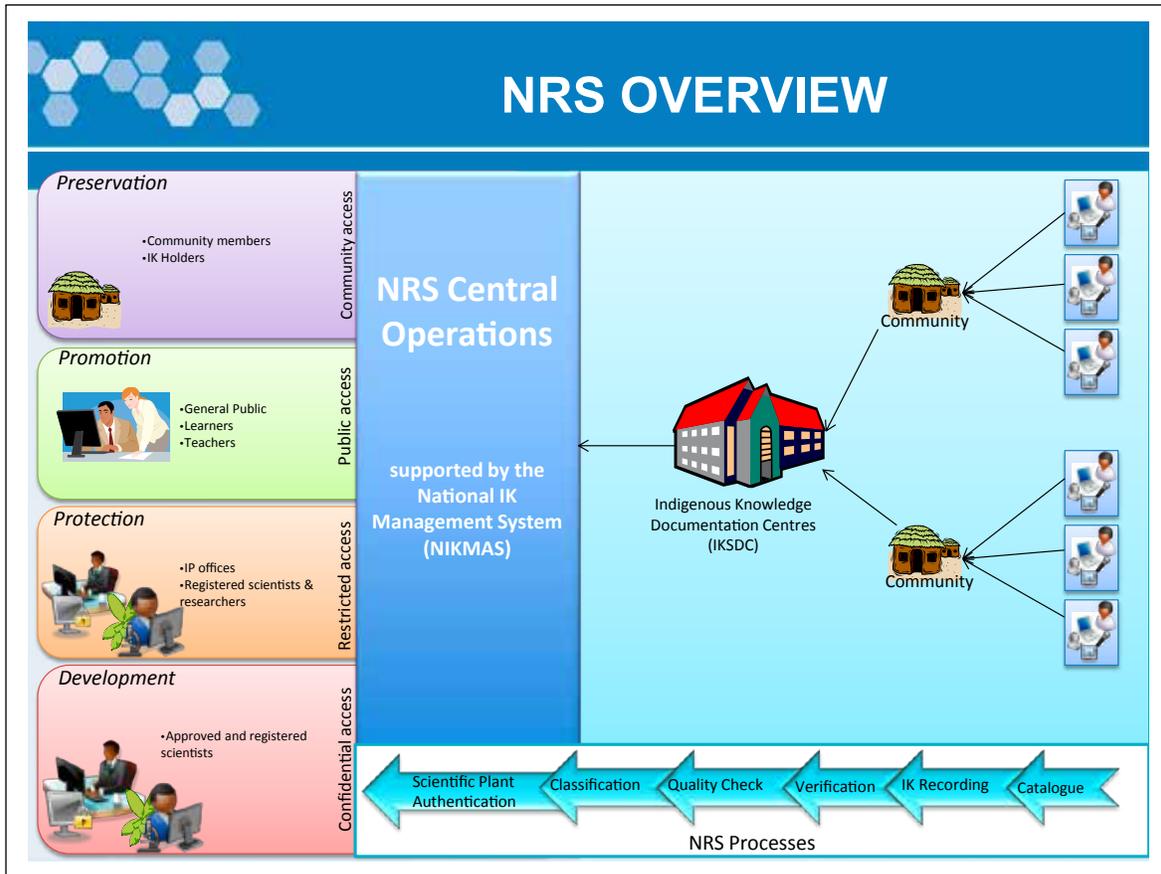
NRS/NIKMAS has many positive potential uses, not only as a way to keep valuable Indigenous knowledge alive, but also as a shared space in which communities can continue to evolve and expand their knowledge and put it to additional beneficial uses. It also can serve as an “Indigenous knowledge hub for government agencies and can facilitate the identification and location of knowledge holders for benefit sharing as part of the bioprospecting permitting process.”¹¹⁴ Importantly, the system is voluntary, so that communities that do not want their information to be made available in this type of repository need not have it included.

IP and “Positive” *Sui Generis* Indigenous Knowledge Protection

The misappropriation of Indigenous knowledge associated with Indigenous biological resources through the patent system, also known as biopiracy, is an area of particular concern in South Africa. The infamous hoodia and rooibos examples discussed above are only two of several instances where applicants sought or obtained patent protection on aspects of Indigenous biological resources without the consent or

¹¹⁴ See Kingsley Egbonu, “Explained: South Africa’s National Recordal System for Indigenous Knowledge”, *Afro-IP* (12 June 2013), online: <<http://afro-ip.blogspot.com/2013/06/explained-south-africas-national.html>>.

