CANADA: TIME TO TAKE ACCESS AND BENEFIT SHARING OVER GENETIC RESOURCES SERIOUSLY*

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INTRODUCTION

The diverse techniques for manipulating the genetic materials of living organisms and for exploring the complex chemistry of biological systems for food and agriculture, medicine and therapeutics, and for other complex indeterminate ends is described as biotechnology.[1] Generally, biotechnology is an umbrella term implicating diverse disciplinarily convergences ranging from molecular biology, genetics, genomics, pharmacogenomics, to other sub-sets and specific classifications such as agricultural biotechnology, plant biotechnology and marine biotechnology, to name a few.

One of the consequences of the prominence of biotechnology in the global knowledge economic order has been the shift in the direction of innovation from technological to life sciences inventions.[2] This new emphasis on the life sciences and the resulting rise in biotechnological innovation underscores the interconnectedness between biological processes and socio-cultural relationships, especially in regard to the present focus on genetic resources in indigenous and local communities. By some accounts, well over 70% of global biological or genetic resources are located in

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[1] Chidi Oguamanam, "Agro-biodiversity and Food Security: Biotechnology and Traditional Agricultural Practices at the Periphery of International Intellectual Property Regime Complex" [2007] Mich. St. L. Rev. 215 at 22; see also Mark J. Fecenko, *Biotechnology Law: Corporate-Commercial Practice* (Markham, Ont.: Butterworths, 2002) at 6-7.

[2] See generally Ikechi Mgbeoji and Byron Allen, "Patent First, Litigate Later! The Scramble for Speculative and Overly Broad Genetic Patents: Implications for Access to Health Care and Biomedical Research" (2003) 2 CJLT 83; see also Margo A. Bagley, "Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law" (2003) 45 Wm. & Mary L. Rev. 469.

indigenous and local communities across the globe. These communities are the centers of global biodiversity.[3]

Indigenous bio-cultural knowledge and insights relate to the immemorial but dynamic and generally informal experience of the members of indigenous and local communities (outside the Western industrialized societies) in dealings with the diverse genetic resources endemic to their ancestral homelands. In many ways, such epistemic orientation depict a worldview that is based on the sanctity of the ecological order as an aspect of indigenous and local communities environmental ethic and integral to their socio-economic survival. It also constitutes critical aspects of their self-determination. Indigenous knowledge and insights thereof are critical to the advancement of life sciences and biotechnology in our increasingly converging knowledge system.[4] Given the relationship of dependence between biotechnology, biodiversity, biological resources and associated knowledge in indigenous and local communities, the latter have become interested stakeholders not only in biodiversity conservation and the regulation of the biotechnology enterprise, but also in the allocation of their benefits. Efforts are currently underway to create a national and international framework for fair and equitable access to biological resources as well as a fair and equitable sharing of the benefit of innovations arising from dealings in genetic materials and associated indigenous knowledge under the rubric of access and benefit sharing (ABS).[5]

The recent international initiative for a global treaty regime on ABS presents a strategic opportunity for Canada to take the issue of ABS seriously. A tactical approach to ABS would recognize the immemorial custodial role of Aboriginal people in tending Canada's biodiversity and the contributions of their indigenous knowledge in genetic research and bio-related innovation. Such an approach would also position Canada optimally as a user and provider of genetic resources. It would place Canada in a position of leadership as a credible broker around the hardened schism in the politics

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[3] Chidi Oguamanam, *International Law and Indigenous Knowledge: Intellectual Property, Plant Biodiversity and Traditional Medicine* (Toronto: University of Toronto Press, 2006) at 23.

[4] For instance, by some accounts relying on indigenous knowledge, the prospects of developing a marketable pharmaceutical from 1000 plant samples increased three and a half times. The same trend appears in the domains of biotechnology and related research. See, for example, Curtis M. Horton, "Protecting Biodiversity and Cultural Diversity Under Intellectual Property Law: Toward a New International System" (1995) 10 J. Envtl. L. & Litig. 1 at 5; Michael J. Balick, "Ethnobotany and the Identification of Therapeutic Agents from the Rainforest" in Derek J. Chadwick and Joan Marsh, eds., *Bioactive Compounds from Plants – No. 154* (New York: John Wiley & Sons, 1990) at 22-39; Darrell A. Posey and Graham Dutfield, *Beyond Intellectual Property: Toward Traditional Resource Rights for Indigenous Peoples and Local Communities* (Ottawa: International Development Research Centre, 1996) at 95.

