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Genetic Resources & Access and Benefit Sharing: Politics, Prospects and Opportunities for Canada after Nagoya

*Chidi Oguamanam**

Biotechnology is a core technological driver of the new knowledge economy. It is mainly controlled by developed countries and relies on biological resources and, by extension, biological diversity. Given the preponderance of biological resources in indigenous and local communities in the developing countries and elsewhere, the latter are often depicted as providers of genetic materials while developed countries are the users. Consequently, biotechnology is implicated as a factor in the unidirectional transfer of the benefits of biological resources from indigenous and local communities to the developed countries. To address this perceived equity gap in the new knowledge economy, the concept of Access and Benefit Sharing (ABS) is designed to ensure that providers and users of genetic resources conduct their affairs in a fair and equitable manner. Under the Convention on Biological Diversity (CBD), the emphasis of the ABS process is on plant and animal genetic resources. Highlighting Canada's unique and complex ecological profile, especially in the realms of Forest and Marine Genetic Resources, this paper argues that a holistic outlook on biological diversity that incorporates the two necessitates a re-thinking of the perceived disposition of Canada as a user, in contrast to a provider of genetic resources under the emerging global ABS process. Such a change in disposition presents an opportunity to factor the interest of Canada's Aboriginal peoples as integral to Canada's national interest in the nascent international ABS law and policy. It would call attention to the present reality in which the user/provider dichotomy is no longer mutually exclusive, and challenge the uncritical notion of the ecological bareness of the developed countries. Canada has a new opportunity to re-engage the subject of ABS through the ratification and committed

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domestication of recently concluded Nagoya ABS Protocol to the CBD.

La biotechnologie constitue un élément technologique clé dans notre nouvelle économie du savoir. Cette technologie est surtout contrôlée par les pays développés et nécessite des ressources biologiques, et par le fait même, de la biodiversité. Compte tenu de l'abondance de ressources biologiques dans les communautés autochtones et locales des pays en voie de développement et ailleurs, ceux-ci sont souvent présentés comme étant les fournisseurs de matériaux génétiques tandis que les pays développés sont perçus comme en étant les utilisateurs. Par conséquent, la biotechnologie est mise de l'avant comme étant une cause du transfert unidirectionnel des avantages que procurent les ressources biologiques des communautés autochtones et locales vers les pays développés. Afin de corriger cette perception de déséquilibre au sein de la nouvelle économie du savoir, on a établi le principe de l'accès aux ressources génétiques et le partage des avantages résultant de leur utilisation (APA) pour s'assurer que les fournisseurs et les utilisateurs de ressources génétiques se conduisent de façon juste et équitable. En vertu de la Convention sur la diversité biologique (CDB), le processus de l'APA doit mettre l'accent sur les ressources génétiques végétales et animales. Dans cet article, l'auteur souligne le profil écologique unique et complexe du Canada, surtout en matière de ressources génétiques marines et forestières. Il soutient également qu'une perspective holistique de la diversité biologique qui incorporerait les deux ressources nécessiterait une révision de la perception que le Canada est un pays utilisateur, plutôt que fournisseur, de ressources génétiques en vertu du nouveau processus global de l'APA. Un tel changement de perception permettrait de tenir compte des intérêts des peuples autochtones du Canada, comme faisant partie intégrale des intérêts canadiens nationaux au sein de la législation et des politiques naissantes en matière d'APA à l'échelle internationale. Cela permettrait d'attirer l'attention sur le fait qu'à l'heure actuelle, la dichotomie utilisateur-fournisseur n'est plus mutuellement exclusive et de remettre en question la notion formulée sans réserve selon laquelle les pays développés sont dépourvus de ressources écologiques. Le Canada a l'occasion de relancer la discussion entourant l'APA dans le cadre de la ratification et de l'engagement d'intégrer à la CDB le protocole récemment conclu de Nagoya sur l'APA.

1. INTRODUCTION

Biotechnology loosely refers to diverse techniques for manipulating the genetic materials of living organisms, for exploring the complex chemistry of biological systems for food and agriculture, medicine and therapeutics, and for other complex indeterminate ends.¹ Biotechnology is hardly a new phenomenon. However, the discovery of recombinant DNA in the 1970s and the ubiquitous impact of digi-

¹ See Chidi Oguamanam, "Agro-biodiversity and Food Security: Biotechnology and Traditional Agricultural Practices at the Periphery of International Intellectual Property Regime Complex" (2007) Michigan State Law Review 215 at 22. See also Mark J. Fecenko, *Biotechnology Law: Corporate and Commercial Practice* (Markham, Ont.: Butterworths, 2002) at 6-7.

tal technology (especially in the late 20th century) provided the fillip for the exponential rise, delivery and induction of biotechnology as a vital driver of the new global knowledge-based economic order.² Today, biotechnology is an umbrella term inherently implicating diverse disciplinarily convergences that range from molecular biology, genetics, genomics, proteomics, pharmacogenomics, to sub-sets and specific classifications including agricultural biotechnology, plant biotechnology and marine biotechnology.

One consequence of the prominence of biotechnology in the global knowledge economic order has been the shift in the direction of innovation from technical to life sciences inventions.³ This new emphasis on the life sciences and the resulting rise in biotechnological innovation underscores the interconnectedness between the modern economy, biological processes and socio-cultural relationships. For instance, biotechnological activities rely substantially on genetic materials or biological resources. In turn, the latter is sustained by biological diversity, a term describing the dynamic relationships and “variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”⁴

By some accounts well over 70 per cent of global biological or genetic resources are located in indigenous and local communities across the globe. These communities are the centres of global biodiversity.⁵ Analysts find a correlation between biological diversity and cultural diversity.⁶ Hence, centres of biological diversity are also centres of cultural and epistemic diversity.⁷ For many indigenous

² See Sheldon Krimsky & Roger P. Wrubel, *Agricultural Biotechnology and the Environment: Science, Policy and Social Issues* (Urbana: University of Illinois Press, 1996); Chidi Oguamanam, “Personalized Medicine and Complementary and Alternative Medicine: In Search of Common Grounds” (2009) 15:8 *Journal of Alternative and Complementary Medicine* 943 at 945. See also J.D. Watson, *The Double Helix: The Personal Account of the Discovery of the Structure of the DNA* (New York: W.W. Norton, 1980).

³ See generally Ikechi Mgbeoji & 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 *C.J.L.T.* 83. See also Margo A. Bagely, “Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law” (2003) 45 *Wm. & Mary L. Rev.* 469.

⁴ See Article 1 of the United Nations Convention on Biological Diversity, reprinted in 31 *I.L.M.* 818 (1992); available online: <<http://www.cbd.int/convention/convention.shtml>> (accessed December 7, 2009) [CBD].

⁵ See Chidi Oguamanam, *International Law and Indigenous Knowledge: Intellectual Property Plant Biodiversity and Traditional Medicine* (Toronto: University of Toronto Press, 2006) at 23.

⁶ See generally Stephen Brush & Doreen Stabinsky, eds., *Valuing Local Knowledge, Indigenous Peoples and Intellectual Property Rights* (Washington, D.C.: Island Press, 1996); Charles McManis, ed., *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge* (London: Earthscan, 2007).

⁷ See Brush & Stabinsky, *ibid.*; McManis, *ibid.*

and local communities, dealings with biological resources constitute a fundamental reality of their lived experience. These dealings are a site for the exploration of community knowledge and innovation systems, and for practical translations of the community's worldview and cultural expressions.⁸ Despite the excessive romanticism prevalent in many of the narratives of indigenous and local communities' relationship with biological resources, it is undeniable that such relationships are premised on the imperative for a sustainable ecological order. This order is the core of the indigenous environmental ethic. Consequently, in addition to highlighting the interconnectedness of biological processes and relationships, to the extent that it relates to dealings with ecological or biological resources, biotechnology represents an alternative environmental ethic, often facilitating tense epistemic interactions or convergences in regard, generally, to the subject of indigenous knowledge and its relationship with western science and technology.

Indigenous bio-cultural knowledge and insights are critical in the advancement of the life sciences and biotechnology in our increasingly converging knowledge system.⁹ 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. After six years, negotiations to create an international regime on fair and equitable access to biological resources, as well as 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) were concluded on October 29, 2010 at Nagoya, Japan. The ABS and related deliberations also occur at converging international regimes, but principally under the auspices of the United Nations Convention on Biological Diversity (CBD).¹⁰

⁸ See James D. Nations, "Deep Ecology Meets the Developing World" in E.O. Wilson, ed., *Biodiversity* (Washington, D.C.: National Academy Press, 1988) at 79. See also Marie Battiste & James Henderson, *Protecting Indigenous Knowledge and Heritage: A Global Challenge* (Saskatoon: Purich, 2000); Marie Battiste, ed., *Reclaiming Indigenous Voices and Vision* (Vancouver: UBC Press, 2000).

⁹ 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 very much obtains in the domains of biotechnology and related research. See, for example, Chris M. Horton, "Preserving Biological and Cultural Diversity Under Intellectual Property Law" (1995) 10 J. Envtl. L. & Litig. 1 at 5; Michael Balick, "Ethnography and Identification of Therapeutic Agents from the Rainforests" in P.J. Chadwick & J. Marsh, eds., *Bioactive Compounds from Plants* (New York: John Wiley & Sons, 1990) at 22-39; Darrel Posey & Graham Dutfield, *Beyond Intellectual Property: Toward Traditional Resources Rights for Indigenous and Local Communities* (Ottawa: IDRC, 1996) at 95.

¹⁰ See CBD, *supra* note 4. Also, the 2001 FAO International Treaty on Plant Genetic Resources on Food and Agriculture (ITPGRFA) has an ABS Component. See *infra* note 43. The same is true of the ongoing work of the WIPO's Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. See *infra* note 37.

This Article explores some of the critical challenges the ABS imperative presents for Canada, primarily at the international level with limited references to the opportunities which a new ABS regime presents in regard to the Canadian national situation. It identifies some perceived shortcomings in Canada's international approach to ABS, especially in regard to its current leaning which, arguably, is more in the direction of a user, as contrasted to a provider of biological or genetic resources.¹¹ Despite this inclination, Canada maintains the more nuanced official position "that it is inappropriate and factually incorrect to categorize some countries as 'providers' and others as 'users' of genetic resources," and rightly argues that "[d]epending on the instance, the needs and the resources being sought, all [countries] are both providers and users of the world's (sic) bio-diversity at different times."¹² Canada's bias as a user of genetic resources probably stems from its status as a leading biotechnology country. The consequence of a user-based approach to ABS undermines Canada's real and potential status as both a user and provider of genetic resources, and in applicable cases, as the custodian of associated indigenous knowledge. It is apparent that the current Canadian response to the global elaboration of ABS alienates its Aboriginal peoples and fails to account for the significance of their knowledge systems in an increasingly converging global knowledge framework. This article argues that a holistic approach and a more harmonized outlook on biodiversity and genetic resources would, in a counterintuitive way, justify a case for Canada as a significant provider and user of genetic resources. Specifically, in addition to its rich forest genetic resources (FGRs), recent scientific interest in marine genetic resources (MGRs) underscores the potential of Canada's biologically diverse but extreme environments as important sites for biodiversity and marine scientific research.

The current momentum on ABS on the heels of the Nagoya ABS Protocol presents a strategic opportunity for Canada to take the issue of ABS seriously. A tactical approach to ABS that is in accordance with the text and spirit of the CBD would recognize the immemorial custodial role of Aboriginal peoples in tending Canada's biodiversity and the contributions of their indigenous knowledge in genetic research and bio-related innovation. Aligned with a solid understanding of the interests of its Aboriginal peoples, Canada's contribution to an international ABS policy would be more legitimate and credible than it presently is. Such an approach would also position Canada optimally as a user and provider of genetic resources and obviate further mixed signals from Canada on this important subject. It would place Canada in a position of leadership as a credible broker around the hardened

¹¹ "Biological resources" is an umbrella term that refers to every conceivable component or material associated with all kinds of life forms, whereas "genetic resources" is limited to the genetic or hereditary components of life forms. However, for convenience, the two terms are used interchangeably here with a focus on their fundamental role in biodiversity and biotechnology.

¹² See WIPO document: WIPO/IP/05/INF/5 April 15, 2005, at 4 (annex) online: <http://www.wipo.int/edocs/mdocs/tk/en/wipo_ip_gr_05/wipo_ip_gr_05_inf_5.doc> (being a compilation of comments on the draft of examination of issues relating to the interrelationship of access to genetic resources and disclosure requirements in intellectual property rights application subsequent to an ad hoc intergovernmental meeting on genetic resources and disclosure requirements and accessed January 23, 2010).

schism between the global “North” and “South” in the politics of ABS. Thus far, that politics has pitted developed countries and their biotechnology industries as the users of genetic resources, against developing countries and their indigenous and local communities as the providers of genetic resources. Canada would be in a position to demonstrate that the position of user and provider of genetic resources is not mutually exclusive. This understanding is necessary for the interpretation and implementation of the recently adopted Nagoya ABS Protocol to the CBD.

2. PART I

(a) The ABS Imperative

Why has the language and imperative for “fairness and equity” been added to the biodiversity conservation lexicon? First, it arises from a simple recognition of the fusion between biological diversity and indigenous knowledge. 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 research methods that are implicated in developing biotechnology when dealing with biological resources in indigenous and local communities inherently involves contact with associated indigenous knowledge.¹³ 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.¹⁴ In this context, many research-intensive concerns, especially in the agro-industrial and pharmaceutical realms, sponsor bioprospecting activities that target diverse biological resources in indigenous and local communities.¹⁵ Bioprospecting refers to the dedicated search for genetic resources and often the local knowledge associated thereto, with a view to exploiting their economic value.¹⁶ For the most part, the results of bioprospecting activities are exploited or harnessed without reference to the contributions of indigenous and local communities, notwithstanding that the latter are not only the custodians of vital genetic or biological

¹³ 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 9 and accompanying text.

¹⁴ See Chidi Oguamanam, “Patents and Traditional Medicine: Digital Capture, Creative Legal Intervention and 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 *Journal of World Intellectual Property* 29 [Oguamanam, “Local Knowledge”].

¹⁵ Terry Ten Kate & Sara Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit Sharing* (London: Earthscan, 2002); Cory Hayden, *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico* (Princeton and Oxford: Princeton University Press, 2003).

¹⁶ See Paul J. Heald, “The Rhetoric of Biopiracy” (2003) 11 *Cardozo J. Int’l & Comp. L.* 519; Cory Hayden, *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico* (Princeton and Oxford: Princeton University Press, 2003).

resources but also, in applicable cases, the creators and stewards of associated knowledge.¹⁷

The phenomenon of bioprospecting often gives rise to “biopiracy.” Amidst other competing definitions, biopiracy refers to the unidirectional transfer or appropriation of the genetic resources and associated knowledge of indigenous and local communities, with little or no regard to knowledge holders.¹⁸ The process of biopiracy is facilitated by intellectual property law, especially the patent regime.¹⁹ Both in its operational process and conceptual design, the patent regime is amenable to the formal or Western scientific narrative in which biotechnology is steeped and by which it is empowered, often at the expense of the indigenous knowledge narrative which remains an outlier in the Western scientific narrative and the intellectual property process.²⁰ Only lately has the subject of indigenous knowledge tasked intellectual property law and jurisprudence, albeit with a mixed but yet unfolding outcome.²¹ In sum, the obligate dependence of biotechnology on biological or genetic materials and often associated knowledge prevalent in indigenous and local communities is acknowledged. But accommodating the multivalent role and the contributions of indigenous knowledge and peoples in this new innovation matrix falls short. This accounts for the push for an equitable ABS system in relation to dealings in genetic resources which has now crystallized in the Nagoya Protocol.

Second, the reason concerns over equity and fairness are fast becoming the norm in the discourse on biodiversity and dealings with genetic resources stems from a focus on an economic model of incentivization as a conservation strategy.²² Since the early 1990s, international environmental law has accorded significant and

¹⁷ See Ikechi Mgbeoji, *Global Biopiracy: Patents, Plants and Indigenous Knowledge* (Vancouver: UBC Press, 2006) [Mgbeoji, *Global Biopiracy*]; Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (Cambridge, MA: South End, 1996).

¹⁸ See Mgbeoji, *Global Biopiracy, ibid.* See also Madhavi Sunder, “IP3” (2006) 59 *Stan. L. Rev.* 257.

¹⁹ See Mgbeoji, *Global Biopiracy, ibid.* at 16. See also Peter Drahos, “Indigenous Knowledge, Intellectual Property and Biopiracy: Is a Global Bio-collecting Society the Answer?” (2000) 22 *Eur. I.P. Rev.* 245; Ikechi Mgbeoji, “Patents and Traditional Knowledge of Uses of Plants: Is a Communal Patent Regime Part of the Solution to the Scourge of Bio-Piracy?” (2001) 9 *Ind. J. Global Legal Stud.* 163 [Mgbeoji, “Communal Patent”]; Danny Huntington, “Redressing the Wrongs: Patent System Not Yet the Venue to Address Indigenous Rights” (2003) 154 *Patent World* 22.

²⁰ See Shayana D. Khadidal, “Subject Matter Imperialism? Biodiversity, Foreign Prior Art and the Neem Controversy” (1996/7) 37 *IDEA* 371; Mgbeoji, “Communal Patent”, *ibid.*; Chidi Oguamanam, “Localizing Intellectual Property in the Globalization Epoch: The Integration of Indigenous Knowledge” (2004) 11 *Ind. J. Global Legal Stud.* 135 [Oguamanam, “Localizing IP”].

²¹ See generally Jane E. Anderson, *Law, Knowledge, Culture: The Production of Indigenous Knowledge in Intellectual Property Law* (London: Edward Edgar, 2009). See also Siegfried Weisner, “Intellectual Property and Indigenous Peoples: An Overview” (2001) 95 *American Society of International Law Proceedings* 151; Alan J. Hartnick, “The Emerging Protection of Traditional Knowledge” (2001) 266 *N.Y.L.J.* 3.

²² See George Martin & Saskia Vermeylen, “Intellectual Property, Indigenous Knowledge, and Biodiversity,” (2005) 26 *Capitalism, Nature, Socialism* 27.

practical recognition to the role and importance of indigenous knowledge for sustainable development and environmental conservation.²³ For instance, Chapter 26 of *Agenda 21*, the UN blueprint for sustainable development, resonates with a shared consensus across diverse international instruments on the environment, indigenous peoples and indigenous knowledge. It states that indigenous peoples “have developed over many generations a holistic traditional scientific knowledge of their lands, natural resources and environment . . .”²⁴ In order to draw indigenous peoples and local communities, their knowledge systems and their diverse roles in environmental stewardship into the global environmental sustenance strategy, there has been a normative shift to create legally backed reward schemes that target their role in the conservation and sustainable use of biodiversity and genetic resources. This is exemplified by the concept of ABS.

(b) The CBD’s Moral High Ground on ABS

Contrary to the sentiments generally contained in *Agenda 21* and other international environmental instruments, the World Trade Organization’s (WTO) Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement failed, in a symbolic way, to recognize the role of indigenous knowledge in innovation. That omission or failure provided an unsuspected opportunity for the emancipation of indigenous knowledge issues in alternative forums.²⁵ Specifically, the CBD has since seized the moral high ground on the issue.²⁶ The CBD is premised on the new

²³ In a way, the foundation for positive developments on global environmental policy recorded in the 1990s, including the current attention on the role of indigenous peoples and their knowledge system, was laid in the Declaration and Principles of the 1972 United Nations Conference on the Human Environment in Stockholm. The Stockholm initiative has since remained the plank for the elaboration of global environmental law and policy over the last three decades. See Jutta Brunnée, “The Stockholm Declaration and the Structure and Processes of International Environmental Law” in Aldo Chircop & Ted MecDorman, eds., *The Future of Ocean Regime Building: Essays In Tribute to Douglas M. Johnston*, (Boston: Martinus Nijhoff Publishers, 2009) at 41–62; also available at SSRN: <<http://ssrn.com/abstract=1437707>> (accessed December 9, 2009).

²⁴ See Agenda 21, United Nations Conference on the Environment and Development, available online: <<http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=52&ArticleID=49&l=en>> (accessed December 9, 2009) [Agenda 21].

²⁵ See Laurence R. Helfer, “Regime Shifting: The TRIPS Agreement and News Dynamics of International Intellectual Property Law Making” (2004) 29 *Yale J. Int’l L.* 1; Peter K. Yu, “International Enclosure, The Regime Complex, and Intellectual Property Schizophrenia” (2007) *Michigan State Law Review* 1; Laurence R. Helfer, “Regime Shifting in the International Intellectual Property System” (2009) 7 *Perspectives on Politics* 39; Chidi Oguamanam, “Regime Tension in the Intellectual Property Rights Arena: Farmers’ Rights and Post-TRIPS Counter Regime Trends” (2006) 29 *Dal. L.J.* 413.

²⁶ It is important to indicate that although the negotiation for the TRIPS under the Uruguay Round of Multilateral Trade negotiations predated that for the CBD, the latter came into effect before the TRIPS Agreement. CBD was considered a viable venue by many developing countries to remedy their perceived loss in the WTO/TRIPS agreements, especially on the issue of indigenous or local knowledge. See Regine Andersen,

global thinking on environmental sustainability in which the environmental ethics prevalent in indigenous and local communities are considered vital. It adopts an incentive and reward approach as a means of supporting and sustaining the contributions of indigenous and local communities' lifestyle and knowledge systems relevant for the conservation and sustainable use of biological resources. Unlike the WTO/TRIPS, the Convention recognizes the potential role of intellectual property in strengthening the protection of indigenous knowledge to further the attainment of its objectives.²⁷ Thus, from the onset, the relationship between the CBD as an environmental instrument and the WTO/TRIPS Agreement as a trade instrument was obvious, necessitating a prompt and ongoing attempt to manage the tension between the two.²⁸ The Convention's objectives include "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources."²⁹ Perhaps more importantly, under Article 8(j), the Convention provides that each contracting party:

shall, as far as possible and as appropriate, [and] subject to its national legislation, 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, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowl-

Governing Agrobiodiversity: Plant Genetics and Developing Countries (Aldershot: Ashgate, 2008) 173–211.

²⁷ See Article 16(5) of the CBD, *supra* note 4, which provides: "The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives." Through a number of its Work Programs and resolutions of its Conference of Parties, the CBD has consistently reached out to the WIPO and other international intellectual property policy bodies with a "view to enhancing the mutual supportiveness of the relevant work programs" pursuant to the mandates of the CBD and such other organizations. See for example WIPO Doc: WIPO/IP/GR/05/03 — examination of the issues relating to the interrelationship of access to genetic resources and disclosure requirements in intellectual property rights (second draft). See also Decision VII/19 of the COP of the CBD (titled Access and Benefit Sharing as Related to Genetic Resources (Article 15)) which invited the WIPO to examine the foregoing issues, online: <<http://www.cbd.int/decision/cop/?id=7756>> (accessed January 25, 2010).

²⁸ For instance, decision 8 of the 1996 Third Conference of Parties Meeting of CBD "Request[ed] the Executive Secretary [of the CBD] to cooperate closely with the World Trade Organization through the Committee on Trade and Environment to explore the extent to which there may be linkages between Article 15 and relevant articles of the Agreement on Trade-related Aspects of Intellectual Property Rights. Online: <<http://www.cbd.int/decision/cop/?id=7111>>. In 2002, the WTO/TRIPS and CBD developed a memorandum of understanding for the coordination of activities of the two agreements.

²⁹ CBD, *supra* note 4 at Art. 1.

edge, innovations and practices.