Figure 4: NRS Overview



Source: Seleti, *supra* note 110. Used with permission.

involvement of Indigenous knowledge holders.¹¹⁵ As a result, South Africa's Indigenous knowledge protection scheme includes linkages with the patent system through a disclosure of origin requirement and the introduction of substantive examination, in addition to new forms of positive protection for Indigenous knowledge.

Disclosure of Origin in Patent Applications

The key feature of the 2005 amendments to the South African Patents Act was the introduction of a requirement that applicants affirmatively disclose the origin of South African biological or genetic resources, or associated traditional knowledge, on

which the claimed invention was directly based.¹¹⁶ Applicants must submit Form P.26 when filing their application or within six months of the filing date. If no biological or genetic resources are disclosed on the form, the applicant must still affirmatively state that none were used, and making a false statement in this regard can result in revocation

¹¹⁵ Wynberg, Silveston & Lombard (*supra* note 64) identified more than 90 different patents in the European Patent Office database owned by applicants in a variety of countries, including Germany, Japan, Korea, South Africa and the United States (noting that "the Rooibos applications are predominantly for compositions exploiting properties of Rooibos and its extracts, with a small number of applications for new processes" at 45).

¹¹⁶ Amendments to South African Patents Act No 57 of 1978. The amendment provides, in part:
Every applicant who lodges an application for a patent accompanied by a complete specification shall, before acceptance of the application, lodge with the registrar a statement in the prescribed manner stating whether or not the invention for which protection is claimed is based on or derived from an Indigenous biological resource, genetic resource, or traditional knowledge or use.
(3B) The registrar shall call upon the applicant to furnish proof in the prescribed manner as to his or her title or authority to make use of the Indigenous biological resource, genetic resource, or of the traditional knowledge or use if an applicant lodges a statement that acknowledges that the invention for which protection is claimed is based on or derived from an Indigenous biological resource, genetic resource, or traditional knowledge or use.

of any patent issuing from the application in which the false statement was made.¹¹⁷

Since the 2005 amendments to the South African Patents Act went into effect in 2007, at least three patent applications have included positive statements that genetic resources and/or Indigenous knowledge from South Africa had been used in creating the inventions. All three applications were ultimately abandoned, after their filers failed to supply the necessary evidence of access and benefit-sharing agreements with the relevant community.¹¹⁸

While the patent office is not a formal Nagoya Protocol compliance checkpoint,¹¹⁹ such linking of a patent application disclosure requirement with evidence of ABS makes the patent office a de facto compliance checkpoint. This linkage is an aspect of the South African system criticized by patent applicants, as the timing of bioprospecting permit issuance may be delayed through no fault of the applicant, resulting in a delay or forfeiture of patent rights. A recent pharmaceutical industry association study of the Brazilian and Indian patent systems, which also link patent application processing with disclosure of ABS compliance, reported a one- to four-year delay in the patent application process due to the disclosure requirements.¹²⁰ Also as noted above, negotiating benefit-sharing agreements with all relevant Indigenous knowledge holders may be a protracted endeavour, not well-suited to

the pace of patent application filing.¹²¹ However, as regards the three applications mentioned above, the DEA apparently had no record of requests for bioprospecting permits from any of the applicants, indicating the requirement may, in fact, be furthering an important domestic policy objective.

Substantive Examination

South Africa currently has a purely formal examination system for patents, meaning that as long as a patent application conforms to formal requirements (for example, identifying information for the inventor, no missing application parts), a patent will issue. The claimed inventions are not examined for compliance with substantive conditions of patentability such as novelty, inventive step, subject matter eligibility and industrial applicability. Having a formalities-only system entails significantly lower costs for the government, as a skilled examining corps is not required.

However, it breeds abuse by applicants and is seen as resulting in the issuance of patents that would not have been granted had the application been substantively examined. Such patents can be used against innocent third parties, creating wasteful litigation or the closure of a market to worthy competitors, and can be especially problematic in relation to pharmaceutical patents.¹²² The new South African Intellectual Property Policy explicitly calls for the introduction of substantive examination to reduce the issuance of undeserved patents, which can place a significant toll on public and private resources, and the pharmaceutical arena in particular.¹²³ More than a dozen examiners have

117 The act amended section 61 by adding a subparagraph (g), such that it now reads:
(g) that the prescribed declaration lodged in respect of the application for the patent or the statement lodged in terms of section 30(3A) contains a false statement or representation which is material and which the patentee knew or ought reasonably to have known to be false at the time when the statement or representation was made.