[5] The ABS process is happening at converging international regime domains, but principally under the auspices of the *United Nations Convention on Biological Diversity* (UNCBD), reprinted in 31 I.L.M. 818 (1992), online: CBD <http://www.cbd.int/convention/convention.shtml>.

of ABS. Thus far, the politics surrounding ABS have pitted developed countries as the users, against developing countries as the providers of genetic resources. Canada has the opportunity to be in a position to demonstrate that the positions of user and provider of genetic resources are not mutually exclusive. That understanding is necessary for progress on a credible global ABS regime.

ABS: A MATTER FOR FAIRNESS AND EQUITY

Why has the language and imperative for fairness and equity been added into the biodiversity conservation lexicon? Briefly, it arises from a simple recognition of the fusion between biological diversity and indigenous knowledge. Also, it is part of the convergence in knowledge systems, especially given regard to the importance and attraction of indigenous bio-cultural knowledge and biological resources for modern biotechnology. In another way, it is a response to the dichotomy between the concentration of biological resources in the global south, home of many indigenous and local communities on the one hand, and the repository of the scientific and industrial infrastructure for their exploitation in the industrialized or global north on the other hand. The application of biotechnology in dealing with biological resources in indigenous and local communities inherently involves contact with associated indigenous knowledge.[6] In practical terms, biotechnology has often been a site for the elaboration of the fluidity of boundaries across knowledge systems, especially in regard to aspects of western science and indigenous knowledge systems.[7]

THE CBD AND GLOBAL FRAMEWORK FOR ABS

Since 2000, the United Nations Convention on Biological Diversity embarked on a dedicated program through its Working Groups on ABS and on Article 8(j), with a view to a full realization and practical translation of the Convention's objectives, especially as they relate to ABS and indigenous knowledge, in the context of biodiversity conservation. After more than one half decade of CBD's initiatives on ABS, there has been a significant response to the subject of equitable ABS at many levels, particularly pursuant to the 2002 *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising Out of their Utilization*.[8]

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[6] Reliance on insights from indigenous bio-cultural knowledge is a major cost-cutting alternative to a scatter-gun approach to biotechnology-related research. See *supra* note 4 and accompanying text.

[7] See Chidi Oguamanam, "Patents and Traditional Medicine: Digital Capture, Creative Legal Interventions and the Dialectics of Knowledge Transformation" (2008) 15 Ind. J. Global Legal Stud. 489 [Oguamanam, "Digital Capture"]; Chidi Oguamanam, "Local Knowledge as Trapped Knowledge: Intellectual Property, Culture, Power and Politics" (2008) 11 J.W.I.P. 29 [Oguamanam, "Local Knowledge"].

[8] Secretariat of the Convention on Biological Diversity, *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising Out of their Utilization* (Montreal: Secretariat of the Convention on Biological Diversity, 2002), online: CBD <http://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf>.

The first level relates to the international arena where the CBD initiatives on ABS provide the impetus for convergences in multiple forums in which ABS is explored in varying degrees. For instance, at the WTO-TRIPS (Trade-Related Aspects of Intellectual Property Rights) Council, there is presently a proposal to entrench the ethics of Prior Informed Consent (PIC) and equitable benefit sharing in the TRIPS Agreement. Consequently, there is a push to amend the TRIPS Agreement to accommodate disclosure of origin of genetic resources and associated indigenous knowledge in patent applications. Sponsors of this amendment argue that it would ensure that TRIPS is aligned with the CBD objectives, as opposed to its current status of potentially undermining the CBD.[9] At the World Intellectual Property Organization (WIPO), similar sentiments are being expressed under two significant frameworks. The first is under the auspices of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC/GRTKF)[10] and the second is via the WIPO Patent Agenda,[11] specifically in the inchoate negotiation of an international patent law treaty for the harmonization of key aspects of patent law under the aegis of Substantive Patent Law Treaty (SPLT). Still under the international framework, the subject of ABS is also an integral part of a more enduring debate around farmers' rights,[12] which was reinvigorated following the 2001 FAO International Treaty on Plant Genetic Resources for Food and Agriculture

[9] This amendment is proposed as article 29bis of TRIPS and is sponsored by a group of developing countries, including Brazil, China, Cuba, India, Pakistan, Peru, Thailand, Tanzania, Ecuador and South Africa with the tacit support of the African regional bloc. See International Centre for Trade and Sustainable Development, "Disclosure of Origin Again on the TRIPS Council Agenda" (2007) 7 Bridges Trade BioRes (16th Feb), online: ICTSD <http://ictsd.org/i/news/biores/9089>.