Article 15 lays the foundation for ABS by providing some direction for implementing fair and equitable access to genetic resources and the sharing of benefits resulting from their use.³⁰ They include facilitated access to genetic resources for environmentally sound uses, the notion that users of genetic resources obtain the prior informed consent (PIC) of the providers, and the idea that transactions in genetic resources be done under mutually agreed terms (MAT) between providers and users of genetic resources. Others relate to active participation of provider countries in the conduct of research based on the genetic resources they provide, and the fair and equitable sharing of the results of research and development and other benefits arising from the utilization of genetic resources.

Since 2000, the CBD has embarked on a dedicated program of work 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. Part of the criticism of the CBD is that its market economic framework for the incentivization of indigenous knowledge and dealings with biological resources is a reductionist approach to the indigenous environmental worldview and a commodification scheme for indigenous ecological experience.³¹ This thinking has continued to dog the broader debate about how indigenous knowledge is negotiated within global knowledge governance in general and within the jurisprudence of intellectual property rights in particular.³² However, given the creolization of knowledge systems,³³ especially as evident in the biotechnology context, it is hardly practicable and indeed least desirable for indigenous people, and certainly any segment of the global population, to hold onto such purist epistemic ideals. There is no vehement line of distinction that clearly demarcates knowledge systems. All peoples everywhere are collective stakeholders and contributors to the processes that feed the global basket of knowledge in a cosmopolitan and converging knowledge economy.³⁴ What is urgently needed is a knowledge governance framework that is not premised on the discredited colonial hierarchies of culture and power that have historically undermined the knowledge of indigenous and colonized communities in the most destitute nooks and crannies of the globe,³⁵ and even those closer to home

³⁰ See also Articles 8(j), 10(c) 15, 16 and 19 which are referenced in para. 1 of the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising Out of their Utilization as constituting the framework for ABS under the CBD.

³¹ See Martin & Vermeylen, *supra* note 22. See generally Christine Haight Farley, "Protecting Folklore of Indigenous Peoples: Is Intellectual Property the Answer?" (1997) 30 Conn. L. Rev. 1; Naomi Roht-Arriaza, "Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities" (1996) 17 Mich. J. Int'l. L. 919.

³² See Anderson, *supra* note 21; Sunder, *supra* note 18.

³³ Michael F. Brown, "Can Culture be Copyrighted?" (1998) 139 Current Anthropology 193 at 196. See also Oguamanam, "Local Knowledge", *supra* note 14 at 43.

³⁴ See Oguamanam, "Local Knowledge", *supra* note 14.

³⁵ See Oguamanam, *ibid.* See also Olufunmilayo B. Arewa, "Piracy, Biopiracy and Borrowing: Culture, Cultural Heritage and Globalization of Intellectual Property" (March

in Canada and elsewhere. This is one of the principal rationales for ABS, especially when viewed through the lens of Article 8(j). Thus, it is hardly surprising that the CBD ABS program has struck a positive note in many indigenous and local communities in developing countries and their counterparts elsewhere.

(c) Regime Constellation on ABS

After a decade of CBD work on ABS, there has been a significant response to the imperative for an equitable ABS system at many levels. The first is the international arena where the CBD work on ABS provides impetus for convergences in multiple forums in which ABS is explored in varying degrees. For instance, at the WTO-TRIPS 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 CBD objectives, as opposed to its current status of potentially undermining the CBD.³⁶ 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)³⁷ and the second is via the WIPO Patent Agenda. The IGC/GRTKF, which has the most elaborate program that integrates ABS in its key mandate areas, was established in response to the exclusion of local knowledge from the WTO-inspired global intellectual property regime under the TRIPS Agreement.³⁸ In addition,

2006) Case Legal Studies Research Paper No. 04-19. Available at SSRN: <<http://ssrn.com/abstract=596921> or doi:10.2139/ssrn.596921> (accessed December 9, 2009).

³⁶ This amendment is proposed as Article 29*bis* 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 ICTSD, “Disclosure of Origin Again at the TRIPS Council Agenda” (2007) 7 Bridges Trade BioRes, (16th February), online: <<http://ictsd.org/i/news/biores/9089>> (accessed January 19, 2010).

³⁷ IGC-GRTKF is an acronym for Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. 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 <<http://www.wipo.int/tk/en>>. On October 1, 2009, the WIPO General Assembly renewed the mandate of the IGC for the 2010-11 biennium.

³⁸ The text of the TRIPS Agreement makes no mention of indigenous or local knowledge, but it is occasionally argued that the TRIPS provision in Article 27 for *sui generis* options as a model of protection for plant varieties allows for a creative use of indigenous knowledge protection protocols.

many instruments, including those resulting from the 1992 Rio Earth Summit,³⁹ and more recently, the 2007 UN Declaration on the Rights of Indigenous Peoples,⁴⁰ have grappled with determining an appropriate reward scheme for the knowledge of indigenous and local communities, including through the concept of ABS.

In a more indirect way, the issue of ABS also features in the elaboration of the WIPO Patent Agenda,⁴¹ especially 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) to which we shall return later. Still under the international framework, the subject of ABS is also an integral part of a more enduring debate around farmers' rights,⁴² which was re-invigorated following the 2001 Food and Agricultural Organization (FAO) International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)⁴³ and the activities of the Consultative Group on International Agricultural Research (CGIAR).⁴⁴ Pending the completion of a new ABS protocol under the auspices of the CBD, to date, the ITPGRA is the most recent international treaty instrument with an ABS component.

The second level relates to the emergence of many regional and national instruments on ABS, especially following the release of the 2002 CBD Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization.⁴⁵ In this regard, there are today at least five regional initiatives, under the African Union, the Andean Pact, Central America, the Nordic

³⁹ They are the Rio Declaration on the Environment and Development, Agenda 21, The CBD, Forest Principles and the Framework Convention on Climate Change.

⁴⁰ Adopted by the United Nations General Assembly Resolution 61/295 of September 13, 2007 and available online: <<http://www.un.org/esa/socdev/unpfii/en/drip.html>>. The Resolution was adopted with an overwhelming majority of 143 votes in favor with 11 abstentions. The only 4 negative votes were cast by Canada, Australia, New Zealand, and the United States.

⁴¹ 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. See *Agenda for the Development of the International Patent System: Memorandum of the WIPO Director General* (submitted to the 36th Series of Meetings of the Assemblies of the Member States, Geneva September 24-October 3, 2001); WIPO Doc A/36/14, dated August 16, 200, online: <http://www.wipo.int/edocs/mdocs/govbody/en/a_36/a_36_14.pdf> (accessed December 9, 2009). See Musungu and Dutfied, *infra* note 62; Correa and Musungu, *infra* note 73.

⁴² See Chidi Oguamanam, "Intellectual Property in Plant Genetic Resources: Farmers' Rights and Food Security in Indigenous and Local Communities" (2006) Drake J. Agric. L. 273 [Oguamanam, "Farmers' Rights"].

⁴³ See Oguamanam, *ibid.* On the ITPGRFA, see online: <<ftp://ftp.fao.org/docrep/fao/011/i0510e/i0510e.pdf>> (accessed October 23, 2009).

⁴⁴ Online: <<http://www.cgiar.org/index.html>> (accessed October 23, 2009).

⁴⁵ Text of Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits Arising from their Utilization, online: <<http://www.cbd.int/decision/cop/?id=7198>> (accessed April 2009).

Region, and the Himalayan Region on ABS.⁴⁶ There is 96 country-specific legislative initiatives on ABS pursuant to the CBD.⁴⁷ The third level consists of mainly informal self-regulating initiatives by industry sectors and private corporations involved in bioprospecting activities under diverse arrangements, exemplified, for instance, in the activities of the Union for Ethical Biotrade⁴⁸ and similar initiatives. Integral aspects of these arrangements are Material Transfer Agreements (MTAs),⁴⁹ the principles of PIC,⁵⁰ MAT, and other benefit-sharing schemes. Analysts refer to this trend as “corporate best practices.”⁵¹ These features of corporate practice are entrenched in the Bonn Guidelines. In some cases, however, corporations have been inclined to tailor their bioprospecting transactions to comply with these principles. This is especially the case in regard to arrangements that were in place before the Bonn Guidelines and, of course, before the recent Nagoya. These best practices are drawn upon particularly where there seemed to be no clear na-

⁴⁶ For example, the African Union Model Law on Rights of Local Communities, Farmers and Breeders and Access (2000) and the ASEAN Framework Agreement on Access to Biological and Genetic Resources (2000). See Rafael Boza, “Protecting Andean Traditional Knowledge and Biodiversity Perspectives under the U.S.-Peru Trade Promotion Agreement” (2008) 16 *Currents* 76; Stephen R. Munzer & 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” (2009) 17 *Wm. & Mary Bill Rts. J.* 831; K. 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 *European Intellectual Property Review* 325. For the Himalayan regional initiative, see online <<http://www.icimod.org/abs/resource.php?id=349>> (accessed June 23, 2010).

⁴⁷ See CBD Database on ABS measures, online: <<http://www.cbd.int/abs/measures.shtml>> (accessed October 23, 2009).

⁴⁸ The Union is self-described as “a non-profit association that promotes the ‘Sourcing with Respect’ of ingredients that come from native biodiversity. See online: <<http://ethicalbiotrader.org/about/index.html>> (accessed June 23, 2010).

⁴⁹ 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.

⁵⁰ 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 and unhealthy or environmentally dangerous chemicals.

⁵¹ For a global account of these initiatives via case studies, see Kate and Laird, *supra* note 15.

tional ABS law or regulation in place.⁵²

At the national level, the inter-linked and complex nature of biotechnology with respect to biodiversity, biological resources and intellectual property rights (IPRs) explains the inevitable nature of the current regime constellation on the subject of ABS. Similar considerations also explain the convoluted regulatory and legislative forums for ABS. To date, such national regulations and laws on ABS are reflected under the heads of general environmental law, biodiversity-specific laws and regulations, farmers' rights or agricultural laws, biotechnology strategic legislation, bio-discovery and bio-prospecting laws and regulations. They also appear in the context of wildlife resource conservation laws, indigenous peoples and indigenous rights laws and in aspects of plant genetic resources, food and general agricultural laws.⁵³ The proliferation of these, sometimes overlapping national laws and regulations on ABS, illustrates the complex nature of the subject matter.⁵⁴

In order to better coordinate the multiplicity of ABS laws and regulations, the 2002 Johannesburg World Summit on Sustainable Development (WSSD)⁵⁵ underscored the necessity for a harmonized global instrument on ABS.⁵⁶ The WSSD approved the commencement of negotiations for a binding ABS protocol "within the framework of the Convention on Biological Diversity bearing in mind the Bonn Guidelines, an international treaty regime to promote and safeguard fair and equitable sharing of benefits arising from out of the utilization of genetic resources."⁵⁷ Building on that, the 7th Conference of Parties (COP) Meeting of the CBD in 2004

⁵² Kate & Laird, *supra* note 15. See also Walter Reid, Sara Laird, Rodrigo Gamez, *et al.*, *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development* (Washington, D.C: World Resources Institute, 1993). This approach was the operative business model of the San Francisco based Shaman Pharmaceutical in the United States through the latter's transformations over the years. See, for example, Donald E. Bierer, Thomas J. Carlson & Steven R. King, "Shaman Pharmaceuticals: Integrating Indigenous Knowledge, Tropical Medicinal Plants, Medicine, Modern Science and Reciprocity into Novel Drug Approach", online: <<http://www.netsci.org/Science/Special/feature11.html>> (accessed February 17, 2010).

⁵³ See Genetic Resources Action International (GRAIN) database of Biodiversity Rights Legislation (BRL) online: <<http://www.grain.org/brl/>> (accessed September 12, 2009).

⁵⁴ See, for example, Charles R. McManis & Eul S. Seo, "The Interface of Open Source and Proprietary Agricultural Innovation: Facilitated Access and Benefit-Sharing under the New FAO Treaty" (2009) 30 Wash. U.J.L. & Pol'y 405.

⁵⁵ The WSSD was held in Johannesburg, South Africa ten years after the United Nations Convention on the Environment in Rio (a.k.a. the 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.

⁵⁶ This was a result of the initiative of 15 of the most biologically diverse countries of the world: Bolivia, Brazil, China, Costa Rica, Colombia, Ecuador, India, Indonesia, Kenya, Mexico, Malaysia, Peru, Philippines, South Africa and Venezuela.

⁵⁷ See Graham Dutfield, "Protecting Indigenous Knowledge: Pathways to the Future", policy paper prepared for International Centre for Trade and Sustainable Development (ICTSD) (2006) at 11. See also W. Bradee Chambers, "WSSD and International Re-

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.”⁵⁸ Meanwhile, the United Nations declared the year 2010 as the International Year of Biodiversity⁵⁹ (IYB) “to increase understanding of the vital role that biodiversity plays in sustaining life on Earth”⁶⁰ and the global efforts or strategies to combat biodiversity loss. Given that ABS is one such strategy, the IYB signals a determination to step up efforts on ABS not only as a biodiversity conversation incentive but also as a way to support the sustainable use of biodiversity (which may include biotechnology). The 2004 mandate of the 7th COP on ABS has eventually translated into the 2010 Nagoya Protocol on ABS which was concluded courtesy of the 10th COP in 2010. It is instructive also that in addition to the Protocol; the COP 10 concluded a strategic plan for protecting biodiversity into the future. I will return to the Protocol shortly.

(d) ABS and Intellectual Property

In 2001, the WIPO launched the Patent Agenda. This initiative is “a process of worldwide discussions with the aim of preparing the strategic blueprint that would underlie the future development of the international patent system.”⁶¹ Some dub this the idea of a world patent.⁶² The WIPO Patent Agenda has continued to unfold through various reforms and new initiatives under the recent revisions of the Patent Cooperation Treaty (PCT), the Patent Law Treaty (PLT) and the negotiations around SPLT. All these are geared toward the harmonization of the international patent system.⁶³ Unsurprisingly, the issue of extending aspects of the CBD’s Bonn Guidelines, such as the inclusion of evidence of PIC and the disclosure of the source and origins of genetic resources and associated transitional knowledge undergirding the subjects of patent applications, to the patent system has provoked heated debates and struck discordant notes from different stakeholders.⁶⁴ Unlike the majority of their developed country counterparts, developing countries are in-

gime on Access and Benefit Sharing: Is a Protocol the Appropriate Legal Instrument?” (2003) 12 R.E.C.I.E.L. 310.

⁵⁸ See COP decision VII/19 at D.1 — available at <<http://www.cbd.int/decision/cop/?id=7756>> (accessed October 2009)>. See also *supra* note 27 and accompanying text.

⁵⁹ See online: <<http://www.cbd.int/2010/welcome/>>.

⁶⁰ *Ibid.*

⁶¹ Sisule Musungu & Graham Dutfield, “Multilateral Agreements and a TRIPS plus World: The World Intellectual Property Organisation — WIPO”, (December 2003) Quaker United Nations Office, TRIPS Paper #3 at 11.

⁶² See International Federation of Inventors’ Associations, “2002: WIPO Patent Agenda and the Idea of World Patent”, online: <http://www.invention-iffia.ch/WorldPatent_WIPO_Patent_Agenda.htm> (last accessed September 2, 2010).

⁶³ For an overview of these initiatives, see Musungu & Dutfield, *supra* note 61.

⁶⁴ Emanuela Arezzo, “Struggling Around the “Natural” Divide: The Protection of Tangible and Intangible Indigenous Property” (2007) 25 *Cardozo Arts & Ent. L.J.* 367.

clined to entrench those requirements in the global patent system as a strategy against biopiracy, pursuant to the WIPO Patent Agenda. Despite their stance against “piracy” and their commitment to a stronger intellectual property rights regime, the United States and Japan are, ironically, vehemently opposed to an international patent system that creates these so-called additional burdens on patent jurisprudence.⁶⁵ On its part, and despite the leadership shown by Switzerland toward accommodating these requirements, the European Union (EU) maintains a reluctant or, at best, a constructive interest.⁶⁶ Indeed, the EU does not go as far as the developing countries recommend: that non-disclosure and lack of evidence of PIC would be grounds to annul a patent.⁶⁷

It must be pointed out that though these proposed requirements may not have a direct impact on the protection of indigenous knowledge, they play a defensive role to the extent they support the elements of transparency, trust, and accountability that indigenous peoples earnestly yearn for in regard to dealings with genetic resources and associated transitional knowledge.⁶⁸ Overall, these elements are crucial for any meaningful translation of ABS into practical results for custodians of genetic resources across the globe. For example, PIC and disclosure of origin and source of genetic resources are important elements in negotiating ABS agreements and determining applicable royalties and other forms of compensation, including monitoring the utilization of genetic resources and traditional knowledge, tracing the benefits associated with specific innovation fostered by the knowledge and input of indigenous and local community stakeholders.

Thus far, the modest concession the EU is prepared to make on the adjustment of the patent regime on account of genetic resources is hardly a reflection of its identification with the sentiments advanced by developing countries and indigenous and local communities on the subject of ABS. Rather, the EU concession stems from its vested interest as both user and provider of genetic resources of economic value. According to Arezzo, “[t]he biodiversity of the Mediterranean area is home to a wealth of resources, and many institutions, such as botanic gardens, which grow large collections of biological resources. This may explain the proactive involvement of Europeans in the conservation and protection of such heritage at the international and national level.”⁶⁹ As a result of these disagreements, proposals by

⁶⁵ According to the US, “proposed disclosure requirement will fail to achieve their stated objectives . . . [they will] create uncertainties in the patent system that discourage research and development. . .” See WIPO/IP/GR/05/INF/5, *supra* note 13 at 9.

⁶⁶ Arezzo, *supra* note 64; Oguamanam, “Digital Capture”, *supra* note 14; for a text of EU position, see Disclosure of Origin or Source of Genetic Resources and Associated Traditional Knowledge in Patent Applications — Document submitted by the European Community and its Member States, WIPO/GRTKF/IC/8/11, May 17, 2005.

⁶⁷ For EU, if an applicant fails or refuses to provide required information application should not be further processed, but where it is already approved, “the submission of incorrect or incomplete information should not have any effect on the validity of the granted patent or on its enforceability against patent infringers.” See EU, *ibid.* at 4 paras. 6 and 8.

⁶⁸ Arezzo, *supra* note 64 at 381.

⁶⁹ Arezzo, *ibid.* at 385 n. 84.

developing countries for an amendment of the TRIPS Agreement to include the disclosure of origin and sources of biological resources and/or associated traditional knowledge used in the subject matter of a patent application has yet to see the light of day.⁷⁰

Meanwhile, the United States and its allies are very determined to proceed with the WIPO Patent Agenda which provides them an opportunity to implement a standard of intellectual property protection beyond those prescribed by TRIPS (a.k.a. TRIPS-plus).⁷¹ Analysts agree that developing countries risk losing their leverage, under TRIPS, to determine the scope of the core issues of prior art, grace period, novelty and inventive steps which constitute the focus of current harmonization efforts under SPLT.⁷² Thus, the WIPO Patent Agenda is seen as supervising the entrenchment of a TRIPS-plus standard of intellectual property protection that would advance developed countries' interests at the expense of their developing counterparts.⁷³

Why are the leading industrialized countries opposed to an ABS model that would supervise their dealings in genetic resources and associated indigenous knowledge in the global south and in remote indigenous and local communities? Without question, for these countries, the requirement of an equitable ABS in their dealings with genetic resources is an irritation, to the extent that it is also a call to an accounting that may redress the unbalanced unidirectional transfers of valuable genetic resources and the knowledge of indigenous and local communities in this era of rapid biotechnology progress. Leading biotechnology countries would prefer that the genetic resources and associated indigenous knowledge remain, as they had been: that is, outside the realm of real or intellectual property claims and, consequently, to be freely accessible to them without any restraints. Ironically, while these countries desire to have unrestricted access to vital genetic materials and, in some cases, the associated indigenous knowledge, they deploy intellectual property, particularly the patent system, to exercise proprietary control over the outcome or benefits of their dealings with freely obtained materials. In many narratives of biopiracy, the providers of genetic resources and associated indigenous

⁷⁰ For an updated account of the initiative by developing countries, see Martin Khor, "Support Grows for TRIPS Disclosure as Africa Joins Proposal" (June 6, 2007) TWN, online: <<http://www.twinside.org.sg/title2/wto.info/twninfo060709.htm>>. See also Arezzo, *supra* note 64.

⁷¹ Musungu & Dutfield, *supra* note 61.

⁷² See Carlos Correa & Sisule F. Musungu, "WIPO Patent Agenda: The Risks for Developing Countries". (T.R.A.D.E Working Paper No. 12, November 2002, South Centre) online: <http://www.southcentre.org/index.php?option=com_content&task=view&id=76&Itemid=279> (accessed September 12, 2009). See also Carlos Correa: "An Agenda for Patent Reform and Harmonization for Developing Countries" (UNCTAD-ICTSD on IPRs and Sustainable Development, October 2006), online: <http://www.iprsonline.org/unctadictsd/bellagio/Bellagio2005/CorreaPiece_REV.pdf> (accessed January 25, 2010); Nitya Nanda, "WIPO Patent Agenda: As if TRIPS Was not Enough", *Economic and Political Weekly*, September 25 — October 1, 2004 at 4310-14.

⁷³ On the ramification of the Patent Agenda for developing countries, see Musungu & Dutfield, *supra* note 61. See also Correa & Musungu, *ibid.*

knowledge are outraged that not only are they denied basic compensation and legal recourse; as well, that they are unable to afford the resulting drugs, seeds or agricultural products, as the case may be, that emerge from the genetic resources they provided, often in trust and good faith, for the common good.

Under the CBD, however, the international community vests ownership of genetic resources in the states in which they are located as part of their sovereign rights.⁷⁴ The CBD requires users and providers of biological resources to institute an equitable scheme of ABS.⁷⁵ As well, indigenous knowledge is now recognized as an integral aspect of the cultural identity of its custodians and their claims to self-determination.⁷⁶ The reluctance of global biotechnology players to take ABS seriously is premised on a mindset that considers ABS a developing country issue. That pattern of thinking is, in a way, an extension of the historically rooted colonial cultural hierarchies of power in knowledge governance which continues to deny the intellectual contributions of indigenous peoples and their knowledge systems to processes of innovation.⁷⁷ Paradoxically, intellectual property has been extended to an unprecedented historic high to accommodate every conceivable and potentially infinitesimal manipulation of genetic materials under the Western scientific and technological episteme, in the name of innovation.⁷⁸ Thus, in the new life sciences-driven innovation arena, a country's attitude to ABS depends, in large part, on whether it considers itself a user or provider of genetic resources and/or associated indigenous knowledge. While users have latched onto intellectual property to appropriate and exploit genetic resources and indigenous knowledge in provider communities, the latter are left on the margins of the intellectual property and resource control claims. For some countries, such as Canada, national characterization as a user or provider of genetic resources is a delicate political and economic balancing act.

3. PART II

(a) Canada in the International ABS Process

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)⁷⁹

⁷⁴ See CBD, *supra* note 4 at Articles 3 and 15(1). It is instructive to note that the United States has as yet to ratify the CBD and consequently is not a party to it.

⁷⁵ CBD, *supra* note 4 at Articles 15, 8(j).

⁷⁶ See Chidi Oguamanam, "Indigenous Peoples and International Law: The Making of a Regime" (2004) 30 Queen's L.J. 348. See also Article 31(1) of the UN Declaration on the Rights of Indigenous Peoples, online: <<http://www.un.org/esa/socdev/unpfii/en/drip.html>> (accessed December 11, 2009).

⁷⁷ See Arewa, *supra* note 35. See also Oguamanam, "Local Knowledge", *supra* note 14 at 33.

⁷⁸ See Mgbeoji & Allen, *supra* note 3.