118 Interview with IP office personnel.

119 The only official checkpoint notified by South Africa to the Nagoya Protocol ABS Clearinghouse is the DEA. See Access and Benefit-Sharing Clearing House, online: <<https://absch.cbd.int/search/nationalRecords?schema=absCheckpoint>>.

120 Willem Ruster (on behalf of Steward Redqueen), "Economic Impact of Disclosure Requirements in Patent Applications for 'Genetic Resources'-Based Innovation" (Lecture delivered at WIPO IGC36 side event for International Federation of Pharmaceutical Manufacturers and Associations & CropLife International, 26 June 2018) at ii, online: www.ifpma.org/events-2/ifpma-side-event-wipo-igc36/. The study authors note that "the results could include an (unwanted) bias. Although we reached out to all relevant public stakeholders, as yet we have not been able to interview all of the public stakeholders."

121 See e.g. Sarah Laird & Rachel Wynberg, "Biosciences at the Crossroads: Implementing the Nagoya Protocol on Access and Benefit Sharing in a Time of Scientific, Technological and Industry Change" (2012) CBD Secretariat ("By its nature the PIC process is slow and iterative, but the science is often fast-moving and the business environment competitive" at 10), online: <www.cbd.int/abs/doc/policy-brief-01-en.pdf>.

122 Beyond substantive examination, a number of additional changes to the South African patent system are being contemplated and implemented in the short, medium or long term. These initiatives include: reduced filing fees for small entities (which would likely include at least some Indigenous knowledge holders); the addition of patent information helpdesks in several of the free-standing offices (some located in shopping malls) where individuals can register companies and renew business licences; a WIPO Inventor Assistance Program through which eligible inventors can receive pro bono patent prosecution assistance, as well as the reintroduction of patent agent practitioners with scientific/technical, but not legal degrees, who could assist inventors with filing for and obtaining patents, in addition to patent attorneys.

123 Department of Trade and Industry, Intellectual Property Policy of the Republic of South Africa Phase 1 (2018) at 15–18.

already been hired and are being trained,¹²⁴ and more than twice that number are still to be hired.

One can expect the introduction of substantive examination to enhance opportunities for Indigenous knowledge holder benefit sharing in at least two ways. First, the statements made regarding use of genetic and biological resources and traditional knowledge in disclosure of origin forms likely will be the subject of even greater scrutiny under the substantive examination system.

Second, examiners will have access to, and will be expected to use, the NIKMAS system described above to help identify inventions that are not novel or that lack an inventive step because they are based on previously known and recorded Indigenous knowledge.¹²⁵ It seems likely that the knowledge of these substantive changes will give pause to inventors trying to file patents in South Africa without engaging in the necessary permitting and benefit-sharing negotiations with the DEA and Indigenous knowledge holders, respectively. However, it may also deter researchers from utilizing South African genetic or biological resources to develop useful products due to concerns regarding the difficulty of obtaining the necessary permits, negotiating the benefit-sharing agreements and navigating the patent process.

***Sui Generis* Indigenous Knowledge Protection Legislation**

The capstone to the South African Indigenous knowledge protection system is contained in a bill recently adopted by the South African Parliament.¹²⁶ The Indigenous Knowledge Protection Bill is the pivotal piece that, once signed by the president, will provide “positive” rather than merely “defensive” protection for South African Indigenous knowledge.

The recordation and controlled dissemination (to patent offices in particular) of Indigenous knowledge provided for by the NRS/NIKMAS system is considered a form of “defensive protection” in that it reduces the likelihood that

patents will be improperly issued on subject matter that is not new in light of recorded Indigenous knowledge.¹²⁷ However, defensive protection without positive protection is largely a fallacy, because while the Indigenous knowledge may not be patented, it still could be freely used by third parties and may become more widely known through the patent examination process.¹²⁸ By contrast, positive protection provides affirmative rights in relation to Indigenous knowledge, allowing its owners to exclude third parties from its use and to exploit the knowledge for the community’s economic benefit, while also punishing misappropriation.¹²⁹