[10] The IGC-GRTKF initiative, which came into effect in 2001, is WIPO's "forum for international policy debate and development of legal mechanisms and practical tools concerning the protection of traditional knowledge (TK) and traditional cultural expressions (folklore) against misappropriation and misuse, and the intellectual property (IP) aspects of access to and benefit-sharing in genetic resources." For history, details and the program of work of this initiative, see WIPO online: <http://www.wipo.int/tk/en>. On October 1, 2009, the WIPO General Assembly renewed the mandate of the IGC for the 2010-2011 biennium.

[11] The WIPO Patent Agenda refers to the 2001 WIPO policy initiative for the harmonization of the international patent system for ease of access, certainty and uniformity of the patent process in substantive, procedural and other regards: *Agenda for Development of the International Patent System: Memorandum of the Director General*, UNWIPO, 34th Year, 36th Mtg., WIPO Doc A/36/14, dated August 6, 2001, online: WIPO <http://www.wipo.int/edocs/mdocs/govbody/en/a_36/a_36_14.pdf>. See Sisule F. Musungu and Graham Dutfield, "Multilateral Agreements and a TRIPS-plus World: The World Intellectual Property Organisation – WIPO", (December 2003) Quaker United Nations Office, TRIPS Paper #3; see also Carlos Correa and Sisule F. Musungu, "The WIPO Patent Agenda: the Risks for Developing Countries", T.R.A.D.E Working Papers 12 (South Centre: Nov. 2002) online: South Centre <http://www.southcentre.org/index.php?option=com_content&task=view&id=76&Itemid=279>.

[12] See Chidi Oguamanam, "Intellectual Property Rights in Plant Genetic Resources: Farmers' Rights and Food Security of Indigenous and Local Communities" (2006) 11 Drake J. Agric. L. 273 [Oguamanam, "Farmer's Rights"].

(ITPGRFA)[13] and the activities of the Consultative Group on International Agricultural Research (CGIAR).[14]

The second level relates to the emergence of many regional and national regimes on ABS, especially following the 2002 CBD *Bonn Guidelines* on ABS.[15] In this regard, there are today at least four regional initiatives (African Union, Andean Pact, Central America, and the Nordic Region) on ABS.[16] There are 96 country specific legislative initiatives on ABS pursuant to the CBD.[17] The third level consists of mainly informal self-regulating initiatives by private corporations involved in bio-prospecting activities under diverse arrangements. Integral aspects of those arrangements include

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[13] Oguamanam, "Farmer's Rights" *ibid.* On the treaty, see the *International Treaty on Plant Genetic Resources for Food Agriculture*, see online: Food & Agriculture Organization <ftp://ftp.fao.org/ag/cgrfa/it/ITPGRe.pdf.> [ITPGRFA]

[14] Online: Consultive Group on International Agricultural Research <http://www.cgiar.org/index.html>.

[15] Text of *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization*, online: CBD <http://www.cbd.int/decision/cop/?id=7198>.

[16] For example, the *African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources* (OAU, Algeria, 2000) and the *ASEAN Framework Agreement on Access to Biological and Genetic Resources*, Draft Text, 24 February 2000, online: <http://www.grain.org/brl_files/asean-access-2000-en.pdf.> See Rafael T. Boza, "Protecting Andean Traditional Knowledge and Biodiversity Perspectives under the U.S.-Peru Trade Promotion Agreement" (2008) 16 Currents 76; Stephen R. Munzer and Phyllis Chen Simon, "Territory, Plants, and Land-Use Rights among the San of Southern Africa: A Case Study in Regional Biodiversity, Traditional Knowledge, and Intellectual Property" (2008-2009) 17 Wm. & Mary Bill Rts. J. 831; Kanchana Kariyawasam, "Access to Biological Resources and Benefit-Sharing: Exploring a Regional Mechanism to Implement the Convention on Biological Diversity (CBD) in SAARC Countries" (2007) 29 E.I.P.R. 325.