⁷⁹ These are the United States, Japan, the European Union and Canada. See Peter Drahos & John Braithwaite, "Hegemony Based on Knowledge: The Role of Intellectual Property" (2004) 21 Law in Context 204 at 210.

that championed the TRIPS Agreement. Canada also ranks as one of the world's leading biotechnology countries.⁸⁰ In Canada, as in other industrialized countries, the economic impacts of biotechnology are evident in recent and not so recent strides in pharmaceuticals, food and agriculture, health and other industrial endeavors.⁸¹ As a research-driven and research-intensive enterprise, biotechnology is supported by a strong intellectual property order.⁸² Hence, like the United States, the European Union and Japan, Canada remains a supporter of strong intellectual property rights on the global stage.⁸³

In the last decades, advances in biotechnology, and life sciences in general, have led to the radical expansion of intellectual property rights in both the United States and Canada into the realm of life and life forms, such as genes and genetic materials.⁸⁴ This is occurring despite often mixed signals from judicial decisions in both countries and elsewhere.⁸⁵ Contrary to the desire of developing countries, Canada aligned with the US, EU, Japan and Australia to shift the discussion on

⁸⁰ See "Biotech Round the World: Focus on Canada" (2008) 3 *Biotechnology Journal* 848 at 848. Available online: <<http://www3.interscience.wiley.com/cgi-bin/fulltext/120776029/PDFSTART>> (accessed October 2009). See also Canadian Biotechnology Advisory Committee (CBAC), *Patenting Higher Life Forms: A Report to the Government of Canada Biotechnology Ministerial Committee* (2002).

⁸¹ *Ibid.*

⁸² See Jay P. Kesan, "Intellectual Property and Agricultural Biotechnology: A Multidisciplinary Perspective" (2000) 44 *American Behavioral Scientist* 464; Carlos-Scott Lopez, "Intellectual Property Reform for Genetically Modified Crops: A Legal Imperative" (2004) 20 *J. Contemp. Health L. & Pol'y* 367. See also V. Santiello *et al.*, eds., *Agricultural and Intellectual Property Rights: Economic, Institutional and Implementation Issues in Biotechnology* (London: CABI, 2002).

⁸³ The United States had the backing of Canada, Europe and Japan when it made intellectual property a trade issue in the Uruguay Round of trade talks that eventually birthed the WTO and the TRIPS Agreement. See Peter Drahos, "The Universality of Intellectual Property: Origins and Development", WIPO, *Intellectual Property and Human Rights* paper series (undated), online: <<http://www.wipo.int/tk/en/hr/paneldiscussion/papers/pdf/drahos.pdf>> (accessed March 2009).

⁸⁴ Mgbeoji & Allen, *supra* note 3. See also Bagely, *supra* note 3. See generally Jocelyn Downie & Matthew Herder, "Reflections on the Commercialization of Research Conducted in Public Institutions in Canada (2007) 1:1 *McGill Health Law Publications* 23; Jocelyn Downie, "The Power of Money: Commercialization of Research Conducted in Public Institutions" (2006) 11:2 *University of Otago Law Review* 305.

⁸⁵ In 2002, the Supreme Court of Canada, by a narrow majority of 5-4, turned down an attempt by the President and Fellows of Harvard College to obtain a Canadian patent for a mouse genetically predisposed to cancer (the oncomouse) for the purpose of cancer research. According to the court, s. 2 of the Canadian *Patent Act*, R.S.C. 1985, c. P-4, does not extend patent protection to what the court terms higher life forms (such as the mouse). This decision is contrary to the judicial approach to the identical provision in American Patent Code and to the fact that the oncomouse was subject to an American patent. See *Harvard College v. Canada (Commissioner of Patents)*, [2002] 4 S.C.R. 45.

ABS from the TRIPS Council to the WIPO.⁸⁶ That singular act foreclosed an important opportunity to introduce, albeit indirectly, the subject of indigenous knowledge into the WTO system that has consistently shown disdain for it. From the build-up to final negotiations on the ABS Protocol, Canada broke company with the rest of the parties in its opposition to a single binding protocol on ABS under the CBD by insisting that an international ABS regime should “comprise existing international instruments and processes dealing with access and benefits sharing,” and any future agreements, including a protocol.⁸⁷ Even if we acknowledge that the existence of ITPGRFA as a treaty with ABS components symbolizes a form of forum proliferation, a broad endorsement of forum proliferation that extends to future negotiations on genetic resources, instead of forum management which may be more effective with a limited number of instruments, does not demonstrate a commitment to an effective ABS regime. Regime theorists agree that when forums proliferate, stronger countries have the negotiating advantage over weaker ones.⁸⁸

In addition to several reservations, Canada expresses concerns, even objections, to mandatory certificate of origin of genetic resources, and is reluctant to implement through its patents office and domestic bureaucracy, other countries’ ABS laws.⁸⁹ A few days to the conclusion of the Protocol, Canada, through its Minister of the Environment,⁹⁰ remained adamant in its opposition to making the Protocol retroactive in regard to genetic resources and associated local knowledge in the public domain. Also, Canada’s Minister Prentice insisted that his country is opposed to applying the ABS regime to derivatives.⁹¹ Overall, the Minister struck a pro-industry tone (in manner consistent with Canada’s disposition through the six-year long negotiations) suggesting that ABS escalates the cost of scientific research and development, stifles innovation, and constrains the exploitation of intellectual property through the prospects of levying unjustified royalties for the utilization of genetic resources and associated traditional knowledge.⁹²

⁸⁶ 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.

⁸⁷ See Chee Yoke Ling, “Rocky Road Still Ahead for ABS Protocol”, Third World Network, online: <http://www.twinside.org.sg/title2/intellectual_property/info.service/2010/ipr.info.100401.htm> (accessed June 19, 2010).

⁸⁸ See Laurence Helfer, “Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property” (2004) 29 *Yale J. Int’l. L.* 1. See also Stephen D. Krasner, ed., *International Regimes* (Ithaca, NY: Cornell University Press, 1993).

⁸⁹ See Report of the First Part of the Ninth Meeting of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, UNEP/CBD/WG-ABS/9/3, para. 54, April 2010.

⁹⁰ The then Minister of the Environment was Alberta Tory MP, Jim Prentice who resigned shortly after the conclusion of the Nagoya negotiations for unrelated reasons.

⁹¹ On the significance of derivatives, see *infra* note 150.

⁹² See Transcript of the Minister’s Interview On Wednesday, October 27, 2010 as replayed in the CBC Radio Program “As It Happens” Friday, October 29, 2010 following the conclusion of the Nagoya Protocol same day, online:

In the elaboration of the WIPO Patent Agenda discussed 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. On reflection, the logical implication of Canada's disposition is that perhaps, 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 in the international forums, Canada's domestic commitment to ABS is far from unequivocal support. This is notwithstanding that it is a key party to the CBD, in fact, the first developed country to ratify it, the host of its secretariat, and the Co-Chair of the Ad Hoc Open-ended Working Group on ABS which is the forum that facilitated the binding ABS Protocol.⁹³

Despite the rise in country-specific laws and regulations on ABS pursuant to the CBD, currently in Canada, there is no national ABS framework. "There are diverse laws and regulations across different jurisdictions relevant to elements of ABS, notable among those are regulations governing the collection of genetic resources from various national and provincial parks."⁹⁴ 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, it organized the Northern Workshop on Access to Genetic Resources and Associated Traditional Knowledge and Benefit-Sharing,⁹⁵ apparently designed to consult Aboriginal groups. That same year, 2005, Canada issued a document titled: *ABS Policies: Scoping the Questions and Issues*. This was followed by a 2006 document titled *Guiding Principles and Features of ABS Policies in Canada*. The latter was designed to "serve as a foundation for moving the policy discussion forward within jurisdictions and with stakeholders,"⁹⁶ and was projected to "create a balance between environmental, economic, social and legal considerations."⁹⁷

Yet, in 2009, Environment Canada signaled a change in course with the issue of a policy and discussion paper titled *Access to Genetic Resources and Sharing the Benefits of Their Use in Canada: Opportunities for a New Policy Direction*.⁹⁸ Thus, 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, it has done this through government sponsored *ad hoc* workshops designed to satisfy the "Aboriginal stakeholder consultation compo-

<<http://www.cbc.ca/asithappens/episode/2010/10/29/friday-october-29-2010/>> (last accessed November 25, 2010).

⁹³ The WG is Co-Chaired by Canada's Timothy Hodges and Colombia's Fernando Casas.

⁹⁴ See: Environment Canada: "Access and Benefit-Sharing (ABS) in Canada," online: <http://www.ec.gc.ca/apa-abs/default.asp?lang=En&n=AEFC44AD-1&printer_version=true>. (accessed July 20, 2007).

⁹⁵ Online: <http://www.cbin.ec.gc.ca/apa-abs/northern_workshop_eng.pdf> (accessed May 2010).

⁹⁶ Available online: <<http://www.cbd.int/doc/meetings/abs/abswg-05/information/abswg-05-inf-02-en.pdf>> (accessed September 19, 2009).

⁹⁷ *Ibid.*

⁹⁸ Online: <http://www.cbin.ec.gc.ca/apa-abs/accessing_genetic_e.pdf> (accessed May 2, 2010).

nent.” In regard to the provincial/territorial levels, Perron-Welch notes that:

Canada’s three northern territories — Yukon, the Northwest Territories (NWT), and Nunavut — have gone furthest in implementing access systems that accord with ABS. Each territory has research licensing legislation that serves as a form of access system. The licensing of research in the NWT and Nunavut is governed by the *Scientists Act*, which requires anyone conducting scientific research or collecting specimens for scientific research in the jurisdictions of the territories to obtain a license. Research on wildlife or collection of specimens of wildlife is exempt as archaeological work, although these activities require permits under other legislation. Research in the Yukon is licensed by *Scientists and Explorers Act*, which restricts scientific and exploration activities to persons holding a valid license issued under the Act.⁹⁹

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.¹⁰⁰ Despite the bureaucracy and numerous policy papers, 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, Aboriginal peoples and knowledge, this state of motion without movement on ABS in Canada indicates either the complexity of the subject matter from both constitutional and juridical perspectives, or the country’s poor commitment to the subject. A logical conclusion, nonetheless, is that respecting the intersection between biodiversity, biotechnology and indigenous knowledge, Canada has yet to critically assess let alone explore its conceivable potential as both a user and a provider of genetic resources and associated indigenous knowledge. As the international community commences its transition from the optional Bonn Guidelines to a binding Nagoya Protocol on ABS, Canada has the opportunity to rearticulate its views and to revisit its current approach to ABS as part of a new national ABS policy. It must do this for a number of reasons.

(b) Canada as a User and Provider of Genetic Resources

Indeed, 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 being exhaustive, a number of these bases must be highlighted. First, compared to the United States, Japan and most countries of the

⁹⁹ See Frederic Perron-Welch (Centre for International Sustainable Development Law (CISDL)), “Seeing the Forest for the Non-Timber Forest Products: Access to Forest Genetic Resources and Equitable Sharing of Benefits From their Utilization in Canada” (2010), unpublished paper (footnotes omitted, on file with the author).

¹⁰⁰ 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.

European Union, Canada has a significant number of Aboriginal peoples¹⁰¹ who are custodians of immemorial indigenous knowledge of genetic resources. Aboriginal peoples constitute almost 4 per cent of Canada's population.¹⁰² Along with other indigenous peoples of the Americas and the United States, Canada's Aboriginal peoples steward a strong historical cultural heritage and distinct identity rooted in pre-colonial and pre-conquest experience. This 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) of land and, unknown to many, is larger than the United States. An estimated 90% of Canadians live within 200 km of the US border, leaving incredibly large expanses of wilderness and forest biodiversity to the north.¹⁰³ The diversity of Canada's Aboriginal civilizations is, in part, a factor of Canada's diverse ecological setting and its complex geographical composition. Within its borders, ethnographers identify six of the ten geographical regions and cultural areas having shared cultural traits amongst the indigenous peoples of the Americas. These are the arctic, subarctic, northwest coast, northeast woodlands, plains and plateau geographical regions and cultural areas.¹⁰⁴ As historical custodians of diverse geographic and ecological space in terms of cultural practices and ecology-centred epistemic outlook, Canada's Aboriginal peoples are a critical and integral part of its potential claim to being a user and provider of genetic resources and associated indigenous knowledge.

Third, Canada is an incredibly diverse country that is largely built on immigration. It is home to many cultures and peoples who bring with them a wealth of local knowledge from the remotest parts of the world and are capable of placing Canada in a position of strength in the cosmopolitan character of the new global knowledge economy. Fourth, as "an affluent, high-tech industrial society,"¹⁰⁵ the resilience of Canada's economy lies in its diversity. For instance, in addition to energy, machinery and equipment, Canada also 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 indi-

¹⁰¹ They are made up of the First Nations' descendants, Métis and Inuit.

¹⁰² According to Statistics Canada, in the 2006 census, at 1,172,790 the total "Aboriginal identity population" was 3.8 per cent of Canada's total population of 31, 241,030. See Statistics Canada, online: <<http://www12.statcan.ca/english/census06/data/highlights/aboriginal/>> (accessed November 27, 2009).

¹⁰³ See the Central Intelligence Agency World Fact Book on Canada, online: <<https://www.cia.gov/library/publications/the-world-factbook/geos/ca.html>> (accessed November 27, 2009) [World Fact Book].

¹⁰⁴ See Canadian Museum of Civilization, Gate Way to Aboriginal Heritage, 2006, online: <<http://www.civilization.ca/cmhc/exhibitions/tresors/ethno/etb0170e.shtml>> (accessed October 23, 2009).

¹⁰⁵ World Fact Book, *supra* note 103.

rectly from Aboriginal plant, animal, marine, aquatic and forest genetic resources and associated knowledge. Thus, although Canada may not be a mega-biodiversity hotspot,¹⁰⁶ 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 to sustain Canada's biodiversity, and its unique ecological, land and seascapes.

The new international Protocol on ABS offers Canada an opportunity to exchange its lukewarm disposition for a proactive approach to the subject. Specifically, as noted in preceding paragraphs, there are empirical reasons that support a change in the Canadian attitude to ABS, besides the palpable economic benefits which require no elaboration. Perhaps equally important are the strategic reasons for such a policy adjustment. These differing foundations of support are not mutually exclusive. The strategic reasons have national and global ramifications. Nationally, it is clear that by casting itself as mainly a biotechnology country and, consequently, a user and not necessarily a provider of genetic resources and associated indigenous knowledge, Canada alienates its Aboriginal peoples. Simultaneously, it undermines and undervalues its stock of biodiversity and its 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 peoples. There is, however, plenty of distrust. Not only does Canada's approach demonstrate 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.¹⁰⁷ This jaded approach to ABS also demonstrates a failure to grasp the significance of Canada's extreme environments and their complex ecological setting, including its rich coastal, marine and forest resources. These factors make Canada an important repository of biodiversity and a significant destination for bioprospecting and marine scientific knowledge and research. As the traditional notion of biodiversity expands into the realm of marine genetic resources (MGRs), Canada will assume 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 especially at the international level, is problematic in regard to issues of justice and of valuing 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 resource user country, but also as a provider of genetic resources with associated stock of Cana-

¹⁰⁶ Biodiversity hotspots are sites with very highly populated and delicate collections of endemic species. Scientists believe that such sites are home to nearly 60 per cent of the world's plant, bird, mammal, reptile, and amphibian species. Globally, there are more than 30 such hotspots.

¹⁰⁷ For the relationship of dependence between biotechnology and local knowledge, see Oguamanam, "Farmers' Rights", *supra* note 42 at 275.

dian Aboriginal peoples' knowledge. A more accommodating Canadian approach to ABS has the potential to restore the confidence of its Aboriginal peoples. Like their counterparts elsewhere, this would provide them the opportunity to stake their claims as partners in the evolution of modern biotechnology. At the same time, it would add an edge of plural epistemic experience and expertise to Canada's niche in advancing this dimension of industrial development.

In regard to its global ramifications, Canada's position as a leader in the field of biotechnology, and a country rich in diverse genetic resources and Aboriginal or indigenous knowledge systems, can be strategically leveraged to advance global policy on the evolving ABS regime, specifically to ensure that the regime is sympathetic to users and providers of genetic resources and associated knowledge. Such a Canadian position is likely to earn the confidence and support of many developing countries. Indeed, the current stalemate on the issues of PIC and disclosure of source of origin of genetic resources in the several deliberations in the TRIPS Council, WIPO, CBD and elsewhere, is partly occasioned by the hardened alignments of actors along two extremes: as users *or* providers of genetic resources. There is hardly a middle ground. But as a user and provider, Canada is placed to articulate a measured perspective, a necessary and persuasive middle ground to mediate the lingering negotiating schism regarding the ABS arrangement that presently characterizes the relations between the developed and developing countries and their stakeholders. This measured approach is crucial as countries embark on the domestication of Nagoya Protocol after its expected ratification.

(c) The Limitations of the CBD Approach

Making the case for Canada as a provider of genetic resources does not find easy traction with the current CBD-championed ABS for a number of reasons. These include general limitations in the CBD text, its conceptual outlook on biodiversity, and the limitations in the operational scope of the ABS campaign within the CBD. A more holistic and convergent approach to biodiversity provides the best approach for exploring Canada's status as user and provider of genetic resources.

(i) Textual Limitation

First, the CBD text adopts a narrow definition of genetic resources which is pivotal to understanding the scope of ABS as set out by the Bonn Guidelines and, of course the Nagoya ABS Protocol. Under the CBD, "genetic resources" are defined as "genetic material of actual or potential value;" while genetic material is defined as "any material of plant, animal,¹⁰⁸ microbial or other origins containing

¹⁰⁸ The general impression is that CBD is concerned with genetic resources and its scope does not extend to human genetic materials. To some extent, this position is tenable in the context of the overarching objectives of the Convention which is essentially the conservation of biological diversity. Another tenable view is that the inclusion of "animal" genetic material in the definition of genetic material does not, by implication, exclude human genetic material within the purview of the CBD. The weakness of that contention is, at least, two-fold. First, for dealings with human genetic material to come under the radar of CBD, there has to be a link to conservation of biological diversity.

functional units of heredity.”¹⁰⁹ Clearly, in text and in practice, the emphasis is on plant and animal genetic resources, while other resources have the status of generalized add-ons. Even though the text of the Convention has a more elaborate definition of “biological diversity,” *i.e.*, “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems. . .”, in terms of perception and emphasis, the focus appears to be on genetic resources within terrestrial ecosystems, especially plants and animals. In part, this derives from CBD’s recognition of the sovereign rights of states to the natural resources within the limits of national jurisdiction.¹¹⁰ The latter are easily understood in terms of terrestrial delimitations. Also, the focus on terrestrial ecosystems, especially plant and animal genetic resources, reflects the level of scientific knowledge and interest, especially in the biotechnology realm. In addition, it is important to note that most indigenous and local communities’ dealings with their environments and ecological endowments transcend the narrow category of genetic resources which put serious limits to aspects of the textual provisions of the CBD.

The counterintuitive emphasis on genetic resources within terrestrial ecosystems magnifies the imbalance in global biodiversity distribution along South-North geo-ecological blocs in favour of the South. Hence, the conventional impression is that countries of the global North, such as Canada, are biodiversity’s barren enclaves and the least likely to be providers of significant genetic resources.

(ii) *Limitations Relating to Forest Genetic Resources (FGRs)*

As regards the limitations of the CBD’s operational scope, it should be noted that notwithstanding the current emphasis on genetic resources within terrestrial ecosystems, critical aspects of terrestrial ecosystems, such as forest genetic resources (FGRs), appear to receive a peripheral treatment in the CBD’s ABS. As far back as 1998, CBD adopted a work program for forest biological diversity¹¹¹ which has since been extended. In terms of its mandate, and its conceptual and operational orientation, the CBD work program for forest biodiversity adopts a holistic and inter-sectoral ecosystem approach to forest biodiversity conservation. That approach recognizes that forests are largely governed by diverse instruments, some of which parallel the CBD. As such, the forests issue-area needs a synergistic governance framework. For instance, the *Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and*

Second, the regimes for dealing with human research subjects and access to human genetic material appear to have developed along a robust yet evolving ethical framework outside the CBD ABS regime. However, when genetic research targets endangered and isolated indigenous communities, access to the benefits of such research implicates questions about equity and sustainability of the endangered human populations. This is so because human diversity is a crucial aspect of biological diversity writ large. Early in its life, however, the COP of the CBD clarified via Decision II/11, at paragraph 2, that genetic resources under the CBD exclude human genetic resources.

¹⁰⁹ CBD, *supra* note 4 at Article 1.

¹¹⁰ See CBD, *supra* note 4.

¹¹¹ See online: <<http://www.cbd.int/decision/cop/?id=7130>> (accessed October 18, 2009).

Sustainable Development of All Types of Forests,¹¹² *alias* the *Forest Principles* which, like the CBD, was one of the outcomes of the 1992 United Nations Conference on Environment and Development in Rio, elaborates issues of management and sustainable development of forests.

In addition, the Rio Earth Summit adopted other instruments with direct and indirect relevance to forests, such as *Agenda 21*¹¹³ and the *United Nations Framework Convention on Climate Change* (UNFCCC).¹¹⁴ The *Forest Principles* and these other Rio instruments are reinforced by newer instruments also devoted to global forest governance. The latter include, but are not limited to instruments concluded under the auspices of the United Nations Commission on Sustainable Development (UNCSD) such as through the Intergovernmental Panel on Forests, the Intergovernmental Forum on Forests, the United Nations Forum on Forests (UNFF) which produced the *Non-legally Binding Instrument on All Types of Forests*,¹¹⁵ and the FAO.¹¹⁶ According to Cabrera *et al.*,

[n]otwithstanding the fact that each of these processes deals with specific and distinct issues, there are significant areas of synergy between the Convention's [i.e. the CBD] Programmes of Work on Article 8(j), ABS and Forest Biodiversity and processes under the [UN] Forum on Forests. Some of these synergies may be addressed over the course of the next two years as a result of a recent CBD and UNFF memorandum of understanding that pledges closer collaboration between the two secretariats.¹¹⁷

Given these multiple overlapping approaches to the subject of forests, it follows that the CBD ABS framework is neither exclusive nor exhaustive in regard to access regulation and management of forest biodiversity, including FGRs.

(iii) *Limitations Relating to Marine Genetic Resources (MGRs)*

Genetic resources within marine and other aquatic ecosystems are subject to similar treatment as FGRs and forest biodiversity under the CBD ABS framework. Lori Ridgeway observes that “in many fora, such as in the CBD, the issue of ge-

¹¹² See online: <<http://www.un.org/documents/ga/conf151/aconf15126-3annex3.htm>> (accessed October 18, 2009).

¹¹³ See Agenda 21, *supra* note 24 at Chapters 11 (on combating deforestation) and 15 (on conservation of biological diversity).

¹¹⁴ See online: <<http://unfccc.int/2860.php>>. The UNFCCC is a precursor to the Kyoto Protocol on Climate Change, 1997, which came into effect in 2005. At the time of writing, the Conference of Parties (COP) 15 of the UNFCCC was going on in Copenhagen, Sweden, as the 2009 United Nations Conference on Climate Change.

¹¹⁵ See online: <http://www.daff.gov.au/_data/assets/pdf_file/0018/1141092/non-legally-binding-instrument.pdf> (accessed March 29, 2011).

¹¹⁶ See Jorge Cabrera, Olivier Rukundo & Frederic Perron-Welch, “The Interface Between Sustainable Forest Management and Access and Benefit Sharing: Outlining Potential Areas of Synergy” being a study by the Biodiversity and Biosafety Law Programme of the Centre for International Sustainable Development Law (CISDL) for the CBD WG-ABS 8, Montreal, Canada, February, 2010 (on file with the author) at 2-3.