The Indigenous Knowledge Protection Bill sets forth a fairly comprehensive framework for protecting, promoting, developing and managing registered Indigenous knowledge. It will formally establish NIKSO to create a registration office controlled by an Indigenous knowledge curator, to whom Indigenous community trustees must apply in order to register their knowledge and be entitled to protection. NIKSO must also maintain Indigenous knowledge registrations, facilitate redress and development of Indigenous knowledge, and protect and recognize Indigenous knowledge as the property of the individual communities.¹³⁰ NIKSO is tasked with “empowering indigenous communities through education and awareness campaigns to enable them to recognise and utilise indigenous knowledge for cultural and economic benefit;...assisting indigenous communities in the negotiation of benefit sharing agreements

124 While the European Patent Office has played the most significant role in the examiner training program, the US Patent and Trademark Office, Japan Patent Office and other patent offices have also contributed to the training.

125 See DST, “Application”, *supra* note 113. See also Amechi, *supra* note 103.

126 Adopted 12 September 2018. See South African Parliament, Proceedings on Bills: 2018 Fifth Session, Fifth Parliament (19 October 2018). See *IKS Bill*, *supra* note 11.

127 See e.g. WIPO IGC Secretariat, *Defensive Protection Measures Relating to Intellectual Property, Genetic Resources and Traditional Knowledge: An Update*, WIPO Doc WIPO/GRTKF/IC/6/8 (December 2003) (explaining that “[t]he term ‘defensive protection,’ when applied to traditional knowledge and genetic resources, refers to ‘measures aimed at preventing the acquisition of intellectual property rights over TK or genetic resources by parties other than the customary custodians of the knowledge’” at 1–2), online: <www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_6/wipo_grtkf_ic_6_8.pdf>. See also WIPO IGC Secretariat, *Overview of Activities and Outcomes of the Intergovernmental Committee*, WIPO Doc WIPO/GRTKF/IC/5/12 (April 2003) at paras 18, 28 [WIPO IGC Secretariat, *Overview*] online: <www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_5/wipo_grtkf_ic_5_12.pdf>.

128 See Margo A Bagley, “The Fallacy of Defensive Protection for Traditional Knowledge”, Washburn LJ [forthcoming in 2019].

129 See WIPO IGC Secretariat, *Overview*, *supra* note 127.

130 *IKS Bill*, *supra* note 11, ss 17–20. Another important innovation of the bill is the creation of a prior learning certification program for traditional healers. According to a DST official, criteria are being developed to allow such healers to have their knowledge (of topics such as midwifery, for example) certified through a committee-based oral examination process, based on comparing the healers’ knowledge with current education system requirements.

for the use of indigenous knowledge, ...and facilitating the negotiation of licenses between trustees and users.”¹³¹ This suggests that NIKSO will begin to perform some of the same functions that CSIR informally performs for Indigenous knowledge holders, but with more accountability.

Third parties seeking to use registered Indigenous knowledge must apply for a licence through NIKSO and enter into a benefit-sharing agreement with the trustee of the Indigenous knowledge holding community. The licensee must acknowledge the community by mentioning it or its geographical origin. The fact that researchers can access Indigenous knowledge through the NRS is an intriguing feature, which can be analogized to the postings of technologies available for licensing that many US university technology transfer offices advertise.¹³² Of course, this sort of Indigenous knowledge publication is only feasible in conjunction with the positive protection offered through the Indigenous Knowledge Protection Bill and/or Intellectual Property Laws Amendments Act, and care will need to be taken to ensure that only registered Indigenous knowledge is made accessible in this way.

The licence duration provisions of the Indigenous Knowledge Protection Bill are particularly intriguing. They specify that for functional Indigenous knowledge, the licensee is only required to pay a royalty for 20 years from the date of the agreement; for Indigenous cultural expressions, royalty payments end 50 years after the agreement. This approach addresses the concern of many users that if Indigenous knowledge is protected in perpetuity, royalty payments also would continue indefinitely. The bill creatively maintains the possible perpetual protection for the knowledge such that new users would need to obtain licences, but frees parties who enter licences from further payments after periods designed to match up with those for patents and copyrights covering similar subject matter.¹³³

131 *IKS Bill*, *supra* note 11, s 5.

132 See e.g. Association of University Technology Managers, “AUTM Innovation Marketplace” (“The AUTM Innovation Marketplace (AIM)... showcases university technologies that are available for licensing. With more than 19,000 technologies listed to-date, AIM now has more innovations listed than any portal of its kind”), online: <<https://autm.net/surveys-and-tools/databases/autm-innovation-marketplace/>>.