[17] See CBD Database on ABS measures, online: CBD <http://www.cbd.int/abs/measures.shtml>.

Material Transfer Agreements (MTAs),[18] the principles of PIC,[19] MAT and other benefit-sharing schemes.

TOWARD A TREATY REGIME ON ABS

In order to better coordinate the multiplicity of ABS regimes, the 2002 Johannesburg World Summit on Sustainable Development (WSSD)[20] underscored the imperative for a harmonized global regime on ABS. Building on that imperative, the 7th Conference of Parties Meeting (COP) of the CBD in 2004 mandated the Working Group on Access and Benefit Sharing (WG-ABS) "to elaborate and negotiate an international regime on access to genetic resources and benefit-sharing with the aims of adopting an instrument/ instruments to effectively implement the provisions in Article 15 and Article 8(j) of the Convention and the three objectives of the Convention."[21] Already, the United Nations has declared the year 2010 as the International Year of Biodiversity[22] (IYB) "to increase understanding of the vital role that biodiversity plays in sustaining life on Earth"[23] and the global efforts or strategies to combat loss of biodiversity. Given that ABS is one such strategy, the IYB signals a determination to step up efforts on ABS not only as a biodiversity conservation incentive but also as a way to support the sustainability of biotechnology activities. The prospect of a binding global treaty on ABS envisaged by the WSSD would mark a departure from the current global ABS framework which is driven by the voluntary 2002 *Bonn Guideline* on ABS.

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[18] Broadly, MTA governs the transfer of tangible research materials between the providers/ owners and parties involved in the use of the materials for research or other purposes. For the purpose of ABS, MTAs deal mainly with the transfer of biological materials, including genetic resources. MTAs constitute part of the protocols sanctioned by the *Bonn Guidelines, supra* note 8.

[19] PIC, a principle recognized under the *Bonn Guidelines*, refers generally to the requirement that researchers and other stakeholders seek the consent of the producers or custodians of biological resources, including genetic materials, premised on full disclosure of all relevant information regarding the use of the materials. In other contexts, PIC refers to the ethical principle of obtaining important information on the basis of full disclosure. For example, under the 2000 *Biosafety Protocol of the CBD* and the *Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*, PIC is a protocol for the exchange of information regarding sensitive, hazardous or toxic materials such as living modified organisms, unhealthy or environmentally dangerous chemicals and the like.

[20] The WSSD was held in Johannesburg, South Africa ten years after the *United Nations Convention on the Environment* in Rio (Rio Earth Summit); hence the WSSD was dubbed the Second Earth Summit or Rio+10. The WSSD is yet another milestone in the evaluation of global environmental policy since the 1972 *United Nations Convention on the Human Environment* in Stockholm. The significance of the WSSD decision on ABS resonates with the importance of ABS for global environmental strategy.

[21] See COP 7 decision VII/19 at D.1, online: CBD <http://www.cbd.int/decision/cop/?id=7756>; see also *supra* note 17 and accompanying text.

[22] See online: CBD <http://www.cbd.int/2010/welcome/>.

[23] See online: CBD < http://www.cbd.int/2010/about/>.

ABS: AS AN ACCOUNTABILITY INITIATIVE

Why are the leading industrialized countries of the world opposed to an ABS model for supervising their dealings in genetic resources and associated indigenous knowledge in the global South and remote indigenous and local communities? Without question, for these countries the ABS regime is an irritation to the extent that it is also an accountability regime that seeks to redress the imbalance of unidirectional transfers of genetic resources, wealth and knowledge of indigenous and local communities in the era of biotechnology. Leading biotechnology countries would prefer that the genetic resources and associated indigenous knowledge remain, as they had been, the common heritage of humanity, outside the realm of real or intellectual property claims and consequently freely accessible without inhibition. Ironically, at the same time as these countries desire access without inhibition, they deploy intellectual property, particularly the patent system, to exercise proprietary control over the outcome or benefits of their dealings with these freely obtained materials. In many narratives of this trend, which is generally depicted as 'biopiracy', the providers of genetic resources and associated indigenous knowledge are outraged that they are unable to afford the resulting drugs, seeds or agricultural products, as the case may be, from the genetic resources they have provided often in trust and good faith for the common good. This is more so where the resulting 'innovation' is readily associated with traditional bio-cultural knowledge of indigenous and local communities.