¹¹⁷ *Ibid.*

netic resources is treated generically — that is terrestrial and marine combined.”¹¹⁸ Even so, both are not approached in an even-handed manner in all fora, as the CBD experience demonstrates. The CBD has a program of work on marine and coastal biodiversity. This program is silent on ABS, but it is pursued at national, regional and global levels under five target program elements, namely, integrated marine and coastal management, marine and coastal living resources, marine and coastal protected areas, mariculture, and invasive alien species.¹¹⁹

In recent times, there has been an increase in scientific research and industrial interest in MGRs. This trend requires a conscious attempt to explore the distinct character of MGRs, as opposed to their terrestrial counterparts, in order to determine the most appropriate approach to managing them.¹²⁰ The United Nations Informal Consultation Process (ICP) on Oceans and the Law of the Sea examines the subject of MGRs as part of current or emerging oceans issues.¹²¹ The ICP on MGRs notes the wide variety of MGRs and their diverse uses which are only now being explored by the biotechnology and related industrial complexes.

The variety of MGRs comprises every living marine resource, from fish to microbial organisms, and including viruses.¹²² Their ever increasing uses traverse aquaculture, food preparation, bio-remediation, medicine, cosmetology, preservation science and climatology, including global warming, to mention a few. MGRs and coastal life forms exist at a variety of depths and in complex ecological settings, including extreme environments, such as very hot (hydrothermal vents) or very cold (Arctic, Subarctic, Antarctic) conditions, “mangrove forests; coral reefs; sea grass beds; estuaries in coastal areas; . . . and seamounts; and soft sediments of the ocean floor a few kilometers below the surface.”¹²³ The increasing interest in biotechnology and general scientific research on MGRs is only beginning to scratch the surface of the economic wealth subsisting in the depths of the oceans outside the traditional extractive enterprises of fishing, oil and gas, and mining. The interest in MGRs will balance the extant emphasis of ABS on plant, animal and terrestrial biodiversity in general, with a focus on the deep reaches of the oceans and extreme environmental conditions hitherto underemphasized and undermined in the politics, economics, and science of biodiversity conservation.

As part of its outcome, the ICP on MGRs clearly indicates that MGRs straddle the biodiversity regime, especially under the CBD, and the broader oceans resources regime with particular regard to the Law of the Sea Convention (LOSC).¹²⁴ Because of its trans-boundary jurisdiction and open access or “commons” approach to ocean resources, the LOSC is “the regime for thinking about legal aspects of

¹¹⁸ See Lorraine (Lori) Ridgeway, “Marine Genetic Resources: Outcomes of the United Nations Informal Consultative Process” (2009) 24 *International Journal of Marine and Coastal Law* 309 at 313.

¹¹⁹ See CBD Program of Work on Marine Coastal Biodiversity, online: <<http://www.cbd.int/marine/resources.shtml>> (accessed May 2, 2010).

¹²⁰ Ridgeway, *supra* note 118 at 313.

¹²¹ *Ibid.*, providing the outcome of the 8th ICP which focused on MGRs.

¹²² *Ibid.* at 314.

¹²³ *Supra* note 118.

¹²⁴ Ridgeway, *supra* note 118 at 313.

MGRs in ABNJ [*i.e.*, areas beyond national jurisdiction].”¹²⁵ On the other hand, the CBD emphasis on national sovereignty over genetic resources makes it the main instrument for dealing with the legal aspects of genetic resources, including the scarcely acknowledged MGRs in areas within national jurisdiction. The inter-linked nature of biodiversity in every ecological setting — terrestrial (plant, animal), marine and other aquatic variations — requires a coherent and synergistic international approach across diverse regimes.

(iv) *A Holistic and Convergent Approach to ABS*

Specifically, a synergistic and all-inclusive biodiversity conservation strategy must incorporate genetic resources in all their classifications: terrestrial (animal, plants and FGRs), as well as in marine, coastal, aquatic and other unconventional ecosystems. Despite its limitations, the current CBD-led ABS enjoys the primacy of place and persuasion on the subject. However, it needs to be better coordinated across strategic fields in order to address issues unique to the marine and forest environments. This is necessary to promote realization of the all-important synergy between ABS in the context of FGRs and MGRs. On a less cheery note, the ABS Protocol provides, in part, under Article 3, that: “This Protocol shall apply to genetic resources within the scope of Article 15 of the Convention . . .”¹²⁶ The imperative for cross-sectoral coordination on ABS has been affirmed by the Conference of Parties of the CBD and ICP on MGRs and the Law of the Sea.

When FGRs and MGRs are fully elaborated and entrenched as integral components of a comprehensive ABS scheme on biodiversity, the status of some states would come into reckoning. For instance, Canada’s mega-rich forest resources, its unique ecology, geography and geology, and its extreme and diverse coastal and marine environments, would reveal not only a key source of MGRs, but also of FGRs and, overall, biodiversity. Consequently, Canada is a potential hub for marine scientific research, marine bioprospecting and the management of other knowledge-intensive activities that attract ABS considerations under national and international regimes.

It has been observed that “the role of traditional knowledge in marine genetic resources may not be the same as in a terrestrial context.”¹²⁷ Ordinarily, traditional knowledge is more readily associated with easily accessible terrestrial locations of biological diversity and genetic resources in comparison with less accessible MGRs in deep sea beds and areas outside national jurisdictions.¹²⁸ However, Canada’s Aboriginal peoples have a longstanding relationship with the sea due to the coun-

¹²⁵ *Ibid.* at 319.

¹²⁶ See *infra* note 134.

¹²⁷ Ridgeway, *supra* note 118 at 317. This may not be unconnected with the technology intensive nature of the exploration of marine ecosystems or marine scientific research.

¹²⁸ *Ibid.* This view should, however, not be overstretched. Aboriginal peoples of Canada have been exposed to Canada’s extreme environments and their significant oceans, islands, coasts etc., longer than later day Canadians. Consequently, indigenous peoples’ immemorial knowledge of these extreme and unique ecologies is central to their way of life and accounts in part for their survival through generations. Such experiences and knowledge systems are understudied and should not be underrated.

try's extensive coastlines and rich marine resources. This is particularly the case in regard to the coastal peoples of British Columbia and the Inuit. While the extent to which indigenous or traditional knowledge associated with MGRs may be inchoate, the point here is that Canada's status as a provider of genetic resources *qua* resources, is tenable even where there is no directly associated knowledge, traditional or otherwise.

Now that the real and potential status of Canada as a producer and user of genetic resources has been canvassed, it is left to explore how the interests of Canada's Aboriginal peoples could be accommodated within the proposed strategic (re)positioning of Canada in the ABS equation. In this regard both Canada's Aboriginal peoples and, perhaps more so, the Canadian state, have distinct but mutually reinforcing responsibilities.

4. PART III

(a) Aboriginal Capacity-Building on ABS

(i) *Expectations from the Canadian State*

Canada has to substantively engage its Aboriginal peoples as partners and stakeholders on the issue of ABS. The engagement required for this purpose is one that recognizes that the equities are not equal between different levels of the Canadian governmental apparatus and Aboriginal communities. Consequently, Canada must provide support for indigenous stakeholders through recognition and capacity-building, to help facilitate their understanding of the complex and constellating national and international ABS landscape. So far, Canada has adopted a pattern of *ad hoc*, top down, unidirectional consultations with Aboriginal peoples, including hurriedly organized workshops on ABS.¹²⁹ In the short run, this provides a semblance of activity and action required to fulfill the CBD reporting requirement. Aboriginal representatives are hurriedly enlisted by federal and provincial bureaucrats to satisfy the requirement of "Aboriginal participation" as a short-cut to legitimate consultations. But without capacity building, recognition of Aboriginal interests by the Canadian state, and reciprocal collaboration on ABS issues, there would hardly be any meaningful Aboriginal participation in ABS and related matters.

In adopting the text of the Bonn Guidelines, the COP of the CBD underscored the need for capacity-building as critical to the implementation of the Guidelines.¹³⁰ Pursuant to decision VI/24 of the COP, the Open-ended Expert Workshop

¹²⁹ Public-awareness and educational workshops are important for capacity building, when properly targeted for that purpose. But they should be distinguished from such fora when devoid of any deliverable capacity-building, especially when designed, as is the norm in Canada, to satisfy the reporting requirement of the CBD. Collaborative research efforts underway between the Montreal-based Centre for International Sustainable Development Law and the IDRC on the subject of ABS is a hopeful initiative which provides potential for an independent and alternative educational program on ABS. See online: <<http://www.cisd.org/programmes002.html>> (accessed December 11, 2009).

¹³⁰ See Decision VI/24A para. 8(e) online: <<http://www.cbd.int/decision/cop/?id=7198>> (accessed September 18, 2009).

on Capacity-building for Access to Genetic Resources and Benefit-sharing developed, as a matter of strategy, the Action Plan on Capacity Building for Access to Genetic Resources and Benefit-sharing.¹³¹ The Action Plan, which was adopted by decision VII/19 of the seventh COP, is a comprehensive program which identifies key areas for capacity-building on ABS, and the mechanisms for their implementation and coordination at national, regional, sub-regional and international levels. In the Canadian context, a significant portion of the Action Plan can be transposed to the sub-national level and applied in cooperation with Aboriginal peoples. The document specifically indicates that “[t]he implementation of the Action Plan at local, national, sub-regional, regional and international levels should involve indigenous and local communities and all relevant stakeholders.”¹³²

An important way of building Aboriginal capacity on ABS is to provide support to Aboriginal stakeholders to, among other things, interact with government bureaucrats at all levels, including federal, provincial and territorial. These officials are in a position to facilitate Aboriginal stakeholders’ familiarization with the science, law, policy and politics of ABS to enable them participate and make informed contributions to the ongoing elaboration of a Canadian ABS policy. To move beyond surface scratching, the initiative should include strategic cross-sectoral research funding in conventional and non-conventional institutional and non-institutional sites targeting Aboriginal capacity-building on ABS and related matters. Beyond these, Aboriginal peoples should also be supported to engage with diverse neutral intergovernmental, non-governmental, and other non-neutral activist and advocacy civil society organizations on ABS and related matters. This would ensure that they gain a more critical, independent and objective understanding and assessment of Canada’s national and international ABS policy.

The national, provincial and territorial governments of Canada are in a position to liaise with other stakeholders to implement collaborative public education initiatives as a capacity building strategy for effective Aboriginal participation in decision-making and policy formulation on ABS. In this regard, the CBD’s COP work on an international ABS is quite clear when it charges the WG-ABS and the WG-Article 8(j) and Related Provisions to ensure:

the [independent] participation of indigenous and local communities, non-Governmental Organizations, industry and scientific and academic institutions, as well as intergovernmental organizations to elaborate and negotiate an international regime on access and benefit-sharing with the aim of adopting an instrument/instruments to effectively implement the provisions of Article 15 and 8(j) of the Convention and the three objectives of the Convention.¹³³

The emphasis on capacity building is on developing countries with a vague

¹³¹ See the Annex to Decision VII/19 of the COP titled “Action Plan on Capacity-Building for Access to Genetic Resources and Benefit-Sharing”, online: <<http://www.cbd.int/decision/cop/?id=7756>> (accessed November 27, 2009).

¹³² *Ibid.*, para. A.

¹³³ See COP 7 Decision VII/19 on Access and Benefit-Sharing as Related to Genetic Resources (Article 15), online: <<http://www.cbd.int/decision/cop/?id=7756>> (last accessed May 6, 2010).

mention of indigenous and local communities which appears rather vaguely under Article 22(3) in some worth constrained form. It reads, in part: "Parties support the capacity needs and priorities of indigenous and local communities and relevant stakeholders, as identified by them, emphasizing the capacity needs and priorities of women."¹³⁴ Without question, capacity building in its diverse ramification, as elaborated in Article 22 and elsewhere, is an integral part of the new ABS regime under the Nagoya Protocol.

(ii) Expectations from Aboriginal Peoples

On their part, the development of Aboriginal peoples' effective capacity on ABS must, among other things, translate into their ability to identify their entitlements, priorities and sources of funding support at national and international levels.¹³⁵ As a matter of priority, Aboriginal capacity on ABS must reflect in their ability to conduct as practically as possible, a proper audit of their knowledge systems and regional and national institutional resources relevant to ABS.¹³⁶ This would involve technical and taxonomic skills to interpret and locate Aboriginal knowledge relevant to ABS, in the context of its interaction with other knowledge systems. Such capacities are necessary for identifying aspects of Canadian Aboriginal knowledge and genetic resources that constitute current or potential targets for exploitation and marketing by national and international biotechnology firms, non-commercial research organizations and other industrial applications. In short, one benefit of capacity building is that it enables Aboriginal peoples, including particular stakeholders, to get onto the cutting-edge of the diverse trends in genetic resource-based innovations that implicate indigenous knowledge and techno-scientific trends and marketing relevant to ABS. With the capacity to identify forms of their knowledge relevant to ABS as an ongoing inquiry, Aboriginal peoples would be able to efficiently position their knowledge system as dynamic and not frozen in time. They would also be able to appreciate their strengths and limitations, and those of their knowledge systems in regard to specific ecological sites, so as not to use ABS as a mechanism to scuttle research and innovation.

For instance, Aboriginal forest-related knowledge is more easily explored than the evaluation of Aboriginal knowledge in marine/deep oceans or other aquatic ecosystems. Forests are estimated to contain "93,000 of Canada's 140,000 species of plants, animals, and microorganisms, making forests an important ecological

¹³⁴ The text of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity, online: <<http://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>> (last accessed March 26, 2011).

¹³⁵ According to the Action Plan, funding opportunities for capacity building (which would cover creative training initiatives, exchange programs, training workshops, use of audio visual, multimedia and diverse educational and public enlightenment tools) are available via multiple sectors at regional, sub-regional and international levels involving both public and private sectors and intergovernmental institutions, such as the Global Environmental Facility (GEF).

¹³⁶ A ready example is an organization like the Truro, N.S., Maritime Aboriginal Aquatic Resources Secretariat.

component of Canada's biodiversity [relevant] for genetic and biotechnological research and development activities in support of many forest-related specialties (tree-breeding, silviculture, forest product processing, etc.) and other fields of practice (food, pharmaceutical, natural medicinal products, etc.)."¹³⁷ Unmistakably, forests are a critical context of Aboriginal knowledge relevant to ABS.

It is true that the Aboriginal peoples have immemorial custodial experience of Canada's complex, unique and extreme environments. However, compared to FGRs, Aboriginal knowledge of MGRs in the deep ocean, Arctic and sub-Arctic regions, and genetic resources in other extreme conditions is perhaps more limited, or so it seems.¹³⁸ Similarly and, compared to available scientific knowledge of species of terrestrial biodiversity, the same is true of western science relating to MGRs. Interest in MGRs and marine scientific research in general, especially in the context of biotechnology, is now only beginning to be explored.¹³⁹ Law, science and policy have only begun to grapple with the complexity and the nesting of MGRs in multi-sectoral and cross-cutting contexts¹⁴⁰ far removed from the purview of indigenous knowledge, as compared to other more explored aspects of biodiversity.

The ultimate translation of the benefits deriving from the ABS process is an underlying rationale for capacity building. For Aboriginal peoples, this means being able to create governance mechanisms to enforce and implement protocols on ABS so as to properly identify, target and benefit the right stakeholders, be they communal or individual. This could be done through provisions of existing or future treaties, self-government agreements, customary protocols, laws and practices of the specific Aboriginal community, or by virtue of other arrangements.¹⁴¹ Compared to other stakeholders, indigenous peoples are better positioned to determine the right kind of incentives or benefits that may be worth sharing in view of the

¹³⁷ See "The Convention on Biological Diversity and Access to Genetic Resources and Associated Traditional Knowledge and Benefit Sharing: Facts, Interface and Emerging ABS Forest-related Issues" (being a report of the joint Canada and New Brunswick Government Workshop on Access to Forest Genetic Resources and Benefit-Sharing, February, 2006), online: <http://www.nafaforestry.org/forest_home/documents/ABSworkshop-FactSheet.E.logo.pdf> (accessed December 7, 2009).

¹³⁸ One has to be careful in making any categorical claims about traditional knowledge in the Arctic and sub-Arctic regions. Not many would dispute the sophisticated knowledge of the Inuit in cataloguing information on MGRs in the deep ocean, and on genetic resources in Arctic and sub-Arctic environments.

¹³⁹ Ridgeway, *supra* note 118 at 515 (noting that "MGRs have a wide variety of uses — economic, social and environmental. Appreciation of the breadth of applications is now just emerging").

¹⁴⁰ *Ibid.*

¹⁴¹ See Articles 12(1) of the Nagoya Protocols (providing for the recognition of indigenous and local communities' customary laws, community protocol and procedures on ABS); Article 10, 11 (providing for the management of genetic resources and traditional knowledge associated thereto that occur in transboundary situations). Similar provisions are contained, for example, in proposed Articles 5 and 6(5) of the Draft WIPO-IGC Provisions on the Protection Traditional Knowledge (Revised Objectives and Principles). See WIPO/GRTK/IC/16/5 (March 22, 2010).

underlying objectives for ABS. Often, the complex nuances of the indigenous cultural experience are hardly appreciated at the preliminary stages of policy elaboration. But when policy has to be translated into implementable points in indigenous circles, the often presumed homogeneity of the indigenous cultural experience hardly stands up to scrutiny. Australia's experience forcefully demonstrates this truism.¹⁴²

Aboriginal peoples are the best authorities to interpret their knowledge systems in the context of diverse bio-cultural experiences. Neither governments, nor latter-day sophisticated but less familiar corporate or research-oriented intermediaries can implement the details of any prospective ABS regime in a manner cognizant of the competing and, often, complementary stakeholder interests within the socio-cultural settings that contextualize entitlements to the benefits of indigenous knowledge.¹⁴³ Only the indigenous or Aboriginal peoples themselves can devise the appropriate governance mechanisms to translate any national or international ABS protocol that may cater to the details required for the practical elaboration of their knowledge. Even if less satisfactorily, the Nagoya Protocol makes some accommodation that could constitute important starting point to this expectation.¹⁴⁴

Finally, in Canada's peculiar context, negotiating a national ABS regime and translating the Nagoya Protocol, for that matter, would require traversing the bridge between the State and Aboriginal peoples created to deal with the long-drawn out subject of Aboriginal treaty rights, self-government and land claim settlements. On that platform, Aboriginal peoples would seek from the various Canadian governments a solution for the translation of the provisions of Articles 3 and 15(1) of the CBD, which indicate that *States* have sovereign rights over natural and genetic resources located within their jurisdictions, a point reiterated in the preamble to the Nagoya Protocol. Aboriginal peoples would also seek guarantees regarding Articles 8(j) and 10(c) of the CBD that are designed to protect, promote and respect the traditional knowledge, innovations and practices of indigenous peoples relevant to the CBD's objectives, and to encourage the equitable benefit sharing arising from their broader use. Given the intricate connection of Aboriginal peoples to their land, their knowledge systems and genetic or, more appropriately, biological resources, they should demand to know on what premise their claims to these resources could be reconciled with those of the Canadian State, and what claim, if any, should trump the other and on what basis in cases of conflict. This state of affairs appears to have been foreseen by the Action Plan when it suggested that "determination of ownership or rights to provide resources, including rights of indigenous and local communities; traditional knowledge; private sector partnership; prior informed consent; implementation and conflict resolution" are critical issues

¹⁴² See Anderson, *supra* note 21.

¹⁴³ See Hayden, *supra* note 16.

¹⁴⁴ See for example, Article 12(1) which recognizes the role of customary laws of indigenous and local communities on the subject of ABS. On the limitations of the provision, see Robinson and Tobin, *infra* note 151 and accompanying text.

for the “development of national access and benefit-sharing strategy or policy.”¹⁴⁵

(iii) *In the Wake of Nagoya: Opportunity Amidst the Flaws*

It is neither within the scope of this article to do a textual analysis of the Nagoya Protocol nor to x-ray Canada’s role in the final negotiations. However, from our narrative so far, one can conclude: i) that Canada could have done better through the negotiations if it adverted to its immense potential as a user and provider of genetic resources. In which case, such a realization would have moderated Canada’s consistent pro-industry tone throughout the negotiations. Perhaps nothing symbolized Canada’s insensitivity to its role as a provider of genetic resources and, by extension, associated indigenous knowledge, than its earlier opposition to a reference to the United Nations Declaration on the Rights of Indigenous Peoples (DRIPS) in the preamble to the Nagoya Protocol;¹⁴⁶ ii) given the paucity or even non-existence of a Canadian national legal regime on ABS patterned after the Bonn Guidelines, the emergence of the Nagoya Protocol appears to have caught Canada unawares; iii) consequently, Canada has perhaps two clear options, *i.e.*, to fast track its domestic framework and consultations in order to rise to the challenge presented by the Protocol, or to stall from ratifying the Protocol and risk the potential embarrassment and repeat occurrence of its three years of holding out on the DRIPS which it grudgingly signed following the ABS Protocol.¹⁴⁷

The second option is the least attractive while the first option represents is, perhaps, Canada’s best choice. Admittedly, even before the ink has dried on its text, the Protocol has continued to generate controversy and conflicted interpretations. Some have called it a “masterpiece of ambiguity.”¹⁴⁸ Others call it “an unpleasant ending to a very long negotiation.”¹⁴⁹ Principal areas of controversy include its treatment of derivatives,¹⁵⁰ the scope of its application, its failure to *directly*

¹⁴⁵ See Appendix to COP 7 Decision VII/19 online: <<http://www.cbd.int/decision/cop/?id=7756>> under the title of “possible approaches for action” (accessed November 17, 2009).

¹⁴⁶ Canada was among the countries that did not sign onto the United Nations Declaration on the Right of Indigenous Peoples in 2007. See *supra* note 40 and accompanying text. During the Nagoya negotiations, it objected to making reference to DRIPS in the preamble to the Protocol but failed. Paragraph 25 of the Protocol reads: “*Noting* the United Nations Declaration on the Rights of Indigenous Peoples.”

¹⁴⁷ Ironically, despite Canada’s initial objection to a reference to DRIPS in the preamble to the ABS Protocol, in a face-saving measure, Canada endorsed the DRIPS, November 14 2010. See online: <<http://www.ainc-inac.gc.ca/ai/mr/nr/s-d2010/23429-eng.asp>> (last accessed November 19, 2010).

¹⁴⁸ See ICTSD, “CBD Clinches ABS Protocol in Nagoya” (2010) 10 Bridges Trade Biores #20 November 8, 2010, online: <<http://ictsd.org/i/news/biores/94075>> (last accessed November 28, 2010).

¹⁴⁹ Remark made by Dr. Mooney, the CEO of the ETC Group whose organization had been actively involved for the six years of negotiations that resulted in the Nagoya Protocol. See *supra* note 91.

¹⁵⁰ The significance of derivatives is that 90 per cent of biopiracy which the concept of ABS seeks to mitigate involves the use of derivatives. Article 2 of the Protocol defines

sanction the issue of disclosure of source and origin of genetic resources, the general weakness and limitations of its overall language along the same vagueness that characterizes the CBD text, to mention a few. Yet for many, the Protocol is an important starting point far preferable to the possibility of the stalemate that would have scuttled six long years of hard work at Nagoya.