133 *IKS Bill*, *supra* note 11, s 26.

A prior draft of the enforcement provisions of the bill included criminal penalties for violations of Indigenous knowledge holder rights.¹³⁴ Such provisions were extremely controversial, and fortunately were deleted from the final text. However, it is possible that stronger enforcement mechanisms may be required, as fines are currently the only penalty for violation and may not be a sufficient deterrent against bad activity. Moreover, as the rights are territorial, Indigenous knowledge users who do not reside in South Africa may be beyond the reach of even these enforcement provisions.

The requirement that Indigenous knowledge be registered to be protected is understandable for evidentiary and notice reasons. Third parties should be able to avoid incurring liability by checking the register prior to using Indigenous knowledge and the register serves as constructive notice of the Indigenous knowledge rights in judicial and other proceedings. However, the requirement is problematic in view of the fact that Indigenous knowledge is generally maintained and transmitted orally, and holders may not have the awareness or resources to pursue registration, or they may be opposed to such documentation for practical or philosophical reasons. In addition, the reality is that having a right to exclude may be meaningless without the financial wherewithal to pursue redress against an alleged infringer who chooses not to obtain a licence.

One possible way to ameliorate the potential negative effects of the registration requirement would be to modify the law or create regulations to specify that Indigenous knowledge entered into the NIKMAS/NRS would be registered automatically. Such knowledge appears more likely to be accessed and used, so automatic registration would provide important protection for Indigenous knowledge holders consenting to participate in the NRS process.

Interestingly, the bill also provides protection for Indigenous knowledge originating outside of South Africa if reciprocal protection is available under the laws of that foreign jurisdiction. Moreover, for transboundary Indigenous knowledge, the bill requires NIKSO to assist the foreign government

134 *Ibid*, c 8.

and Indigenous communities in concluding an equitable benefit-sharing arrangement.¹³⁵

Shared Indigenous Knowledge

It is worth noting that the rooibos, *Lippia javonica* and monomo molate examples described above all involve Indigenous knowledge held by more than one community. Resolving ownership and benefit-sharing disputes relating to shared Indigenous knowledge can be difficult and contentious. As described, the rooibos benefit-sharing negotiations are on hold due to concerns regarding lack of inclusion of all relevant Khoi and San communities.

The Indigenous Knowledge Protection Bill includes provisions that explicitly address shared knowledge. In particular, the bill requires corrective amendment of benefit-sharing agreements that do not include all trustees of relevant Indigenous communities and requires remuneration under a benefit-sharing agreement to be apportioned equally among Indigenous knowledge holder trustees. It also requires NIKSO to intervene, in transnational situations where Indigenous knowledge is shared by communities within and outside of South Africa, and assist foreign authorities in developing benefit-sharing agreements that fairly apportion benefits among all relevant communities.¹³⁶

Intellectual Property Laws Amendment Act

The South African government's first attempt at providing positive protection for Indigenous knowledge was the 2013 Intellectual Property Laws Amendments Act (IPLAA). IPLAA provisions provide protection under the existing copyright, trademark, designs and performer's protections acts for traditional works, expressions, terms and

designs, and create a national trust fund, council and database for Indigenous knowledge.¹³⁷

The IPLAA was widely criticized, however, for not adequately recognizing the unique nature of Indigenous knowledge and the fact that adding an overlay to the existing IP system might not provide the most effective protection.¹³⁸ Another issue arose from the fact that the IPLAA was largely the project of the Department of Trade and Industry's Companies and Intellectual Property Commission, which comprises the Intellectual Property Office, while the new Indigenous Knowledge Protection Bill was developed by the DST. Both government entities having competency in this subject matter, but not being in agreement on the best way to protect Indigenous knowledge, has led to the IPLAA (while technically in force) not being implemented. In fact, on June 12, 2018, the Provincial Parliament of the Western Cape approved a negotiating mandate to support the adoption of the Indigenous Knowledge Protection Bill and proposed that the IPLAA "be repealed as it does not appear to be compatible" with the Indigenous Knowledge Protection Bill. However, the IPLAA repeal language was removed from the final mandate.¹³⁹

The Indigenous Knowledge Protection Bill provides protection for this same subject matter as the IPLAA, but under a *sui generis* regime managed by NIKSO under the DST. While the IPLAA was originally seen as possibly incompatible with the Indigenous Knowledge Protection Bill, it is now believed that by implementing only complementary provisions of the IPLAA, a more holistic protection system for Indigenous knowledge can be achieved than through the Indigenous Knowledge Protection Bill alone.¹⁴⁰

The Indigenous Knowledge Protection Bill is likely to be signed into law by the president very soon, after which it is expected to be implemented along with selected IPLAA provisions. The competency of the DEA, DST and Department of Trade and Industry, in relation to Indigenous

¹³⁵ *Ibid*, s 29.