CANADA'S APPROACH TO ABS

Canada is one of the world's leading industrialized countries. Its support for a harmonized universal regime of stronger intellectual property rights is evident in its status as a member of the exclusive club of industrialized countries (the Quad)[24] that championed the establishment of the TRIPS Agreement. Contrary to the desire of developing countries, Canada aligned with the US, EU, Japan and Australia to shift the discussion on ABS from the TRIPS Council to the WIPO, thereby suppressing an opportunity to open up the WTO system (of which TRIPS is a part) to the subject of indigenous knowledge.[25] In the elaboration of the WIPO Patent Agenda, mentioned above, Canada has shown a lack of commitment regarding the requirement of evidence of PIC and disclosure of source and origins of genetic resources and associated knowledge in patent applications. The overall implication of Canada's disposition is that it considers its interests as better served as a user of genetic resources and a member of the biotechnology industrial complex. Consistent with its disposition at the international forums, at the domestic level, Canada's commitment to ABS is far from

[24] Comprising the United States, Japan, the European Union and Canada. See Peter Drahos and John Braithwaite, "Hegemony Based on Knowledge: The Role of Intellectual Property" (2003) 21 LIC 204 at 210.

[25] Many developed countries were inclined to have the issue of ABS resolved within the framework of TRIPS for at least two strategic reasons. The first reason was to open up TRIPS to the subject of indigenous knowledge it had totally ignored. The second was to make ABS the subject of possible sanctions under the WTO Dispute Settlement Resolution.

one of unequivocal support; even though it is a key party to the CBD and host of its secretariat. The unwritten but compelling interpretation of Canada's approach is that ABS is, at best, a developing country or indigenous people's issue.

Despite the rise in country-specific regimes on ABS pursuant to the CBD, currently in Canada there is no specific ABS framework; even though "some laws and regulations in different jurisdictions cover some elements of ABS (e.g., permitting for the collection of genetic resources in national parks), but again, no common framework exists."[26] However, since 2004 Canada has engaged in a number of intergovernmental and cross-sectoral consultations, workshops and diverse activities aimed at formulating a Canada-wide ABS policy. In 2005, Canada issued a document titled: *ABS Policies in Canada: Scoping the Questions and Issues*.[27] This was followed by a 2006 document titled *Guiding Principles and Features of ABS Policies in Canada*.[28] The latter document is designed to "serve as a foundation for moving the policy discussion forward within jurisdictions and with stakeholders."[29] Also, it is projected as "create[ing] a balance between environmental, economic, social and legal considerations."[30] To date, Canada appears to have merely broached the complex nature of the issues involved in ABS, especially as it relates to Aboriginal peoples and their knowledge systems, often through government sponsored *ad hoc* workshops designed to satisfy the Aboriginal stakeholder consultation component.

At the Canadian federal government level, there is already an emerging bureaucracy on ABS, pursuant to the CBD framework, in Environment Canada, through which Aboriginal stakeholders are required to navigate.[31] But in all of these, the subject of ABS has yet to translate or crystallize into any concrete or substantive legislative outcome in accordance with international and national trends. Even conceding the historical, political and jurisdictional complexity of the Canadian national context in regard to the issue of genetic resources, indigenous people and knowledge, this state of motion without movement on ABS in Canada reflects Canada's lackluster approach to the subject. A logical conclusion is that on the subject of the intersection

[26] UNEP Convention on Biological Diversity, 5th Mtg., UNEP/CBD/WG-ABS/5/INF/2 (2007), online: Convention on Biological Diversity <http://www.cbd.int/doc/meetings/abs/abswg-05/information/abswg-05-inf-02-en.pdf>.

[27] Federal/Provincial/Territorial Working Group on Access and Benefit Sharing of Genetic Resources, *ABS Policies in Canada: Scoping the Questions and Issues* (November 2005) online: Environment Canada <http://www.ec.gc.ca/apa-abs/documents/ABS_policies_e.pdf>.