The Protocol provides important milestones in regard to affirming virtually all the established principles in the Bonn Guidelines. It endorses the recognition of indigenous and local communities as holders of traditional knowledge, even though such recognition seems to go below the standard contemplated by DRIPS.¹⁵¹ Impressively, it commits parties to recognize the customary laws of indigenous and local communities in regard to PIC and the ABS process.¹⁵² Somehow, it constricts the ability of those communities to implement or optimize those provisions by making such initiatives subject to domestic laws of the member states.¹⁵³ Perhaps more important for Canada, the Protocol has elaborate provisions in areas of institutional and human capacity building, monitoring of utilization of genetic resources, global benefit-sharing mechanism in regard to genetic resources and traditional knowledge associated with the latter in transboundary contexts, compliance with MATs, development of code of conduct and best practices, awareness-raising, etc.¹⁵⁴ Thus, despite its advertised and self-evident flaws, the Nagoya Protocol provides significant template and opportunity for a constructive institutionalizing of domestic ABS framework in Canada, one that would build on the imperative for integrating Aboriginal stakeholder contributions and optimizes Canada's unique status as provider and user of genetic resources without discounting associated indigenous knowledge as may be applicable.

5. CONCLUSION

The development of biotechnology in the latter part of the twentieth century demonstrates the convergence and interaction between science, biodiversity and indigenous knowledge. This interaction has yielded a lopsided outcome in the form of the unidirectional transfer of biological resources and associated indigenous

derivatives, even as it limits the meaning of "genetic resources" to the CBD definition under Article 15. The latter is silent on derivatives. However, because the Protocol also defines "utilization of genetic resources", analysts argue that such utilization would include derivatives. In which case, the Protocol covers the use of derivatives. See ICTSD, *supra* note 148.

¹⁵¹ Article 31 of DRIPS is an affirmation of the rights of indigenous peoples to ownership and control of their knowledge. But for the most part, the language of the Protocol text suggests the ability of indigenous peoples to realize this promise in the context of ABS is subject to domestic law of the member states to Protocol, which is often in conflict with indigenous aspirations. See Daniel Robinson and Brendan Tobin, "Dealing with Traditional Knowledge under the ABS Protocol" ICTDS Environmental and Natural Resources Programme Vol. 4, No. 3, October 2010, online: <<http://ictds.org/i/environment/87124/>> (last accessed November 8, 2010).

¹⁵² See Article 12(1), for example.

¹⁵³ See *supra* note 151.

¹⁵⁴ See generally Articles 22, 10, 11, 18, 20, 21, etc.

knowledge to Western scientific industrial complexes, especially in the fields of food, agriculture and pharmaceuticals. Analysts have depicted this trend, which is augmented by various aspects of the intellectual property system, as biopiracy. As an unrequited form of exploitation of biological resources and associated indigenous knowledge, biopiracy is fingered as being antithetical to the international effort regarding the conservation and sustainable use of biological diversity. The knowledge of indigenous and local communities, including their custodial role in the conservation of global biological resources, constitutes part of the received wisdom that is integral to the international environmental protection and preservation regime.

As a counter to biopiracy, the concept of ABS supports a negotiated mechanism to balance the competing interests of equitable access and reward for both users and providers of genetic resources. ABS is fast becoming an entrenched feature of international law and policy. It implicates the convergence of environmental, indigenous, intellectual property law, and socio-economic development. Although principally championed by the CBD, ABS has become the subject of a multiple and complex regime constellation that traverses a host of national, regional and international forums. Most notably, perhaps, the constellation includes the FAO Treaty on Plant Genetic Resources for Food and Agriculture and the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. Even taken into a critical account of the newly concluded ABS Protocol, the elaboration of the ABS program in the CBD is, however, founded on a conception of genetic resources that focuses on terrestrial ecosystems.¹⁵⁵ This framework does not fully accommodate FGRs and MGRs which are covered under regimes parallel to the core CBD agenda.

Overall, a narrow approach to genetic resources under the CBD's work on ABS does not adequately represent or buttress Canada's status as a country rich in biodiversity and associated indigenous knowledge. A synergistic or holistic conception of genetic resources to encompass terrestrial ecosystems, as well as FGRs and MGRs, is required to fully comprehend that Canada is a producer and a user of genetic resources and associated indigenous knowledge. Thus far, Canada has not demonstrated a serious commitment to the ABS program. Like other leading biotechnology countries, its lack of serious commitment is premised on its self-perception, arguably, as more of a user, and not necessarily a provider of genetic resources. But, at least officially, Canada recognizes that the two positions are not mutually exclusive. Essentially, therefore, the country sends mixed signals on the issue of ABS. But the Nagoya Protocol, despite its shortcomings, presents an opportunity for Canada to seriously re-think its approach to the subject of ABS.

Casting Canada as a user nation essentially caters to its biotechnology interests, but distances it from its indigenous and local communities who are immemorial tenders and custodians of its genetic heritage and associated indigenous knowledge. The claim to be a user of genetic resources is not uncommon among the developed countries. They consider the ABS scheme as an irritation, and rightly so,

¹⁵⁵ This is not unexpected because the Protocol is part of the implementation instruments of the CBD and is, among other considerations, specifically designed to give effect to Article 15 thereto.

seeing that ABS is an accountability process that puts its main searchlight on external users of such resources. The presumption for their user categorization is that most of them are bioresource-barren enclaves that avidly look to acquire genetic resources from less developed regions of the globe. For Canada, the full incorporation of FGRs and MGRs into the ABS equation would warrant a reconsideration of its interest as mainly a user of genetic resources. As biotechnology innovation turns on MGRs, Canada's complex and extreme marine ecological profile would aver for its status as a provider of genetic resources and an important source of marine scientific knowledge. In addition to MGRs, Canada's abundant FGRs and its indigenous knowledge and heritage combine to make it a provider of genetic resources.

A reformulation of Canada's current approach to ABS would help to build the confidence of its Aboriginal peoples who are presently alienated by its lackluster stance on the subject. This change of tactic would also place Canada in a strategic position with the developing countries, the majority of which are providers of genetic resources. So far, in the ABS debate, users and providers of genetic resources are seen as having mutually exclusive interests. For the most part, the dividing line is drawn between developed and developing countries to correspond to users, and providers, of the resources. This position does not stand up to scrutiny, and Canada officially recognizes this.¹⁵⁶ As both a user and provider of genetic resources, Canada has an opportunity to ratify the Nagoya Protocol and seize on the present momentum through its domestication to become a credible leader to bridge the gap and overturn the suspicion that presently characterizes the engagement of the developed and developing countries on the issue of ABS. The implementation of the Protocol presents a chance for Canada to show leadership on the domestic front that would have ramification on the global level. To engage either opportunity requires Canada to first shore up the confidence and capacity of its Aboriginal peoples so they could effectively participate in forging the emergence of a credible and functionally feasible ABS process.

¹⁵⁶ See *supra* note 12 and accompanying text.

The Regulation of Wind Power in Alberta: The Case of Municipalities

Nickie Vlavianos*

Wind energy development has been on the rise over at least the last decade for a number of reasons, including the increasing awareness of the need to reduce greenhouse gas emissions from carbon-based electricity generation. As wind power development increases, so too will concerns from local governments over this type of development. This article considers the role of municipalities in decision-making around wind power development in Alberta. It assesses the position of municipalities within the current policy and legal framework. It asks the following questions: What is the legal position of municipalities with respect to wind power development in Alberta? How are their views and concerns taken into account? Can municipalities address wind power development through land use bylaws and other statutory instruments? Should they do so?

Although municipalities are a level of government with legislated mandates and legitimate interests and concerns over wind power development, this article finds that they are clearly subordinate to provincial decision-making in the current regime. It also finds that the relationship between provincial and municipal decision-making with respect to wind power development is a complex one. Many questions are raised and left unanswered. Still, drawing upon the experiences of the Municipal District of Pincher Creek in particular, the article notes that there are important avenues available for municipalities to pursue in this context. It also concludes that there are valid reasons for municipalities to be proactive with respect to wind power development within their borders.

Le développement de l'énergie éolienne est en croissance depuis au moins la dernière décennie, et ce, pour plusieurs raisons, notamment la prise de conscience grandissante du besoin de réduire les émissions de gaz à effet de serre provenant de la production d'électricité à partir de combustibles à base de carbone. La croissance du développement de l'énergie éolienne soulèvera aussi des préoccupations de la part des gouvernements locaux concernant cette évolution. Dans cet article, l'auteure étudie le rôle des municipalités en matière de prise de décisions entourant le développement de l'énergie éolienne en Alberta. L'auteure évalue la position des municipalités dans le cadre législatif et politique actuel. Elle soulève les questions suivantes : quelle est la position juridique des municipalités au sujet du

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développement de l'énergie éolienne en Alberta? Comment leurs opinions et leurs préoccupations sont-elles prises en compte? Les municipalités peuvent-elles encadrer le développement de l'énergie éolienne par des règlements municipaux sur l'emploi des terres et par d'autres instruments de réglementation? Devraient-elles le faire?

Les municipalités constituent un palier de gouvernement mandaté par la loi et ayant des intérêts et des préoccupations légitimes concernant le développement de l'énergie éolienne. Malgré cela, l'auteure de cet article soutient que les municipalités sont clairement subordonnées au processus décisionnel du gouvernement provincial dans le régime actuel. Elle maintient aussi que la relation entre le processus décisionnel provincial et celui des municipalités concernant le développement de l'énergie éolienne est complexe. Plusieurs questions sont soulevées, mais demeurent sans réponse. Par contre, en se fondant sur les expériences particulières de l'arrondissement municipal de Pincher Creek, l'auteure souligne que les municipalités ont tout de même plusieurs moyens à leur disposition dans ce contexte. Elle arrive également à la conclusion que les municipalités ont de bonnes raisons d'être proactives en matière de développement de l'énergie éolienne sur leurs territoires.

1. INTRODUCTION

As awareness of the environmental implications of carbon-based electricity generation grows, interest in and demand for wind energy will continue to increase. Over the past ten years, wind power has become the fastest growing source of electricity worldwide.¹ In Alberta, the wind industry continues to grow. Wind power currently amounts to 5 per cent of the province's generation mix, but the expectations of significant growth are clear.²

The legislative and regulatory framework for energy development in Alberta, at least with respect to the primary source of energy in the province, oil and gas, is characterized predominately by centralized decision-making. The provincial government and delegated provincial agencies or boards have the ultimate final say over key issues such as the pace and intensity of oil and gas development, the location of that development, and the acceptable risks and impacts from that development. Generally, even when local or regional stakeholders, such as municipal governments, are granted a role in decision-making, they are not the final arbiters when

¹ Jeff Bell & Tim Weis, *Greening the Grid: Powering Alberta's Future with Renewable Energy* (Drayton Valley, AB: The Pembina Institute, 2009) at 33.

² See Alberta Energy, "Electricity Statistics," online: <<http://www.energy.gov.ab.ca/Electricity/682.asp>>. Electricity in Alberta is currently generated primarily from coal (approximately 46 per cent) and natural gas (approximately 40 per cent): *ibid.* In its 2009 Strategic Plan, the Alberta Energy Research Institute aims to see 20 per cent of Alberta's total electricity mix coming from renewable energy, including wind, by 2020: see Tyler Hamilton, "Alberta has wind at its back" *Toronto Star* (21 December 2009) B1. See also: Shawn McCarthy, "Ottawa tells energy firms to start powering down coal-fired plants" *Globe and Mail* (25 April 2010), online: <<http://www.theglobeandmail.com/report-on-business/ottawa-wants-coal-fired-power-plants-to-close/article1546314/>>.

it comes to oil and gas matters in the province.³

As wind power grows in importance, key questions will have to be addressed. How much wind power will be produced in the province? How much will be given access to the provincial electricity grid? Where will wind farms be located? How many will be allowed and how large can they be? What type of impacts from such development will we tolerate? Such questions will intensify as wind power development intensifies over the coming years.

In answering these questions, a fundamental tension will undoubtedly arise, as it has on the oil and gas side, in regard to the appropriate balance between centralized and decentralized decision-making. There are of course good reasons for centralized decision-making in energy development generally. Decisions around the composition of a province's energy mix must take into account economic, social and environmental considerations at a provincial level. Centralization also ensures a level playing field for industry no matter where operations are located. It ensures consistency and predictability at least with respect to minimum standards. This prevents the creation of a patchwork of regulations across the province which could lead to forum shopping by industry. It also removes incentives to lower standards so as to attract development for short-term benefit. Centralized decision-making further ensures that local interests and concerns do not prevail over the interests and concerns of the greater whole. Allowing decisions to be subject to a local veto could promote a "not in my backyard" phenomenon that could undermine the well-being of the whole province in the interests of a few.

Still, there are downsides to centralized decision-making. It may be that, on some matters, the greater provincial interest does not equate with that of local or regional constituencies. In the energy development context, there is no doubt that the impacts from development, both positive and negative, are felt most directly and acutely by local stakeholders. These include landowners whose land is directly affected but also neighbours and others working or living in the affected area. It also includes local industry as well as the local government which must handle infrastructure and other pressures from the proposed development. Indeed, regulators have noted that sometimes the impacts of proposed energy development will be borne primarily by the local community while the primary benefits flow elsewhere.⁴

Ultimately, a balance must be struck. Too much centralization has its downsides as does too much decentralization. This paper considers where the current balance lies in the case of wind power development in Alberta.⁵ The vehicle through which decentralized decision-making is assessed is Alberta's form of local

³ For a detailed review of the centralized approach taken in Alberta for oil and gas development and the limited role accorded to municipalities, see Nickie Vlavianos & Chidinma Thompson, "Alberta's Approach to Local Governance in Oil and Gas Development" (2010) 48:1 Alta. L. Rev. 55.

⁴ See, for example, National Energy Board, *Sumas Energy 2, Inc., Application for the Construction and Operation of an International Power Line*, Reasons for Decision EH-1-2000 (March 2004).

⁵ For a similar analysis with respect to oil and gas development, see Vlavianos & Thompson, *supra* note 3.

government, the municipality. Because municipalities are the natural vehicle for representing the values and interests of their local constituencies, they are typically on the frontlines in dealing with local issues and concerns in respect of all types of development. The courts have also increasingly noted that local governments tend to be better positioned in terms of local knowledge to anticipate and deal with the social, economic and environmental impacts of development. The Supreme Court of Canada has noted that local governments are the level of government “closest to the citizens affected and thus most responsive to their needs, to local distinctiveness, and to population diversity.”⁶

This article considers the role of municipalities in decision-making around wind power development in Alberta. It considers the following questions: What is the legal position of municipalities vis-à-vis wind power development in Alberta? How are their views and concerns taken into account? Can municipalities address wind power development through their own bylaws and other regulatory instruments? Should they do so?

Part 2 of this article sets the context by providing some basic facts about wind power development generally and wind power development in Alberta in particular. Part 3 describes the nature and mandates of municipalities in Alberta and explains why they may be interested in decision-making around wind power development within their borders. Part 4 reviews the key features of Alberta’s legislative and regulatory framework for wind power development and highlights the role of municipalities within that framework. Part 5 explores the possibility of municipalities directly regulating some aspects of wind development through their land use and planning powers. In particular, it examines the approach taken by the Municipal District of Pincher Creek No. 9. Part 6 of the article summarizes the findings made and provides some concluding remarks. It highlights the fact that, although they are accorded a subordinate role in the current framework for wind power development in Alberta, municipalities do have some ability to ensure that at least some of their concerns are addressed. Moreover, there are valid and important reasons why municipalities should address wind power development in their statutory plans and land use bylaws.

2. WIND POWER AND WIND POWER DEVELOPMENT IN ALBERTA

Wind energy generation is, in theory, a simple operation. Modern wind turbines sit on top of towers and convert wind into mechanical movement. The wind spins the blades of the turbine to create mechanical power, and this mechanical power is used to turn a generator and produce electricity. The electricity is then carried by cables to transmission lines to move electricity to suppliers and consumers.⁷ Wind energy conversion systems can range in size and scope from small-scale microgeneration units used to power individual homes and businesses to massive 125 metre multi-million dollar turbines used as part of large-scale wind farm

⁶ *114957 Canada Ltée (Spray-Tech, Société d’arrosage) v. Hudson (Ville)*, [2001] 2 S.C.R. 241 (*Spraytech*) at 249.

⁷ See Canadian Wind Energy Association, “Wind Energy,” online: <http://www.canwea.ca/wind-energy/index_e.php>.

operations.⁸

Commentators note that wind has been the fastest growing source of electrical power worldwide over the past ten years.⁹ Several factors continue to make the development of wind energy more viable than in the past. These include advances in technology, at times fluctuating and uncertain oil and natural gas prices, and increasing evidence that fossil fuel supplies are “finite, politically vulnerable and environmentally taxing.”¹⁰ By far the key current driver pushing wind power development (and the development of other renewable energy sources) is undoubtedly the increasing need to reduce carbon emissions to combat climate change.¹¹

In Canada, although the growth in wind energy has not equaled that of other countries, growth has been steady.¹² As for Alberta, Wenig *et al.* note that the province “has been the focus of wind development in Canada for more than a decade.”¹³ Commentators note that Alberta has one of the best and most accessible land-based wind resources in Canada.¹⁴ The winds are strongest in the south of the province, although there are windy regions throughout the west and northwest.¹⁵

Currently, Alberta has approximately 657 megawatts (MW) of wind power connected to the grid.¹⁶ As of mid-2009, there was more than 11,000 MW of wind generating capacity under development and seeking approval from the Alberta Electric System Operator (AESO) to connect to the grid.¹⁷ Even with all these projects, commentators note that Alberta has significant untapped wind power capacity. Alberta’s total wind energy potential is estimated at roughly 64,000 MW.¹⁸

Despite the potential, critics note Alberta’s modest progress. Although the Al-

⁸ See Bell & Weis, *supra* note 1 at 33. Generally, non-commercial wind power projects generate electricity to be used on-site whereas commercial projects result in the sale of electricity off-site.

⁹ Bell & Weis, *ibid.*

¹⁰ Brad Armstrong, Krista L. Hughes & Monica Balaski, “Permitting Issues in British Columbia and Alberta: Wind and Run-of-River Projects” (Paper presented at the Insight Conference on British Columbia Power Summit, Vancouver, B.C., 6-7 December 2005) (Calgary: Lawson Lundell LLP, 2006).

¹¹ See, for example: *ibid.*; Bell & Weis, *supra* note 1; and McCarthy, *supra* note 2.

¹² Michael M. Wenig *et al.*, *Legal and Policy Frameworks for Renewable Energy in Alberta*, Alberta Energy Futures Project Paper No. 12 (Calgary: Institute for Sustainable Energy, Environment and Economy, University of Calgary, 2007) at 1. See also Bell & Weis, *supra* note 1; Armstrong *et al.*, *supra* note 10 at 3; and Michael Wenig & Michal Moore, *Is “Conservation” Worth Conserving? The Implications of Alberta’s “Energy Resource Conservation” Mandate for Renewable Energy*, Occasional Paper No. 20 (Calgary: Canadian Institute of Resources Law, 2007) at 4-8.

¹³ Wenig *et al.*, *ibid.* at 87.

¹⁴ Bell & Weis, *supra* note 1.

¹⁵ *Ibid.* at 34.

¹⁶ As noted, wind makes up approximately 5 per cent of the current generation mix. See Alberta Energy, *supra* note 2.

¹⁷ Government of Alberta, “Talk about Wind Power: Facts on Wind Power” (April 2009), online: <http://www.energy.alberta.ca/Electricity/pdfs/FactSheet_Wind_Power.pdf>.

¹⁸ Bell & Weis, *supra* note 1 at 34.

berta government announced in 2008 that “alternative and renewable energy sources will play a growing role in Alberta’s energy future,” it also concluded that these “cannot match the importance to Alberta of ‘clean’ fossil fuels.”¹⁹ Critics point to a lack of political will to move away from an emphasis on fossil fuel-based electricity in the province.²⁰ They also point to the moratorium imposed by the government on wind power over provincially-owned lands as evidence of a lack of support for wind power in the province.²¹ Similarly, commentators note that Alberta is the only Canadian province without a government defined wind power integration goal.²²

Nonetheless, as the barriers to wind energy continue to be overcome, it is generally anticipated that there will be continued growth in Alberta. One key barrier, namely the lack of transmission capacity, has been recently addressed.²³ Ultimately, how far wind development progresses in the province will depend on several factors, including technological advances, government policies, and market dynamics. Given Alberta’s bountiful wind resources and the growing need to switch to cleaner energy sources, it is likely wind power development will continue to increase, although exact numbers are difficult to predict.²⁴ As this growth occurs, it is reasonable to predict that municipalities, who will feel the impacts of this development most directly, will become increasingly interested in their role vis-à-vis wind development.

¹⁹ Government of Alberta, *Alberta’s 2008 Climate Change Strategy*, online: <<http://environment.gov.ab.ca/info/library/7894.pdf>>.

²⁰ *Supra* note 1.

²¹ See, for example, Ryan Kalt, *A Tale of Two Winds: The Regulatory Framework for Wind Energy in Alberta and Ontario* (2009) [unpublished].

²² See, for example, Canadian Wind Energy Association (CANWEA), online: <<http://www.canwea.ca/images/uploads/File/Fed%20and%20provincial%20initiatives-%20Feb%202009.pdf>>. This is in contrast to the approach taken by many other jurisdictions. See Helle Tegner Anker, Birgitte Egelund Olsen & Anita Ronne, “Wind Energy and the Law: A Comparative Analysis” (2009) 27:2 J. Energy & Nat’l Res. Law 145, [where the authors state, at 152, that the general policy trend worldwide has been to set specific targets for increasing the share of renewables in overall energy consumption. The authors also note, *ibid.*, that the “use of wind energy depends on political will and the adoption of the necessary instruments for the implementation of these targets.”].

²³ Legislative amendments were recently passed to upgrade and strengthen Alberta’s transmission system. See *Bill 50: Electric Statutes Amendment Act, 2009*, 2d Sess., 27th Leg., Alberta, 2009. As well, the construction of a new major transmission line to facilitate wind power projects in southwest Alberta was recently approved. See Alberta Utilities Commission, Decision 2009-028, *Alta Link Management Ltd., Transmission Line from Pincher Creek to Lethbridge* (10 March 2009).

²⁴ Alberta’s electricity consumption is expected to double by 2027: Alberta Energy, *Launching Alberta’s Energy Future: Provincial Energy Strategy* (Edmonton: December 2008), online: <<http://www.energy.alberta.ca/Initiatives/strategy.asp>>.

3. MANDATES, INTERESTS AND CONCERNS OF ALBERTA MUNICIPALITIES

(a) Mandates

A municipality can be defined as “a corporation, a legal device that allows residents of a specific geographic area to provide services that are of common interest.”²⁵ Municipalities provide a wide range of services and facilities that impact our day-to-day lives. For instance, municipalities exercise responsibility with respect to roads, public transit, water supply (and sometimes natural gas, electricity and telephones), sewage collection and treatment, solid waste collection and disposal, land use planning and regulation; building regulation and inspection; economic development and promotion, business licensing, and emergency planning.²⁶

In addition, a municipality is a “democratic institution, governed by an elected council that exists as a vehicle through which local citizens can identify and address their collective concerns.”²⁷ In Tindal’s view, the municipality is “an extension of the community, the community governing itself.”²⁸ Similarly, courts have recognized the role of municipal councils in “reflecting the conscience of the community.”²⁹

In Alberta, local governments or municipalities are created and empowered by the *Municipal Government Act*.³⁰ Section 1(1)(s) defines a “municipality” as a city, town, village, summer village, municipal district or specialized municipality, or, if the context requires, as its geographical area. The terms “local authority,” “local government” and “municipal authority” are typically used interchangeably with “municipality.” There are 356 municipalities in Alberta: 278 urban ones (*i.e.*, cities, towns, villages and summer villages), 4 specialized ones and 74 rural municipalities (including municipal districts).³¹

Section 3 of the *MGA* sets out the purposes of Alberta municipalities as follows:

- (a) to provide good government;
- (b) to provide services, facilities and other things that, in the opinion of council, are necessary or desirable for all or part of the municipality; and
- (c) to develop and maintain safe and viable communities.