¹³⁶ See *IKS Bill*, *supra* note 11, which provides in part: Transnational arrangements...

29(2) In instances where indigenous knowledge originates in one or more indigenous communities in foreign jurisdictions and in the Republic, NIKSO must assist the relevant foreign authorities and the indigenous community of the Republic to conclude an arrangement to share equitably in the proceeds accruing to the indigenous communities in terms of that benefit sharing agreement.

Multiple claims to indigenous knowledge

30(1) Where there are multiple claims to indigenous knowledge, any remuneration payable under a benefit sharing agreement must be apportioned equally among the trustees.

(2) Where an existing benefit sharing agreement in terms of subsection (1) does not include all the trustees of the relevant indigenous communities, the agreement must be amended accordingly.

¹³⁷ *Intellectual Property Laws Amendment Act*, 2013 (S Afr), No 28 of 2013.

¹³⁸ See Lee-Ann Tong, "Aligning the South African Intellectual Property System with Traditional Knowledge Protection" (2017) 12 *J Intell Prop L & Pol'y* 179 (describing and critiquing the act).

¹³⁹ Western Cape Provincial Parliament, *Negotiating Mandate* (12 June 2018), online: <http://pmg-assets.s3-website-eu-west-1.amazonaws.com/180613WC_Neg_Mandate_IKS_BIL.pdf>.

¹⁴⁰ Conversation with DST official.

knowledge and biological resources protection, is being re-evaluated with a view to creating a one-stop shop for holders and users of Indigenous knowledge and/or Indigenous biological resources. If successful, such an efficiency-based realignment of the current system has the potential to further establish the South African regime as a model of Indigenous knowledge protection worthy of possible emulation.

Conclusion

South Africa's commitment to Indigenous knowledge and Indigenous biological resources protection is evident in its efforts to take a multi-faceted, innovative approach to this complex and seemingly intractable challenge. The role of entities (such as CSIR) and structures (such as the creation of NIKSO) that can serve small business enhancement-type functions for traditional knowledge holders is particularly notable, as they can in essence provide capacity for Indigenous peoples and local communities to appropriately exploit traditional knowledge before such capacity is built. Importantly, government officials appear open to iterative improvement efforts to enhance the practical functioning of programs and adjustments of laws necessary to make Indigenous knowledge and Indigenous biological resources protection work in practice for holders, users and South African society at large.

It will take time for the South African Indigenous knowledge and Indigenous biological resources protection framework to create the kinds of substantial monetary benefits that allow recognition of such subject matter as real drivers of economic prosperity in the country. Nevertheless, important and perhaps unanticipated non-monetary benefits are already evident. For example, some Indigenous knowledge holders see the framework

as creating a new and long-awaited appreciation for both the knowledge and its holders.¹⁴¹

To be sure, the system retains significant problems and gaps for both Indigenous knowledge holders and users, and the relevant issues are unlikely to be fully addressed for either group in the near term. The daunting permitting and Indigenous knowledge holder identification and negotiation processes, and the linkage of ABS compliance with patent application processing, are particular challenges for users, and may diminish interest in South African resources to the economic detriment of both Indigenous communities and the burgeoning bioprospecting economy. Moreover, the benefits of protection are yet to be realized for the majority of Indigenous knowledge holders, and reaching the full economic potential for this sector will take both time and considerable focused effort to accomplish. Nevertheless, the many positive features of the structure currently in place and in progress are important initiatives for consideration by countries desirous of creating a protection regime for such valuable and impactful resources.

141 For example, Khoi Acting Chief William Peterson attributes the fact that the Nama language is now being taught in South African schools to the government's focus on Indigenous knowledge and Indigenous biological resources protection and their importance to the country's economic development. (Personal communication with Chief William Peterson.) Interestingly, the South African Constitution also requires the state to "take practical and positive measures to elevate the status and advance the use of" Indigenous languages. (*Constitution of the Republic of South Africa, 1996*, No 108 of 1996, ss 6(2), 6(5).)

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