[28] *Guiding Principles and Features of ABS Policies in Canada*, online: WIPO <http://www.wipo.int/export/sites/www/tk/en/laws/pdf/canada_abs.pdf>.

[29] UNEP, *supra* note 26 at 15.

[30] *Ibid.*

[31] For instance, under Environment Canada there is an ABS Secretariat which serves as Canada's National Focal Point (NFP) on ABS; there is also an office of Biosafety and ABS, Ecosystem and Biodiversity Priority Division and a CBD Office, in the Genetic Resources Unit.

between biodiversity, biotechnology and indigenous knowledge, Canada is beholden to its biotechnology industrial complex and has shied away from critically optimizing its peculiar position as not only a user but also as a provider of genetic resources and associated indigenous knowledge. As the international community commences a transition from the optional Bonn ABS guidelines toward a binding instrument on ABS, there is an opportunity for Canada to rearticulate itself and to revisit its current approach to ABS for a number of reasons.

A USER AND PROVIDER OF GENETIC RESOURCES

There are a number of bases upon which Canada can stake its claim as both a user and provider of genetic resources–a status that requires a more proactive approach to ABS. Without question, Canada's status as a user of genetic resources is a given in light of its profile as a global player in biotechnology and related industries. Here, I highlight a few of those reasons that speak to Canada as a provider of genetic resources without being exhaustive. First, compared to the United States, Japan and most countries of the European Union, Canada has a significant number of Aboriginal people[32] who are immemorial custodians of genetic resources and associated indigenous knowledge. Aboriginal people constitute almost 4% of Canada's population.[33] Along with other indigenous peoples of the Americas and the United States, Canada's Aboriginal people are custodians of a strong historical cultural heritage and distinct identity rooted in pre-colonial and pre-conquest experience. That experience continues to be negotiated in the post or neocolonial era as a complementary feature of Canada's national experience.

Second, Canada is the world's second largest country, after Russia. It sits on 9.9 million sq. km (3.8 million sq. miles) and, a fact unknown to many, is larger than the United States. An estimated 90% of Canadians live within 200km of the US border, leaving incredibly large expanses of wilderness and forest biodiversity to the north.[34] The diversity of Canada's Aboriginal civilization is, in part, a factor of Canada's diverse ecological setting and complex geographical composition. Ethnographers identify in Canada six of the ten geographical regions and cultural areas having shared cultural traits amongst indigenous peoples of the Americas. They are the arctic, subarctic, northwest coast, northeast woodlands, plains and plateau.[35] As historical custodians of

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[32] Comprising First Nations' descendants, Métis and Inuit.

[33] According to Statistics Canada, in the 2006 census, at 1,172,790 the total "Aboriginal identity population" was 3.8% of Canada's total population of 31, 241,030. Aboriginal People's Highlight Tables, 2006 Census, online: Statistics Canada <http://www12.statcan.ca/english/census06/data/highlights/aboriginal/>.

[34] Canada. (2010) The World Factbook, online: Central Intelligence Agency <https://www.cia.gov/library/publications/the-world-factbook/geos/ca.html> [World Fact Book].

[35] Canadian Museum of Civilization, Gate Way to Aboriginal Heritage, Cultural Areas Index, 2006, online: Museum of Civilization <http://www.civilization.ca/cmc/exhibitions/tresors/ethno/etb0170e.shtml>.

Canada's diverse geographic and ecological space, in terms of their cultural practices and ecological centered epistemic outlook, Aboriginal people are a critical and integral part of Canada's potential claim to being a user and provider of genetic resources and associated indigenous knowledge.

Third, Canada is an incredibly diverse country that is built largely on immigration. It is home to many cultures and peoples who bring with them a wealth of local knowledge from the most remote parts of the world and are capable of placing Canada in a position of strength within the cosmopolitan character of the new global knowledge economy.