²⁵ C.R. Tindal, *Local Government in Canada* (Toronto: Nelson, 2004) at 2.

²⁶ A. Sancton, “Provincial and Local Public Administration” in C. Dunn, ed., *The Handbook of Canadian Public Administration* (Toronto: Oxford University Press, 2002) at 254.

²⁷ Tindal, *supra* note 25 at 3.

²⁸ *Ibid.* at 6. See also I. Rogers, *The Law of Canadian Municipal Corporations*, 2d ed., vol. I (Toronto: Thomson Carswell, 2003), chapter 1.

²⁹ *Smith v. White City (Village)* (1989), 81 Sask. R. 79 (Q.B.).

³⁰ *Municipal Government Act*, R.S.A. 2000, c. M-26 (*MGA*).

³¹ Government of Alberta, *Land-Use Framework* (Edmonton: December 2008), online: <<http://www.landuse.alberta.ca/AboutLanduseFramework/LUFProgress/documents/LanduseFramework-FINAL-Dec3-2008.pdf>> (*LUF*).

All powers granted to municipalities by the *MGA* must be exercised in accordance with these purposes.

The *MGA* grants municipalities the ability to enact bylaws respecting a variety of matters including: (a) the safety, health and welfare of people and the protection of people or property; (b) nuisances, including unsightly property; (c) transport and transportation systems; (d) business and business activities; (d) services provided by or on behalf of the municipality; and (e) public utilities.³² According to s. 9(b), these general bylaw-making powers are to be construed broadly so as to enhance “the ability of councils to respond to present and future issues in their municipalities.” Increasingly, case law is exposing the ability of municipalities to protect the environment through such general bylaw-making powers, especially that in regard to public health and safety.³³

A key power granted to Alberta municipalities is the ability to control and regulate the use and development of all private and municipal land within their boundaries, as well as public land in some cases.³⁴ Municipalities are empowered to (and in some cases must) adopt several documents as tools for land use planning. These include municipal development plans, area structure plans, area redevelopment plans and land use bylaws. These documents set out a municipality’s goals and objectives for present and future land use and, in the case of the land use bylaw, assist approving authorities (such as development and subdivision authorities, planning commissions and appeal boards) to make decisions on proposals to designate, subdivide or develop land.³⁵ Section 617 sets out that the purpose of the planning and development provisions in the *MGA* is to provide the means whereby plans and related matters may be prepared and adopted so as “to achieve the orderly, economical and beneficial development, use of land and patterns of human settlement” and “to maintain and improve the quality of the physical environment within which patterns of human settlement are situated in Alberta” to the extent necessary for the overall public interest.

³² *MGA*, s. 7.

³³ See, for example, *Spraytech*, *supra* note 6, and *Croplife Canada v. Toronto (City)* (2005), 254 D.L.R. (4th) 40 (Ont. C.A.); leave to appeal refused 2005 CarswellOnt 6587 (S.C.C.) (*Croplife*).

³⁴ *MGA*, Part 17. Because the *MGA* does not bind the Crown, municipal planning documents and bylaws do not apply to provincially-owned (Crown) lands in Alberta as long as those lands are being used by the Crown. However, where Crown land has been leased to a private company (for energy development for example), Part 17 of the *MGA* will apply unless the Crown has claimed immunity in the lease contract or in some other way. See Fred Laux, *Planning and Practice in Alberta*, 3d ed. (Edmonton: Juriliber, 2005) at 4-15 to 4-17 and *Squamish (District) v. Great Pacific Pumice Inc.* (2000), 187 D.L.R. (4th) 483 (B.C. C.A.); leave to appeal refused (2001), 267 N.R. 200 (note) (S.C.C.).

³⁵ The land use bylaw is the key regulatory tool which regulates and controls the use of land in a municipality in Alberta. It divides the municipality into districts or “zones” (e.g., industrial, residential, commercial, agriculture) and must state what uses are permitted and what uses are discretionary for each district. See Part 17, Division 5, *MGA*. See also Laux, *ibid.*

(b) Interests and Concerns of Municipalities with Wind Power Development

Ensuring a viable local economy is of primary concern for all municipalities. Wind power development undoubtedly has the potential to significantly boost local economies. It also directly increases the tax base of municipalities.³⁶ Still, energy development, including that based on wind, is not without downsides.³⁷ Perhaps the strongest resistance to the development of wind farms has come from landowners and others living and working near wind developments.³⁸

Several concerns have been expressed about wind farms, especially large-scale commercial ones. These include noise and visual impacts and disturbances,³⁹ potential health impacts from the constant presence of low frequency noise generated by wind turbines,⁴⁰ the destruction of scenic viewscapes,⁴¹ the quality of life im-

³⁶ See, for example: Canadian Press, "Rural communities want Alberta to allow wind power farms on leased Crown land" *Whitehorse Star* (23 March 2009) [citing the Association of Municipal Districts and Counties' call on the Alberta Government to allow companies to develop wind farms on leased Crown land based on its belief that wind development could boost economic conditions in rural areas]; Richard Blackwell, "How prairie farmers got their second wind" *Globe and Mail* (10 October 2008), online: <<http://v1.theglobeandmail.com/partners/free/toyota/catalysts08/articles/oct10/article1.html>> [economic benefits of wind development include local jobs, spin-off effects, tax revenue for municipalities, and rental payments for landowners]; and Canadian Wind Energy Association, "Wind Industry Presentation" (8 March 2008), online: <http://www.canwea.ca/images/uploads/File/Members_only/Wind_Energy_CanWEA_March_08_Final.pdf> at 19 [average municipal tax revenue for wind farms in Alberta is \$9,000 per MW per annum].

³⁷ Of course the impacts, and therefore the concerns on the part of municipalities, are greater on the oil and gas side, especially given concerns over emissions and safety risks (explosions, leaks, releases, etc.). See, for example, Vlavianos & Thompson, *supra* note 3 and Nickie Vlavianos, "Albertans' Concerns with Oil and Gas Development: A Summary", Human Rights Paper No. 3 (Calgary: Canadian Institute of Resources Law, 2006).

³⁸ On the other hand, immediately-affected landowners may stand to benefit from wind development through rental payments for the use of their land. In Alberta the average landowner royalty is \$4,000 per MW per year: Canadian Wind Energy Association, "Wind Industry Presentation" (8 March 2008), online: <http://www.canwea.ca/images/uploads/File/Members_only/Wind_Energy_CanWEA_March_08_Final.pdf> at 19.

³⁹ Landowners have reported headaches, dizziness, ringing in the ears, body aches and insomnia from the sound and strobing effect of the spinning blades of the turbines: see W-Five Staff, "Caution to the Wind" (27 December 2008), online: <http://CTVNews/WFive/20081223/wfive_windmills_081227/>. See also Anker, Olsen & Ronne, *supra* note 22 at 167 [where the authors cite studies which have found that noise, vibration, flickering and other light effects may be associated with wind turbines].

⁴⁰ See, for example, British Wind Energy Association "Low Frequency Noise and Wind Turbines" (February 2005), online: <<http://www.bwea.com/ref/lowfrequencynoise.html>>.

⁴¹ See, for example, Blackwell, *supra* note 36 and Sid Marty, "Whither Windmills?" *Legacy Magazine* (March 2008), online: <<http://www.windaction.org/opinions/16474>>.

pacts caused by the “strobe light flicker effect” from nearby wind turbines revolving in the sun, impacts on birds and bats,⁴² the possible reduction of property values, and the fact that large-scale farms require significant amounts of land.⁴³ With respect to the protection of the environment generally, negative effects on wildlife, wildlife habitat and on valuable landscapes are also major concerns.⁴⁴ As noted by Alberta Sustainable Resource Development:

While a source of renewable clean energy, wind power does have impacts on the landscape, and is a cause of bird and bat mortality. Wind farms can also result in wildlife disturbance, habitat degradation and affect regional ecological integrity.⁴⁵

As the frontline government, municipalities are typically the first to hear from local constituents about such concerns. They want their municipality to deal with them. Thus, municipalities may be interested in the course of wind energy development, like all other forms of development, from the point of view of dealing with the concerns of local constituents. They will also be interested from the point of view of ensuring that their municipality remains an attractive and viable place to live and work. Their concerns relate to their mandates to ensure the protection of the health and quality of life (social, economic, environmental) of residents as well as to ensure their ability to carry out their responsibilities in terms of roads, infrastructure, social services, etc. that will be impacted by increasing development within their borders. As well, given the land base required for large-scale wind farms, municipalities will be interested in such developments from the point of view of their land use planning and development responsibilities.

4. MUNICIPALITIES AND THE POLICY/PLANNING, LEGISLATIVE AND REGULATORY FRAMEWORK FOR WIND POWER DEVELOPMENT IN ALBERTA

(a) Provincial Energy Policy and Land Use Planning Processes

Decision-making about wind power development in Alberta should fit within,

⁴² See, for example, Richard Blackwell, “Windfarm turbines deadly for birds, bats”, *Globe and Mail* (9 June 2010).

⁴³ See, for example, Canadian Wind Energy Association, “Wind Industry Presentation” (8 March 2008), online: <http://www.canwea.ca/images/uploads/File/Members_only/Wind_Energy_CanWEA_March_08_Final.pdf> at 15 and Julia Layton, “How Wind Power Works”, online: <<http://science.howstuffworks.com/wind-power.htm/printable>>.

⁴⁴ See Anker, Olsen & Ronne, *supra* note 22 and Shirley Bray, “County Allows Wind Farms in Cypress Hills” (2005) 13:3 *Wild Lands Advocate* 10 [where avoiding “industrialization of the landscape” through intense wind development is discussed].

⁴⁵ Alberta Sustainable Resource Development (ASRD) — Fish and Wildlife Division, *Wildlife Guidelines for Alberta Wind Energy Projects* (5 April 2006). For a review of literature that says the noise, wildlife and visual impacts from wind farms have been exaggerated, see: Damian Szybalski, *Harvesting Wind from Idle Ground: Integrating Wind Power Specific Land-Use Planning Policies into City of Toronto’s Official Plan and Zoning By-law* (Toronto: University of Toronto, April 2004) at 16–22 and 63–73.

and be driven by, comprehensive energy policy and environmental and land use planning frameworks. Such policies and plans would assist with decision-making on a variety of matters, including pace and intensity, siting, and acceptable and unacceptable economic, social and environmental impacts. Approving authorities could look to such plans and policies for guidance with respect to decision-making about individual projects.

(i) *Provincial Energy Strategy*

In Alberta, the provincial government has recently taken steps towards developing a comprehensive energy policy and a land use planning framework for the province. Previous government policies were criticized for being inconsistent, lacking in specifics, and prioritizing development over environmental protection.⁴⁶ Alberta's current energy strategy can be summarized through a number of key principles. First, its stated vision is that of ensuring Alberta remains a global energy leader through the continued development of fossil fuels. Second, this vision will be met by achieving three goals: clean energy production, wise energy use, and sustained economic prosperity. Third, these goals will be achieved by (i) addressing the environmental footprint of energy; (ii) investigating and exploring ways to add value to Alberta's energy industry; (iii) changing energy consumption behaviour; (iv) improving innovation with regard to energy technology, leadership and development of people; (v) enhancing the capability of our electricity system; (vi) bolstering knowledge and awareness of and appropriate education on energy issues; and (vii) aligning the energy strategy with other initiatives, programs, policies and regulations.⁴⁷

Renewable energy sources, including wind, are promoted in the province's strategy as a component of the province's energy future along with fossil fuels. According to the Alberta government, electricity generation from renewable resources will entail investments in the electricity infrastructure and conservation initiatives.⁴⁸ Although renewables are supported in the province's strategy and there is a commitment to develop markets for them, there is no doubt that the focus of the strategy is fossil fuels (particularly the need to develop the technology for clean fossil fuel development). Ultimately, because the strategy is lacking in specifics, it is difficult to conclude what its impact will be with respect to wind development in the province.

⁴⁶ See, for example: Michael M. Wenig & William A. Ross, "Making Progress Toward a Truly Integrated Energy Policy" (2007) 31:4 *LawNow*; Andrew Nikiforuk, "Plan? What Plan? Alberta's Energy Future" *Canadian Business Magazine* (2006); Elona Malterre & Mark Lowey, "Alberta's New Energy Vision Faces Huge Challenges" (2006) 16:19-20 *EnviroLine*; and Michael M. Wenig, "Federal Policy and Alberta's Oil and Gas: The Challenge of Biodiversity Conservation" in G. Bruce Doern, ed., *How Ottawa Spends 2004-2005: Mandate Change in the Martin Era* (Montreal: McGill-Queen's Press, 2004).

⁴⁷ Government of Alberta, *Launching Alberta's Energy Future: Provincial Energy Strategy* (Edmonton: December 2008), online: <<http://www.energy.alberta.ca/Initiatives/strategy.asp>> (*Provincial Energy Strategy*).

⁴⁸ *Provincial Energy Strategy*, *ibid.*

As far as municipalities are concerned, Alberta's current energy strategy does not provide a direct role for municipalities in the development of policy or in the actions to be taken to meet these goals. The strategy also does not require consultation with municipalities to be affected by energy developments.⁴⁹ Although in practice the Alberta government may, as it sometimes does with respect to oil and gas development, partner with municipalities on an *ad hoc* basis to respond to demands of a growing industry,⁵⁰ there is no indication that municipalities are or will be involved in the initial policy stage which ultimately determines the course of energy, including wind power development in the province. There is also no indication that municipalities were in any way consulted on the formation or adoption of the current energy strategy. In short, as far as wind power is concerned, it is the provincial government, with uncertain input from local communities, who will dictate how much wind power development will or will not make up what percentage of the province's energy supply mix.

(ii) *Land Use Framework*

Commentators called on the Alberta government to adopt a comprehensive land use planning framework for the province for years.⁵¹ The Alberta government responded in 2008 with the release of a policy document called the *Land-Use Framework*⁵² which outlines its intended approach for managing public and private lands and natural resources in the province.⁵³ The *LUF* divides the province into seven new land use regions and envisions the development of unique land use plans for each region. The plans will be universally binding and will provide the context for all land use decision-making in each region, including those relating to wind

⁴⁹ There is only one mention of municipalities in the energy strategy as follows: that the province commits to encouraging municipalities to reduce urban sprawl and increase housing density to reduce energy consumption: *ibid.* at 39. Further, the only consultative commitment in the strategy is for the province to meet its legal duty to consult with aboriginal communities whose constitutionally-protected rights under s. 35 of the *Constitution Act, 1982* (Canada) may be potentially adversely impacted by development: *ibid.* at 47.

⁵⁰ An example is the Alberta government's partnership with Fort McMurray through the Fort McMurray Community Development Plan. See Government of Alberta, *Budget 2009: Strategic Business Plan*, online: <<http://www.finance.alberta.ca/publications/budget/budget2009/govbp.pdf>> at 8.

⁵¹ See, for example: Steven Kennett *et al.*, *Managing Alberta's Energy Futures at the Landscape Scale*, Alberta Energy Future's Project Paper No. 18 (Calgary: Institute of Sustainable Energy, Environment and Economy, University of Calgary, 2006); Steven Kennett, *Integrated Landscape Management in Canada: Getting from Here to There*, Occasional Paper No. 17 (Calgary: Canadian Institute of Resources Law, 2006); and Reg Lang, ed., *Integrated Approaches to Resource Planning and Management* (Calgary: University of Calgary Press, 1986).

⁵² *LUF*, *supra* note 31.

⁵³ Subsection 622(1) of the *MGA* notes the provincial government's authority to establish land use policies for the province as a whole. Pursuant to s. 622(3), municipal statutory plans, land use bylaws and actions must comply with such land use policies.

power development.⁵⁴ Given the direct impact on the land use planning mandates of municipalities, it makes sense to consider what the role of municipalities is with respect to the *LUF*.

The *LUF* has been enacted through the *Alberta Land Stewardship Act*.⁵⁵ The *ALSA* empowers Cabinet to divide the province into different planning regions and it allows Cabinet to create regional plans for each region.⁵⁶ Cabinet is empowered (but not required) to establish Regional Advisory Councils (RACs) for each region in the province; if established, the RACs may provide their input to Cabinet for the development of the regional plans.⁵⁷ Although the *LUF* states that the RACs will consist of members representing a range of perspectives and experience in the region “who are able to appreciate the broad interest of the region and its place in the province,”⁵⁸ the *ALSA* does not set out any membership criteria or guidelines for the appointment of members of the RACs.⁵⁹ Ultimately, Cabinet retains broad powers to create, amend and implement regional plans. It may or may not implement recommendations from an RAC.⁶⁰

The regional plans are intended to identify necessary trade-offs and choices in order to balance economic development with environmental and social considerations. Depending on the level of detail adopted in a particular regional plan, it is conceivable that they may affect wind power development in terms of the pace and intensity and siting of such developments. For example, a regional plan could, despite abundant amounts of wind in the area, designate a particular area as being a no-wind (or other major industrial) development area in order to protect wildlife, ecosystems or viewsapes.⁶¹ That said, a regional plan favourable to wind farms may have the opposite effect, serving to encourage wind power developments in a particular area.

More than 25 existing statutes have been amended to comply with the *ALSA* and with the regional plans that are to be passed under it. With respect to wind

⁵⁴ *LUF*, *supra* note 32 at 19.

⁵⁵ *Alberta Land Stewardship Act*, S.A. 2009, c. A-26.8 (*ALSA*).

⁵⁶ *ALSA*, s. 4(1). For a summary of the key features of the *ALSA*, see: Jenette Poschwatta & Adam Zelmer, “*The Alberta Land Stewardship Act — Certainty or Uncertainty?*” (2009) 106 Resources 1, online: <<http://dspace.ucalgary.ca/bitstream/1880/47462/1/Resources106.pdf>>.

⁵⁷ *ALSA*, s. 51(1).

⁵⁸ *LUF*, *supra* note 31 at 29.

⁵⁹ *ALSA*, s. 51(2). For criticism of Cabinet’s broad discretion with respect to appointing members of the RACs, see Environmental Law Centre, “*Backgrounder: Bill 46 — Limited Rights to Participate and Appeal*” (1 May 2009), online: <http://www.elc.ab.ca/Content_Files/Files/Backgrounder_Limited_rights_to_participate_and_appeal.pdf>.

⁶⁰ See *ALSA*, s. 8(2) and s. 9(1)-(2).

⁶¹ A “viewscape” has been defined as a line-of-sight from a specific location to a landscape or portion of it. A “view shed” refers to a sequence of views or panorama from a given vantage point. See Parks Canada, *A Guide to the Preparation of Commemorative Integrity Statements*, online: <http://www.pc.gc.ca/docs/pc/guide/guide/sec3/commemorative_glossary_1.aspx>.

power development, two key statutes have been amended. They are the *Alberta Utilities Commission Act*⁶² and the *Electric Utilities Act*,⁶³ discussed in more detail below. The *AUC Act* was amended to add a provision directing the Alberta Utilities Commission (AUC) to act in accordance with any applicable *ALSA* regional plan in carrying out its powers, duties, and functions under the Act.⁶⁴ The *EUA* was amended to state that the Independent System Operation (or Alberta Electric System Operator) must act in accordance with any applicable *ALSA* regional plan in carrying out its mandate.⁶⁵ Both are key decision makers in the wind power development context in the province.

Once developed, the *ALSA* is clear that regional plans will be legally binding on everyone. This includes local governments.⁶⁶ Municipalities will be required to make all future development and land use planning decisions in accordance with applicable regional plans. They will also be required to review their existing regulatory instruments (including all bylaws and municipal planning documents) and decide what, if any, changes are required in order to bring these documents into compliance with the regional plans.⁶⁷ Any existing regulatory instrument which conflicts with a regional plan will be superseded by the plan.⁶⁸ Further, although the *LUF* states that the province will respect the existing land use planning and decision-making authority of municipalities, the *ALSA* grants Cabinet the ability to make, as part of a regional plan, "law about matters in respect of which a local government may enact a regulatory instrument."⁶⁹

Depending on the details, it is reasonable to assume that the regional plans adopted pursuant to the *ALSA* will play a critical role in how and where wind power projects proceed in the province. Given the potential significance of regional plans on the local land use and planning jurisdiction of municipalities, a number of issues arise with respect to their role in the enactment of the *ALSA* and its implementation. First, there is no indication that municipalities were consulted in any direct way in the public consultation processes that led up to the government's adoption of the *LUF* and the ultimate drafting of the *ALSA*. Rather, it appears that municipalities were simply entitled to provide their input as part of the general "public" that was consulted.⁷⁰ Ultimately, there is a lack of information as to whether there was any special consideration given to the statutory mandates of municipalities in regard to local land use planning and development. Second, assuming that RACs are struck for every region identified, the *ALSA* contains no requirement for local government representation on them. This is particularly surprising given the local knowledge

⁶² *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2 (*AUC Act*).

⁶³ *Electric Utilities Act*, S.A. 2003, c. E-5.1 (*EUA*). The *EUA* is the key statute that creates and regulates Alberta's electricity industry.

⁶⁴ *AUC Act*, s. 8.1.

⁶⁵ *EUA*, s. 16.1.

⁶⁶ *ALSA*, s. 15(1).

⁶⁷ *ALSA*, s. 20(1).

⁶⁸ *ALSA*, s. 17(1)(b).

⁶⁹ *ALSA*, s. 9(2)(f).

⁷⁰ For the public consultation process undertaken, see online: <<http://www.landuse.alberta.ca/Default.aspx>>.

municipalities typically hold in terms of land use, planning, and economic, social and environmental matters within their respective jurisdictions. Without an explicit requirement, there is no guarantee that the views of municipalities will be adequately represented on the RACs. Third, even if there is some form of representation, the ability of Cabinet to reject the recommendations from the RACs means that the views and concerns of municipalities in terms of land use planning within their borders may not be adequately addressed in any regional plan. Finally, the ability of the provincial Cabinet to usurp unilaterally the local land use planning jurisdiction by enacting laws in relation to municipal matters should be of particular concern to Alberta municipalities.⁷¹

(b) Legislative and Regulatory Framework for Wind Power Development

There is no comprehensive legislation that governs wind power or renewable energy in Alberta.⁷² The generation and distribution of wind power is regulated through a number of different acts and regulations in the province, some more key than others. Consequently, there is more than one decision-making authority involved in any given application.⁷³

⁷¹ Notably, only 28 per cent of Albertans surveyed believe the *LUF* has struck the right balance between provincial leadership and local decision-making. By contrast 32% felt that its implementation would equate with too much provincial government involvement or that the *LUF*'s structure would be too top-down or centralized. See Sierra Systems Group, Inc., *Draft Land-Use Framework: Public Survey and Public Submissions Report* (November 2008), online: <<http://www.landuse.alberta.ca/Default.aspx>> at 2-3.

⁷² See Wenig *et al.*, *supra* note 12. By contrast, many other jurisdictions have adopted specific energy legislation for renewables, including wind energy: see Anker, Olsen & Ronne, *supra* note 22. See also Ontario's *Green Energy Act, 2009*, S.O. 2009, c. 12. In Alberta, enactments have been passed that deal specifically with electricity generation from renewable energy sources (including wind) but their application is limited to small-scale facilities that meet particular criteria. See the *Small Power Research and Development Act*, R.S.A. 2000, c. S-9 [which established a program enabling small wind producers to sell electricity to the grid] and the *Micro-Generation Regulation*, Alta. Reg. 27/2008 [which allows customers to generate their own electricity and sell their surplus to Alberta's electricity grid where the generating unit, among other things, has a total capacity of 1 MW or less and meets all or part of a customer's needs]. See also: Alberta Utilities Commission, "Rule 024: Micro-Generation", online: <<http://www.auc.ab.ca/rule-development/micro-generation/Pages/default.aspx>>, and Dean Watt, "Electricity Micro-Generation in Alberta" (2009) 23:5 *News Brief* (Edmonton: Environmental Law Centre) 8. Because this article is concerned with wind developments of broader municipal concern, small-scale micro-generation projects are not considered in detail. By its nature, the micro-generation market is typically non-commercial (often for on-site agricultural or personal use) and contributes very little to total wind energy production.

⁷³ Only the key statutes and regulators will be discussed here. Approvals may be required in certain circumstances under other legislation. Provincially, these include, for example, approvals from Alberta Transportation (where a proposed wind power plant is to be constructed within 300 metres of a numbered highway) and Alberta Historic Resources Management Branch (to ensure projects do not negatively impact a site of his-

(i) Hydro and Electric Energy Act and the AUC

The starting point is the province's *Hydro and Electric Energy Act*⁷⁴ (*HEEA*) which governs the development of all electric energy in Alberta. The purposes of the *HEEA* include the provision of "economic, orderly and efficient development and operation, in the public interest of (...) the generation and transmission of electric energy in Alberta" and ensuring that "safe and efficient practices" are observed in the generation, transmission and distribution of electric energy in Alberta.⁷⁵ The Act is also intended to "assist the Government in controlling pollution and ensuring environment conservation (...) in the generation, transmission and distribution of electric energy in Alberta."⁷⁶

Section 11 of the *HEEA* states that "[n]o person shall construct or operate a power plant unless the Commission, by order, has approved the construction and operation of the power plant."⁷⁷ The "Commission" is the Alberta Utilities Commission (AUC).⁷⁸ Wind turbines qualify as power plants under the *HEEA* through the definition of "power plant," meaning "facilities for the generation and gathering of electric energy from any source."⁷⁹ The reference to *any* source captures generation facilities sourced by wind. Thus, a proposal to construct and operate a wind power facility requires approval from the AUC under s. 11 of the *HEEA*. Gathering (or collector) systems (*e.g.*, overhead and underground power lines) designed to collect and transmit electric power for the wind turbines to a substation are in-

torical importance). See the *HEEA*, *infra* note 74, s. 40 [approvals obtained under the *HEEA* do not relieve operators from obligations to obtain required approvals under other enactments]. There may also be approvals required from federal authorities, for example, from Transport Canada (for structures 20 metres or taller). See Alberta Utilities Commission, Rule 007, *infra* note 89, s. 3.2. Federal jurisdiction over wind power developments in Alberta may also arise in other ways, for example if a project attracts the application of the *Canadian Environmental Assessment Act*, S.C. 1992, c. 37, the *Migratory Birds Convention Act*, 1994, S.C. 1994, c. 22, the *Wildlife Act*, R.S.C. 1985, c. W-9, the *Species at Risk Act*, S.C. 2002, c. 29, and the *Fisheries Act*, R.S.C. 1985, c. F-14. See generally, Wenig *et al.*, *supra* note 12, Appendix A and ASRD, *supra* note 45.

⁷⁴ *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16 (*HEEA*).

⁷⁵ *HEEA*, ss. 2(a)-(b).

⁷⁶ *HEEA*, s. 2(c).

⁷⁷ *HEEA*, s. 11.

⁷⁸ *HEEA*, s. 1(1)(a). The AUC's enabling legislation is the *AUC Act*, *supra* note 62. The AUC was created in January 2008 when Alberta's Energy and Utilities Board (EUB) was split into the Energy Resources and Conservation Board (ERCB) and the Alberta Utilities Commission (AUC). Generally, the ERCB has jurisdiction over oil and gas development while the AUC regulates Alberta's electrical utilities sector. For a discussion of the split and respective mandates, see Cecilia A. Low, *Energy and Utility Regulation in Alberta: Like Oil and Water?*, Occasional Paper No. 25 (Calgary: Canadian Institute of Resources Law, 2009). See also: Cecilia A. Low, *The Provincial Energy Strategy — An Integrated Approach: The Challenges Raised by a Two-Tier Board Model for Energy and Utility Regulation*, Occasional Paper No. 26 (Calgary: Canadian Institute of Resources Law, 2009).

⁷⁹ *HEEA*, s. 1(1)(k).

cluded in the power plant application under s. 11.⁸⁰

For commercial wind energy projects, it will be necessary to tie the facility to Alberta's power grid (*i.e.*, the Alberta Interconnected Electric System (AIES)) so as to transport and sell the electricity generated. A transmission line connecting the wind farm to the AIES is required. Sections 14 and 15 of the *HEEA* clarify that no person shall construct or operate a transmission line or any part of a transmission line unless the necessary permit to construct and licence to operate have been issued by the AUC. Connection applications for power plants, substations and transmission lines must be made pursuant to s. 18 of the *HEEA*.

In deciding on applications for power plants and transmission lines, the AUC is guided by the public interest test set out in s. 17(1) of the *AUC Act*. The AUC must consider whether the proposed power plant or transmission line is in the public interest, "having regard to the social and economic effects of the development, plant, or line and the effects of the development, plant, or line on the environment." Subsection 3(1) of the *HEEA* specifies, however, that, in the case of a s. 11 power plant application, the AUC shall not have regard to whether the generating unit is an "economic source of electric energy in Alberta" or whether there is a need "for the electric energy to be produced by such facility in meeting the requirements for electric energy in Alberta or outside Alberta." Rather, s. 3(1) directs the AUC to have regard for the purposes of the province's *EUA*.⁸¹ Those purposes, set out in s. 5 of the *EUA*, include providing an efficient Alberta electric industry structure and providing rules to allow for an efficient market for electricity to develop based on fair and open competition for all participants.

On an application for an approval, permit or licence for a power plant or transmission line, the AUC may grant the application subject to any terms and conditions it may prescribe, or it may deny the application.⁸² The Act specifies that the AUC may also require changes in the plans and specifications or location of the power plant or transmission line, prescribe a date before which the construction and operation must commence, and prescribe the precise location and route of the transmission line as it considers suitable.⁸³ Terms and conditions typically imposed by the Commission relate to the submission of progress reports, satisfying the Commission that construction has been completed by a specified date (or applying for a revised date), and notifying the AUC within a specified time of completing con-

⁸⁰ Section 13 of the *HEEA* makes an exception to approval requirements (unless the AUC otherwise directs) for someone who is generating or proposing to generate, transmit, or distribute electric energy solely for their own use. See also s. 16 and s. 24. Still, self-generators whose generation capacity exceeds 500 KW must give notice to the AUC with details about their operations: see *Hydro and Electric Energy Regulation*, Alta. Reg. 409/83 (*HEER*), s. 9. Also exempt from the s. 11 requirement (to obtain an AUC approval to construct and operate a power plant) are small generators with a capacity of 500 KW or less that are supplying a single load and are not connected to an electric distribution system: *HEER*, s. 15.

⁸¹ *EUA*, *supra* note 63.

⁸² *HEEA*, s. 19(1).

⁸³ *HEEA*, s. 19(2).

struction.⁸⁴ Other conditions may include a requirement that a post-construction comprehensive noise study be conducted to verify and ensure compliance with AUC rules at each noise receptor identified in the application.⁸⁵

Subsection 5(1) of the *HEEA* grants the AUC broad regulation-making authority over wind power developments in the province. The Commission may make rules in respect of several matters to enable it carry out its mandate. For example, it may make regulations with respect to: (a) the information that must be included in applications made to it; (b) excluding certain power plants or transmission lines from the application of any legislative or regulatory provision; (c) prescribing terms and conditions about the measures to be taken in the construction, operation and abandonment of any power plant or transmission line for the protection of life, property, wildlife and the prevention/extinguishment of fires; and (d) in regard to the inspection of power plants and transmission lines both during and after construction.⁸⁶

Subsection 5(4) further specifies that, subject to the approval of Alberta's Minister of the Environment, the AUC may make rules as to the measures to be taken in the "construction, operation or abandonment of any power plant or transmission line for the control of pollution and ensuring environment conservation." Section 7 of the *HEEA* provides catch-all authority for the AUC to, with the approval of Cabinet, make any "just and reasonable" order and direction that is not specifically authorized by the *HEEA* but which the Commission considers necessary to effect the purposes of the Act.⁸⁷

Subsection 41(1) of the *HEEA* authorizes the AUC to cancel or suspend any approval, permit or licence granted (or to make any other order it considers suitable in the circumstances) in cases of non-compliance with the provisions of the Act, the regulations or any term or condition of an approval. Except in cases of a danger to the public or property, the AUC must follow specified procedures prior to ordering such cancellation or suspension or requiring expensive remedial measures.⁸⁸

The AUC has developed rules for applications for the construction and operation of power plants, substations and transmission lines pursuant to the *HEEA*.⁸⁹ Rule 007 outlines the criteria that must be met prior to an approval being granted. It requires applicants to submit several types of information with their applications. As discussed further below, this includes information about the details and out-

⁸⁴ See, for example, Alberta Utilities Commission, *Power Plant Approval No. U2009-21: Enel Alberta Wind Inc., Transfer of Ownership of Castle Rock Ridge Wind Power Plant, Application No. 1600883*, 27 January 2009. See also s. 3 of the *HEER*, *supra* note 80, which stipulates that approval or permit holders must submit construction progress reports to the AUC every three months.

⁸⁵ See, for example, AUC Decision 2010-216, *Suncor Energy Products Inc., Wintering Hills Wind Power Project* (4 June 2010) at 5.

⁸⁶ See s. 5(1) of the *HEEA* for the full list of the AUC's regulation-making powers in this context.

⁸⁷ For the key regulations passed to date under the *HEEA*, see the *HEER*, *supra* note 80.

⁸⁸ See *HEEA*, s. 41(2).

⁸⁹ Alberta Utilities Commission, *Rule 007: Applications for Power Plants, Substations, Transmission Lines and Industrial System Designations*, 21 April 2009 (Rule 007) at 3.

comes of “consultation with local jurisdictions (*i.e.*, municipal districts, counties)” as well as confirmation that the applicant has submitted an application for a development permit from the appropriate municipal district or county.⁹⁰ Information about approvals required from other agencies pursuant to other legislation must also be provided. As noted, approvals are sometimes required from Alberta Transportation, Transport Canada, and Navigation Canada for instance. The AUC also directs applicants to confirm that a *Historic Resources Act*⁹¹ clearance has been (or is being) applied for.

(ii) *Alberta Environment and Alberta Sustainable Resources Development*

With respect to environmental impacts, Rule 007 directs applicants to confirm with the AUC that an application to Alberta Environment (AENV) has been made “if applicable.”⁹² Unlike power plants sourced with fossil fuels, wind generation facilities do not attract the application of many provisions of Alberta’s key environmental statute, the *Environmental Protection and Enhancement Act*.⁹³ Generally, the *EPEA* applies to operations involving air, soil or water emissions, the use and storage of hazardous substances, waste management, and the management of waste water. Since wind farms do not typically involve these types of impacts, it is unlikely that many of the *EPEA* provisions will apply to wind power developments.⁹⁴ In particular, the approval, registration and notice provisions of the *EPEA* do not apply since none of the designated activities capture wind power facilities.⁹⁵

Similarly, the environmental impact assessment (EIA) provisions of the *EPEA* do not apply unless AENV directs otherwise.⁹⁶ Wind power generation is not designated either as a mandatory or exempted activity for EIA purposes.⁹⁷

As for reclamation of the site at closure, the existing regulations do specifically capture transmission lines and thus reclamation obligations attach.⁹⁸ For wind farms (*i.e.*, the turbines and associated gathering stations), reclamation responsibil-

⁹⁰ Rule 007, *ibid.* at 9 and 14.

⁹¹ R.S.A. 2000, c. H-9. Such clearance is required where a historical or archaeological site may be affected by the proposed project.

⁹² Rule 007, *supra* note 89 at 9.

⁹³ R.S.A. 2000, c. E-12 (*EPEA*).

⁹⁴ See, for example, AUC Decision 2010-216, *supra* note 85 at 4 where it was noted that there would be “. . . no air emissions during operations and no effect on surface water” from an 88 MW proposed wind power plant and substation.

⁹⁵ See ss. 60–86 of the *EPEA* and s. 5 of the *Activities Designation Regulation*, Alta. Reg. 276/2003 and related Schedules.

⁹⁶ This would be pursuant to s. 41 of the *EPEA*. Given the lack of emissions and waste concerns in the wind generation context, however, it would be rare for a project to attract Alberta Environment’s attention under this provision.

⁹⁷ See *Environmental Assessment (Mandatory and Exempted Activities) Regulation*, Alta. Reg. 111/1993. Although transmission lines are specifically exempted from the EIA process, wind generation facilities are not mentioned in any way in the regulation.

⁹⁸ *Conservation and Reclamation Regulation*, Alta. Reg. 115/93, s. 1(t)(iv) (*CRR*). Section 137 of the *EPEA* sets out the obligation on operators to conserve and reclaim “specified land” (as defined in the *CRR*) and to obtain a certificate from AENV indicat-

ity is likely captured by ss. 1(t)(ix) of the *CRR* which lists land used in connection with the construction or operation of a “plant” as specified land.⁹⁹

Despite the limited role of AENV under the *EPEA* in regard to wind generation facilities, assessment of environmental impacts must occur through the public interest test the AUC is required to apply in deciding whether or not to approve a particular project. Discussed further below, the public interest test requires consideration of the economic, social and environmental impacts of proposed wind power projects. AUC’s Rule 007 directs proponents to “provide a general overview of environmental impacts (such as noise, visual, emissions, land disturbances, surface water)” as part of the application to the Board.¹⁰⁰ Applicants must also provide information about the existing land use of the affected area and potential siting and land use issues.¹⁰¹

Environmental impacts in regard to wildlife are also, and perhaps solely, assessed by Alberta Sustainable Resource Development (ASRD) — Fish and Wildlife Division pursuant to its jurisdiction over wildlife and wildlife habitat in the province. AUC’s Rule 007 tells wind operators that a “sign off” from ASRD is required prior to the processing of any new wind applications.¹⁰² ASRD’s jurisdiction stems from the province’s *Wildlife Act*¹⁰³ which applies to wildlife on private and provincially-owned lands within the province (outside National Parks and other lands subject to federal jurisdiction).

Wind power proponents must identify all possible impacts on birds and wildlife and take efforts to minimize impacts. ASRD has published specific guidelines to minimize and mitigate impacts on wildlife and wildlife habitat from wind power developments in the province. These include pre-construction planning and wildlife and habitat surveys, site selection considerations, mandatory mitigation measures, post-construction wildlife monitoring and the development of a site-specific habitat reclamation plan which emphasizes restoration of natural habitats (*e.g.*, native grasslands).¹⁰⁴ The guidelines also set out specific setbacks for wind power facilities based on the type of species and habitat (*e.g.*, sharp-tailed grouse leks, hawk nests, wetlands) involved. In its review, the AUC considers carefully ASRD’s review of the project and whether the recommended setbacks have been adopted in

ing that the reclamation has complied with all applicable requirements. The obligation is restated in s. 3(2) of the *CRR*.

⁹⁹ The *CRR* defines “plant” as all buildings, structures, pipelines, and other installations used for any activity listed in s. 2 of the Schedule of Activities in the *EPEA*, including the land used in or for that activity. Although there is no specific mention of wind power plants, at least large-scale wind farm operations likely fall within the broad category of the “construction, operation (. . .) of a plant (. . .) for any other industrial (. . .) purpose”: s. 2(ii), Schedule of Activities, *EPEA*.

¹⁰⁰ Rule 007, *supra* note 89 at 10.

¹⁰¹ *Ibid.*

¹⁰² Rule 007, *supra* note 89 at 9.

¹⁰³ *Wildlife Act*, R.S.A. 2000, c. W-10.

¹⁰⁴ See ASRD, *supra* note 45.

the project's design.¹⁰⁵ In a recent application, the AUC concluded that the ASRD's "sign off" regarding a proposed wind farm assured it that "the environmental impacts of the turbines have been identified and addressed."¹⁰⁶

Along with impacts to wildlife and wildlife habitat, the other key impact from wind generation facilities is noise. In this regard, Alberta's *EPEA* may have implications for operators in the event of unauthorized noise levels. Section 108 of the *EPEA* prohibits releases of "substances" into the environment in amounts that are in excess of those prescribed by an approval, code of practice or the regulations. Paragraph 1(mmm)(ii) defines "substance" broadly to include "any sound, vibration (. . .) or other form of energy." This would capture the sounds and vibrations from wind turbines. Although no code of practice or regulations dealing with noise have yet to be passed under the *EPEA*,¹⁰⁷ the AUC considers noise impacts in its review of wind power plant applications and it has adopted its own rules in regard to noise. Rule 007 requires applicants to provide a noise impact assessment in accordance with AUC's Rule 012.¹⁰⁸ All sources of noise from a wind power plant must be considered in this assessment. Rule 012 outlines permissible sound levels from power plants, substations and transmission lines, including noise related to the construction of the facilities. It also outlines how operators are to deal with complaints in relation to noise.¹⁰⁹

(iii) Participant Involvement

Along with consulting with relevant provincial and federal authorities, wind power proponents must also carry out a "participant involvement program" prior to filing an application with the AUC.¹¹⁰ The goal is to allow concerns to be "raised, properly addressed and if possible, resolved."¹¹¹ AUC Rule 007 sets out the minimum requirements and recommendations in this regard. It defines "participant involvement" broadly as "encompassing all aspects of public, local authority and industry interaction and communications" and recognizes that "other groups may also have a stake in electric facility developments."¹¹²

Without question, "persons whose rights may be directly and adversely affected by the proposed development" are included.¹¹³ Such persons must be "informed of the application and have an opportunity to voice their concerns and to be

¹⁰⁵ See, for example, AUC Decision 2010-216, *supra* note 85 and AUC Decision 2009-293, *Greengate Power Corporation, Halkirk Wind Project* (31 December 2009).

¹⁰⁶ AUC Decision 2009-293, *ibid.* at 3.

¹⁰⁷ See the *Substance Release Regulation*, Alta. Reg. 124/93.

¹⁰⁸ Rule 007, *supra* note 89 at 10.

¹⁰⁹ Alberta Utilities Commission, *Rule 012: Noise Control* (23 February 2010) (Rule 012).

¹¹⁰ Rule 007, *supra* note 89 at 39.

¹¹¹ Alberta Utilities Commission, *Public Involvement in Needs of Facilities Applications* (December 2009) at 4, online: <http://www.auc.ab.ca/news-room/brochures/Documents/Public_Involvement_in_Needs_or_Facilities_Applications_to_the_AUC.pdf>.

¹¹² Rule 007, *supra* note 89 at 39.

¹¹³ *Ibid.*

heard.”¹¹⁴ But the AUC notes that it cannot predetermine the precise extent and scope of a participant involvement program; each project must be dealt with on its own facts. Applicants must consider whether the circumstances of their application require their participant involvement program to exceed the requirements and recommendations set out in Rule 007.¹¹⁵

As with the rules applicable for oil and gas facilities, the requirements of Rule 007 distinguish between notification (written correspondence) and personal consultation (face-to-face or via telephone).¹¹⁶ The distinction is based on proximity to the proposed power plant or transmission line and substation. Generally, it is “occupants, residents and landowners of land” within specified distances from the proposed facility that are entitled to be either notified or consulted with respect to the proposed application. For a power plant, Rule 007 states that:

. . . the applicant must provide public notification to all occupants, residents, and landowners within 2000 m measured from the edge of the proposed power plant site boundary. The applicant must provide personal consultation to all occupants, residents, and landowners within 800 m measured from the edge of the proposed power plant site boundary. For major power plant applications, if there are populated areas just outside the 2000 m limit, applicants should consider including those areas in the public notification.¹¹⁷

Throughout, Rule 007 cautions that it may be necessary, depending on the nature and scope of a particular project, to increase the radius to include others who have expressed an interest in development in the area. Rule 007 directs proponents to assess the “need to reach the broader public” through information sessions or public open houses.

Once completed, Rule 007 requires applicants to provide details about its participant involvement program as part of its application to the AUC. The applicant must outline any unresolved issues that were identified. After the Commission is satisfied that the application is complete, a notice of application is issued for most applications to parties that have been identified as persons who may be directly and adversely affected by the proposed project. The notice is typically published in local newspapers.¹¹⁸ A party wishing to express its concerns to the AUC must make a written submission to the AUC in accordance with the deadlines and directions set out in the notice of application. If the AUC decides the person is someone who meets the test for standing, discussed below, a public hearing may be held to consider the application.¹¹⁹

With respect to municipalities and wind proponents’ participant involvement programs, Rule 007 specifies that:

Local authorities [and Alberta Sustainable Resource Development (ASRD)] play an important part in the plan for orderly land use and should be in-

¹¹⁴ *Ibid.*

¹¹⁵ *Ibid.*

¹¹⁶ For oil and gas developments, see Energy Resources Conservation Board, *Directive 056: Energy Development Applications and Schedules* (16 June 2008).

¹¹⁷ Rule 007, *supra* note 89 at 40.

¹¹⁸ *Supra* note 111 at 6.

¹¹⁹ *Ibid.* at 6.

volved at an early stage in planning a transmission line or substation development and participant involvement program. Additionally, local authorities, Commission Field Centre staff, and the applicant's previous knowledge of the area may help identify needs in the community.¹²⁰

As noted, applicants must submit information to the AUC about the details and outcomes of their "consultation with local jurisdictions (*i.e.*, municipal districts, counties)".¹²¹

(iv) Public Interest Determination

Like other tribunals making decisions about proposed energy projects in Alberta, the AUC is guided by a public interest test. Section 17 of the *AUC Act* tells the AUC that it must consider whether the construction and operation of a proposed power plant and transmission line is in the public interest, having regard to the social, economic and environmental effects of the plant or line.¹²²

The AUC's predecessor, the EUB, often noted that it is difficult to define "concretely what is meant by the public interest and how the Board will apply consideration of this interest in any given situation."¹²³ What is clear, however, is that it is inaccurate to say that the public interest lies "where the greatest good for the greatest number can be identified."¹²⁴ This ignores the specific elements that must, according to the EUB, be considered in assessing the public interest.

Generally, the tribunal must weigh the benefits (not just to the applicant and those directly connected with the development, but to Albertans in general) against the risk factors that are present (given the nature of the development, the location proposed and the specifics of the project). A project that is in the public interest does not imply that there will be no site-specific impacts. The challenge is to ensure that site-specific and local impacts are mitigated to an appropriate and acceptable level. Ultimately, "a project may be found to be consistent with the public interest where [it is found] that the benefits of the project outweigh the potential for negative consequences and that appropriate mitigative measures can be applied to reduce or eliminate any negative aspects of the project."¹²⁵

A review of AUC decisions for wind power applications reveals some key factors the Commission focuses on in its assessment of the public interest. These

¹²⁰ Rule 007, *supra* note 89 at 40.

¹²¹ Rule 007, *ibid.* at 9 and 14.

¹²² With respect to certain transmission lines (defined as critical transmission lines in the *EUA*, *supra* note 63), s. 17(2) clarifies that the AUC is not to consider whether those are required to meet the needs of Alberta.

¹²³ EUB Decision 2005-060, *Compton Petroleum Corporation Applications for Licences to Drill Six Critical Sour Natural Gas Wells* (22 June 2005) at 12. For the inherent difficulties with the public interest test, see Jodie L. Hierlmeier, "The 'Public Interest': Can it Provide Guidance to the ERCB and NRCB?" (2008) 18 J.E.L.P. 279 and Shaun Fluker, "The Jurisdiction of Alberta's Energy and Utilities Board to Consider Broad Socio-Ecological Effects Associated with Energy Projects" (2005) 42 Alta. L. Rev. 1085.