Fourth, as "an affluent, high-tech industrial society,"[36] the resilience of Canada's economy lies in its diversity. For instance, in addition to exports of energy, machinery and equipment, Canada exports forestry, agricultural and fish products. Canada's ability to exploit its biotechnology potential (for example in forestry, agriculture and aquatic resources) derives from its diverse ecological landscape which is fused with the diversity of its Aboriginal communities and their knowledge. In a way, a significant part of Canada's biotechnology activities benefit directly or indirectly from Aboriginal plant, animal, marine, aquatic and forest genetic resources and associated knowledge. Thus, although Canada may not be a mega-biodiversity hotspot,[37] like the Caribbean Islands, the Amazon, the Himalayas or Madagascar, it has vast nature and biosphere reserves, wilderness areas, wetlands, a significant collection of higher plants, mammals, breeding birds, reptiles, amphibians and fish. Apart from historic Aboriginal land claims that incorporate some of these resources, indigenous knowledge also constitutes an important aspect of immemorial Aboriginal stewardship in sustaining Canada's biodiversity, and unique ecological, land and seascapes.

CONCLUSION

ABS: A Strategic Opportunity for Canada

As negotiations get underway toward an international treaty regime on ABS, Canada has an opportunity to exchange its lukewarm disposition for a proactive approach to the subject. Specifically, as I have noted in the foregoing paragraphs, there are empirical reasons in support of a change in the Canadian attitude to ABS. Perhaps equally important are the strategic reasons for such a change. These differing foundations of support are not mutually exclusive. The strategic reasons have national and global ramifications. In regard to the national ramification, it is palpable that by casting itself as mainly a biotechnology country and consequently a user rather than a provider of genetic resources and associated indigenous knowledge, Canada alienates its

[36] World Fact Book, *supra* note 34.

[37] Biodiversity hotspots are sites with very highly populated and delicate collections of endemic species. Scientists believe that such sites are home to nearly 60% of the world'splant, bird, mammal, reptile, and amphibian species. There are more than 30 such hotspots globally.

Aboriginal peoples. As well, Canada undermines its stock of biodiversity and wealth of genetic resources. Without question, so far, there is no unity of purpose between the Canadian official position on ABS and the expectations of its Aboriginal people. There is, however, plenty of distrust. Not only does Canada's approach demonstrate some insensitivity to the contributions of indigenous knowledge in the advancement of biotechnology, it also shows a lack of appreciation of the complex epistemic context for the practice of biotechnology.[38] Also, this lackluster approach to ABS demonstrates a failure to grasp the significance of Canada's extreme environments and complex ecological setting, including its rich forest resources. These factors make Canada an important repository of biodiversity and a significant site for bioprospecting and marine scientific knowledge and research. As the traditional notion of biodiversity adjusts to incorporate the realms of marine genetic resources (MGRs), Canada assumes a new significance in the biodiversity and ABS equation as a user and provider of genetic resources.

Overall, the exclusion of Aboriginal perspectives in the elaboration of ABS is problematic in regard to issues of both justice and of the valuing of diverse perspectives as an integral part of the Canadian national experience. Particularly, it represents a lost, but potentially salvageable, opportunity to strategically locate Canada as not only a biotechnologically strong country and, consequently, as a resource user but also as a provider of genetic resources and the associated indigenous knowledge of Canada's diverse Aboriginal peoples. A more accommodating Canadian approach to ABS has the potential to restore the confidence of its Aboriginal peoples by providing them the required opportunity, like their counterparts elsewhere, to stake their claims and contributions to the global basket of knowledge in an era of biotechnology. Such an approach will assist in optimizing Canada's potential on two critical counts: as user and producer of genetic resources which are serviced by a plural epistemic experience.

In regard to the global ramification, Canada's unique position as both a leader in the field of biotechnology and a country rich in diverse genetic resources and Aboriginal or indigenous knowledge systems, can be leveraged through a strategic policy on global ABS movements. A position that is both sympathetic to users and providers of genetic resources and associated knowledge is one more likely to earn the confidence and sympathy of many developing counties. The current stalemate on the issues of PIC and disclosure of source of origin of genetic resources in the several deliberations at the TRIPS Council, WIPO, CBD and elsewhere is occasioned, in part, by hardened alignments of actors along two extremes: as users or as providers of genetic resources. There is hardly a middle ground. As a user and provider, Canada is capable of presenting a measured perspective on ABS that represents the much needed middle ground for mediating negotiations on ABS for developed and developing country stakeholders.

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[38] For the relationship of dependence between biotechnology and local knowledge, see Oguamanam, "Farmer's Rights," *supra* note 12 at 275.