¹²⁴ EUB Decision 2005-060, *ibid.*

¹²⁵ *Ibid.* at 13.

include: the adequacy of the applicant's participant involvement program; the noise, visual and environmental impacts of the proposed development; whether approvals or letters have been obtained as required from other regulatory entities; and the nature and extent of the mitigation measures (*e.g.*, setbacks) proposed by the applicant.¹²⁶ Where all regulatory requirements are met, the AUC generally approves a project as being in the public interest.¹²⁷

(v) *Standing Before the AUC*

Although, as noted above, the AUC requires (or in some cases, expects) companies to consult with various stakeholders, including local governments, prior to submitting their applications, ultimately it is only persons whose rights may be "directly and adversely affected" by a proposed wind project that may be granted standing to trigger and participate in a public hearing before the Commission with respect to an application. Subsection 9(2) of the *AUC Act* requires the AUC to give notice of an application in accordance with its rules and to hold a hearing where it appears that a person's rights may be directly and adversely affected by the AUC's decision.

Unlike the comparable provision applicable for oil and gas facilities, s. 9(3) of the *AUC Act* goes on to state, that the AUC is not required to hold a hearing where: (i) no one requests a hearing in response to the Commission's notice of application and; (ii) the AUC is satisfied that the applicant "has met the relevant Commission rules respecting each owner of land that may be directly and adversely affected by the Commission's decision on the application."¹²⁸

Although s. 9(3) refers to the Commission's "rules" respecting affected landowners, it does not appear that the AUC has yet finalized any such rules. What is clear, however, is that a party wanting to trigger or participate in a hearing before the AUC must indicate, by way of written submission, the manner in which that person's rights may be directly and adversely affected by the AUC's decision on the proposed application.¹²⁹ Only those persons whom the AUC has determined may be directly and adversely affected by the proposed application are entitled to

¹²⁶ See, for example, AUC Decision 2010-216, *supra* note 85 and AUC Decision 2009-293, *supra* note 105.

¹²⁷ See, for example, *ibid.*, and AUC Decision 2010-021, *TransAlta Wind, Ardenville Wind Plant and Substation* (15 January 2010).

¹²⁸ The comparable provision on the oil and gas side is s. 26(2) of the *Energy Resources Conservation Act*, R.S.A. 2000, c. E-10. That provision does not authorize the ERCB to waive a hearing entirely (although one can be held solely via written materials) where a person's rights may be directly and adversely affected. For criticism of the new s. 9 of the *AUC Act*, see Lyn Gorman, "Another step back for democracy in Alberta" 628 *Vue Weekly* (30 October 2007), online: <http://vueweekly.com/front/story/bill_46_another_step_back_for_democracy_in_alberta/> and Environmental Law Centre, "Comments on Bill 46 — *Alberta Utilities Commission Act*" (19 July 2007).

¹²⁹ Alberta Utilities Commission, *Rule 001: Rules of Practice*, 20 October 2009, s. 24. See also Rule 001, s. 10.

participate in a hearing.¹³⁰

The question of whether a party has “rights” that may be “directly and adversely affected” in any given situation is open to debate. On the ERCB side (formerly one-half of the EUB), standing decisions have been the subject of numerous court applications and critical commentary.¹³¹ Dan Woynillowicz and Steve Kennett have summarized the frustrations with the existing legislative test for standing as follows:

...only Albertans who can demonstrate that their rights may be “directly and adversely affected” have the right to a public hearing. This test silences many Albertans with legitimate interests in decisions on utilities and energy projects and lies at the root of widespread dissatisfaction with the EUB [now the ERCB and the AUC] and its “public interest” decision-making process. Landowners adjacent to energy developments, individuals with recreational and other interests in land, landowner organizations, environmental groups and even municipal governments have been denied the right to be heard under this test.¹³²

On the AUC side, where the same test applies, the Commission has already considered several applications for standing.¹³³ The Commission has stated that, although local intervenors with standing vary with each application, “historically most utility facility siting applications consider a landowner or entitled occupant of land to have standing if he/she lives or operates a business within 800 meters of the

¹³⁰ See *supra* note 111 at 10. In contrast to the AUC, the ERCB seems to take a less strict approach in terms of who it will allow to participate at a hearing. The ERCB sometimes allows parties that do not meet the standing test to participate in a hearing if one is held (because triggered by someone with standing). See, for example, EUB Decision 2010-026, *Shell Canada Limited, Prehearing Meeting, Applications for Well and Facility Licences, Castle River* (29 June 2010) and EUB Decision 2010-021, *Shell Canada Prehearing Meeting, Applications for Well Licences and Associated Pipeline and Facility Licences, Waterton Field* (18 May 2010). Sometimes, however, such parties are not given full participation rights (*e.g.*, to make argument, lead evidence and cross-examine witnesses) and they usually do not qualify for costs.

¹³¹ For recent court decisions, see: *Kelly v. Alberta (Energy Resources Conservation Board)*, 2010 ABCA 307; *Prince v. Alberta (Energy Resources Conservation Board)*, 2010 ABCA 214; *Kelly v. Alberta (Energy Resources Conservation Board)*, 2009 ABCA 349; *Graff v. Alberta (Energy & Utilities Board)*, 2008 ABCA 119; and *Shell Canada Ltd., Re*, (sub nom. *Sawyer v. Alberta (Energy & Utilities Board)*) 2007 ABCA 297. For commentary, see, for example: Shaun Fluker, “Standing Against Public Participation at the Alberta Energy and Utilities Board”, online: <http://ablawg.ca/wp-content/uploads/2008/02/sf_sawyer.pdf>; Dan Woynillowicz & Steve Kennett, “Passage of Bill 46 Perpetuates EUB Shortcomings”, 5 December 2007, online: <<http://alberta.pembina.org/op-ed/1566>>; and Nickie Vlavianos, *The Potential Application of Human Rights Law to Oil and Gas Development in Alberta: A Synopsis*, Human Rights Paper No. 5 (Calgary: Canadian Institute of Resources Law, 2006).

¹³² Woynillowicz & Kennett, *ibid.* at 1.

¹³³ See, for example, *Cheyne v. Alberta (Utilities Commission)*, 2009 ABCA 94 and AUC Decision 2010-021, *supra* note 127.

proposed site.”¹³⁴ Thus, it is generally landowners, occupants or residents that are close enough to the proposed development that are entitled to standing.

Recently, the AUC denied standing to two persons that resided approximately 25 km from a proposed wind plant. Moreover, according to the AUC, these persons wanted to raise matters of general policy outside of the AUC’s mandate. Some of the matters raised in their submission for standing concerned issues around whether governments should invest in helping Albertans replace outdated and power inefficient appliances so as to reduce the need for power (rather than reacting with a push for alternative fuel sources); whether wind turbines will reduce our dependence on fossil fuels; whether sufficient research has been carried out on the long-term impacts of wind energy on the environment and human health; and whether wind farms interrupt scenic views, add light pollution and reduce land values.¹³⁵ The AUC emphasized that to get standing, parties must tell it how their rights will be directly or adversely affected by the particular application before it. The AUC said as follows in regard to raising matters of policy before it:

[s]everal matters raised by these parties, such as government assistance programs and society’s dependence on fossil fuels, are general matters of government policy, are not responsive to the characteristics of the application before the Commission, do not address the particular impacts of the application on them or on rights which they might have, and are outside of the Commission’s mandate.

With respect to the environmental comments raised regarding the negative effects on bats and migrating animals, these comments were of a general nature and not specific to the project before the Commission. (...) With respect to comments regarding aesthetic and land values raised (...) again, these comments were of a general nature and not specific to the project before the Commission.¹³⁶

Given the socio-economic, environmental and land use impacts of wind power development on municipalities, one might expect local governments to almost always be able to meet the test for standing. This is not, however, the case. In at least two decisions on the oil and gas side, the ERCB has denied standing to municipalities. There is little reason to believe that the AUC would not take a similar approach.

¹³⁴ Alberta Utilities Commission, “How to Participate in a Facility Application”, online: <<http://www.auc.ab.ca/involving-albertans/getting-involved/Pages/HowtoParticipate.aspx>>.

¹³⁵ AUC Decision 2010-021, *supra* note 127 at 4.

¹³⁶ *Ibid.* at 4-5. In *Dene Tha’ First Nation v. Alberta (Energy & Utilities Board)*, 2005 ABCA 68; leave to appeal refused [2005] S.C.C.A. No. 176, 2005 CarswellAlta 1133, the Alberta Court of Appeal held that some degree of connection must exist between the proposed project and the rights asserted to meet the test for standing. Given the applicable (deferential) standard of review, standing decisions by energy tribunals in Alberta are rarely successfully appealed. See, for example: *Prince*, *supra*, note 131; *Cheyne v. Alberta (Utilities Commission)*, 2009 ABCA 348; *Graff*, *supra* note 131; *Shell Canada Ltd., Re*, (sub nom. *Sawyer v. Alberta (Energy & Utilities Board)*) 2007 ABCA 297; and *Dene Tha’ First Nation*, *ibid.* For a notable recent exception, see *Kelly v. Alberta (Energy Resources Conservation Board)*, 2009 ABCA 349.

The first ERCB decision related to an application to drill two sour crude oil wells near Rocky Rapids, Alberta.¹³⁷ The responsible municipality, Brazeau County, requested intervenor status before the then EUB. It said its request was based on its legal obligations under disaster services legislation requiring it to protect the safety of its constituents. In a terse response, the Board concluded that Brazeau County was unable to establish a connection between its interests and the proposed activity. The Board concluded as follows:

The Board notes that the County is a local authority that has responsibilities under the *Disaster Services Act*, as well as under the *Municipal Government Act*. The applications in question do not affect its authority under these acts. In particular, a local authority must ensure that its emergency response plan (ERP) is coordinated with the site-specific response plan proposed by the applicant.¹³⁸

Although one might think that this very requirement of ensuring that its ERP is coordinated with that of the company illustrates the municipality's affected interest, the Board concluded that Brazeau County had not shown the "manner in which these applications may directly and adversely affect its rights."¹³⁹

The second decision dealt with an application for a licence to drill an exploratory sweet gas well within the Eastern Slopes of the province.¹⁴⁰ The M.D. of Pincher Creek, within whose jurisdiction the well was to be drilled, requested standing to trigger a hearing. It argued that as an elected government it represented concerns and issues within its jurisdiction. These included concerns about road use and maintenance, surface water and groundwater contamination, weed control and the loss of fescue grasslands in the area.¹⁴¹ The M.D. wanted the well licence withheld until the company addressed its concerns. In denying the M.D. standing, the EUB did not expressly challenge the M.D.'s assertion that it had genuine interests that may be directly and adversely affected by this project. Rather, the Board denied standing because "the M.D. said that it has authority respecting road use and weed control, and therefore the Board believes that the M.D. can address its concerns respecting those matters through its own authority."¹⁴² Moreover, according to the Board, some of the M.D.'s concerns were "general in nature" and not specific to the particular well in question. Nonetheless, the Board acknowledged that the M.D. did in fact have legitimate concerns about the company's area develop-

¹³⁷ EUB Decision 2006-116, *West Energy Ltd., Prehearing Meeting, Applications for Two Well Licences, Pembina Field* (21 November 2006).

¹³⁸ *Ibid.* at 2.

¹³⁹ *Ibid.* Ultimately, because a hearing was to be held anyway (triggered by someone with proper standing), the ERCB decided to allow Brazeau County to participate fully since it "would be of significant value and assistance to the Board": *ibid.* If so, one wonders why the Board would not have wanted this information from the County even if there had been no one to trigger the hearing.

¹⁴⁰ EUB Decision 2006-052, *Decision on Requests for Consideration of Standing Respecting a Well Licence Application by Compton Petroleum Corporation, Eastern Slopes Area* (8 June 2006).

¹⁴¹ *Ibid.* at 3.

¹⁴² *Ibid.* at 8.

ment plan and told the company that it expected open and diligent communication with the M.D.¹⁴³

In short, according to the then EUB [now the ERCB and the AUC], municipalities do not meet the standing test merely because a matter within its legislated competence may or even will be directly and adversely affected by a proposed project. Instead, it appears that if a municipality cannot establish an economic or property right with respect to the affected land, it will encounter difficulties triggering a hearing before the AUC with respect to any given wind power application. This is so despite the legitimate concerns a municipality might have in the application.

(vi) *Intervenor Costs*

Another barrier to effective participation by municipalities in the AUC approval process is costs. Even if the AUC follows the lead of the ERCB and allows some participation for municipalities where another party has properly triggered a hearing, such a municipality normally would not be entitled to costs for participating in the hearing. The legislative provision allowing for recovery of intervenor costs is narrower than the standing provision. It explicitly reserves costs for persons with property interests in the lands affected by the application. As set out in s. 22(1) of the *AUC Act*, parties eligible for an award of costs are a person or group of persons that, in the opinion of the AUC, has an “interest in, and is in actual occupation or is entitled to occupy” land that is or may be directly and adversely affected by an AUC decision on an application to construct a power plant or transmission line. Here, there is clear language of land ownership and occupation of land.¹⁴⁴ Given the limited resources of many Alberta municipalities, this is a significant barrier to participation in AUC proceedings. Without the potential to recoup at least some costs of participating, one wonders how likely it will be that municipalities will participate fully in wind power applications even where they have legitimate concerns.¹⁴⁵

¹⁴³ *Ibid.* Again, one wonders why, if these are legitimate concerns, a municipality cannot trigger a hearing before the Board on the basis of these very concerns. Ultimately, if no one else triggers a hearing, it is not at all clear how local impacts and community interests will be represented in the Board’s project approval process (and its consideration of the public interest).

¹⁴⁴ See also Alberta Utilities Commission, *Rule 009: Rules on Local Intervenor Costs*, 30 September 2008.

¹⁴⁵ On the oil and gas side, even where allowed to participate fully, municipalities have been denied costs. See, for example: EUB Energy Cost Order 2007-003: *Albian Sands Energy Inc., Application to Expand the Oil Sands Mining and Processing Plant Facilities at the Muskeg River Mine, Cost Award* (14 March 2007); and EUB Energy Cost Order 2007-001: *Suncor Energy Inc., Application for Expansion of an Oil Sands Mine (North Steepbank Mine Extension) and a Bitumen Upgrading Facility (Voyageur Upgrader) in the Fort McMurray Area, Cost Awards* (21 February 2007). Leave to appeal both cost orders was denied in *Wood Buffalo (Regional Municipality) v. Alberta (Energy & Utilities Board)*, 2007 ABCA 192.

5. THE ROLE OF MUNICIPALITIES IN THE APPROVAL AND REGULATION OF WIND POWER PROJECTS

As noted above, municipalities are not, despite their status as elected governments and their statutory mandates and responsibilities, consulted in any special way when the provincial government sets its energy policy and establishes provincial land use plans. In the case of specific projects, municipalities might be able to have their concerns addressed through consultation with the company involved, a route that should be explored as much as possible. In regard to the AUC's project approval process, municipalities may or may not be entitled to participate fully in a hearing to express their concerns directly to the Commission. Even if they do, they typically will not be entitled to any costs for participating. Ultimately, the AUC's mandate to make a final decision in the public interest means that the views and concerns of municipalities are simply factors to be taken into account along with those of other intervenors. Their statutory mandates do not entitle them to any special status in the AUC project approval process.¹⁴⁶

So what about municipal jurisdiction over local land use and planning? Can municipalities affect and regulate wind power development within their borders through their land use planning and development powers? The answer, as outlined below, is yes and no. "Yes" because planning powers are a useful starting point through which to exercise some municipal control over wind power development, but "no" because ultimately any decisions made pursuant to such powers can be overridden by the AUC should it choose to do so.¹⁴⁷

(a) Part 17 of the MGA — Planning and Development

As noted earlier, Part 17 of the *MGA* grants Alberta municipalities key powers to control and regulate land use and development within their borders. Unlike some other energy developments, commercial wind generating facilities are not exempt from these provisions of the *MGA*.¹⁴⁸ Part 17 requires or authorizes municipalities to adopt various planning tools, including municipal plans and land use bylaws, which set the course for subdivision and development decision-making in the municipality. Generally, Part 17 of the *MGA* requires an application to be brought to a municipality for a development permit or subdivision approval before land can be developed or subdivided. Municipalities can use these powers to a certain extent to

¹⁴⁶ Similarly, see *Calgary North H2S Action Committee v. Alberta (Energy & Utilities Board)*, 1999 ABCA 323, where Hunt J.A. held that despite its statutory mandate, a regional health authority held the same status as any other intervenor before the EUB. In her view, there is nothing in the energy legislation to suggest that a category of "super-intervenor" (for entities with legislated mandates) was ever contemplated by the legislature.

¹⁴⁷ For an argument that municipalities may also be able to use another set of powers, the general bylaw making powers granted in s. 7 of the *MGA*, to regulate energy development, see Vlavianos & Thompson, *supra* note 3.

¹⁴⁸ Oil and gas wells, batteries and pipelines are specifically exempted from the application of Part 17 of the *MGA*: see s. 618, *MGA*. Consequently, no municipal development approval is required for these facilities and municipal statutory plans and land use bylaws do not apply to them.

have their concerns over wind power development addressed.

In most wind power project approval applications to the AUC, proponents of wind power facilities have already obtained required municipal development permits.¹⁴⁹ Rule 007 states that applicants must “provide a list of *existing* approvals for facilities directly affected by this project, if any”¹⁵⁰ and, with respect to municipalities, “provide details and outcome of consultation with local jurisdictions (*e.g.*, municipal districts, counties).”¹⁵¹ The AUC says that this requirement means that required municipal development permits must be attached to the application.¹⁵² Applicants must also describe the existing land use of the proposed site and also any potential siting and land use issues that they are aware of.¹⁵³ Thus, the AUC is clearly interested in the outcomes of the municipal development permit process. But is it bound by that process? Are development permits really *required* before the AUC can decide whether or not to approve a wind power project?

(i) *Section 619 of the MGA*

The answer, because of s. 619 of the *MGA*, is clearly “no.” Section 619 states as follows:

619. (1) A licence, permit, approval or other authorization granted by the NRCB, ERCB, AEUB or AUC prevails, in accordance with this section, over any statutory plan, land use bylaw, subdivision decision or development decision by a subdivision authority, development authority, subdivision and development appeal board, or the Municipal Government Board or any other authorization under this Part.

(2) When an application is received by a municipality for a statutory plan amendment, land use bylaw amendment, subdivision approval, development permit or other authorization under this Part and the application is consistent with a licence, permit, approval or other authorization granted by the NRCB, ERCB, AEUB or AUC, the municipality must approve the application to the extent that it complies with the licence, permit, approval or other authorization granted under subsection (1).

Subsection 619(4) specifies that a hearing held by a municipality under s. 619(2) “may not address matters already decided by” the AUC “except as necessary to determine whether an amendment to a statutory plan or land use bylaw is required.” In accordance with s. 619(5), if a municipality does not approve an application under s. 619(2) to amend a statutory plan or land use bylaw, the applicant may appeal to the Municipal Government Board (MGB), which may either dismiss the appeal or order the municipality to amend the plan or land use bylaw so as to comply with the Board’s licence, permit or other authorization.¹⁵⁴

¹⁴⁹ See, for example, *supra* note 127.

¹⁵⁰ Rule 007, *supra* note 89 at 9 [emphasis added].

¹⁵¹ *Ibid.*

¹⁵² Rule 007, *ibid.* at 14.

¹⁵³ *Ibid.* at 10.

¹⁵⁴ *MGA*, s. 619(8). For commentary on the history and purpose behind s. 619 of the *MGA*, see: Laux, *supra* note 34, at para. 3.9(3)(b); Phillip S. Elder, “Alberta’s 1995 Planning Legislation” (1995) 6 J.E.L.P. 23; and J. Owen Saunders & Jenette Poschwatta-Years-

Section 619 does not say that municipalities cannot address wind or other forms of energy development in their land use plans and bylaws. In fact, municipal planning approvals, like a development permit, are required for wind power projects as outlined in the plans and bylaws of each municipality. Nonetheless, s. 619 significantly limits the ability of municipalities to regulate wind power development independently of the AUC.

While there has yet to be judicial consideration of s. 619, the provision has been considered in several tribunal decisions. Its effect on the powers of municipalities vis-à-vis the siting, approval and regulation of power plants was considered by the EUB (AUC's predecessor) in a 2000 decision concerning an application by Shell Canada Ltd. to construct a natural gas-fired cogeneration plant in Strathcona County.¹⁵⁵ An issue arose as to whether the County's existing planning documents supported this heavy industrial use. Shell relied on s. 619 of the *MGA* to argue that the County's particular land use designation was irrelevant to the EUB's consideration of the project. It submitted that the question before the Board was whether the project was in the public interest, not whether it was compatible with existing municipal land use designations. In response, the County argued that, because s. 619 effectively makes the Board the final arbiter of land use issues where energy projects are concerned, the Board must take the land use planning laws of municipalities into account. If it did not, Albertans and municipalities would lack an effective forum for dealing with land use matters that arise from energy developments.

According to the EUB, s. 619 of the *MGA* gives precedence to the licences and approvals of the enumerated boards over municipal land use bylaws and other municipal planning instruments, as well as over decisions of local development appeal boards or other planning agencies. Still, s. 619 does not allow those boards to take on municipal authority for land use planning which municipalities have been granted by the *MGA*. The EUB emphasized that local land use planning remains within the domain of municipal governments. Although not bound by municipal plans and bylaws, the EUB said they may be of relevance to its public interest determination which may require it to consider land use issues.

In another 2000 decision, the EUB again commented on s. 619 of the *MGA*. EPCOR had requested approval to construct and operate an additional natural gas-fired turbine at its Rosedale power plant in Edmonton.¹⁵⁶ At the prehearing meeting, a question arose about whether the Board should consider land use planning issues at its scheduled hearing or whether it should defer its consideration of the application until municipal development permits had been applied for. The EUB concluded that it did not have to delay its approval until municipal approvals were obtained. In its view, although there might be some overlap in the issues the Board and municipalities would look at under their approval processes, the Board's man-

ley, eds., *Canadian Energy Law Service — Alberta* (Toronto: Carswell, 2005) [looseleaf] at paras. 76–78.

¹⁵⁵ EUB Addendum to Decision 2000-30: *Shell Canada Ltd. Cogeneration Plant and Hydrogen Pipeline, Fort Saskatchewan Area* (25 July 2000).

¹⁵⁶ EUB Memorandum of Decision: *Application No. 990289 and 105547, Prehearing Meeting, EPCOR Power Development Corporation and EPCOR Generation Inc., ATCO Pipelines* (30 May 2000).

date does not require it to consider land use planning issues generally. The EUB stated as follows:

...the Board is of the view that Section 619 of the *MGA* neither requires the Board to consider land-use planning issues properly within the jurisdiction of the City nor to defer its consideration of EPCOR's application pending the outcome of the municipal development permit process. The Board believes that Section 619 contemplates that the Board's process will be carried through to completion prior to the City considering subdivision or development permit applications. The Board does not believe that Section 619 transfers to the Board or otherwise usurps jurisdiction over land-use planning matters otherwise within municipal jurisdiction. Section 619 recognizes that there may be some overlap in the Board's consideration of an application and that of a municipality. It does not require the Board to carry out the municipality's responsibilities under its own legislation. The Board has on a number of occasions stated that land-use planning issues are within municipal jurisdiction.¹⁵⁷

Nevertheless, the EUB again emphasized that land use impacts from a proposed project are properly within its public interest mandate. Consequently, in this case, the Board allowed evidence relating to the present and historic nature of municipal land use planning policies, plans and instruments of the river valley along which the plant operated. In its view, this evidence would allow the Board to appreciate better the effects of the Rosssdale power plant on the usage of the river valley. Elsewhere, the Board summarized as follows:

[...]and use planning regimes are relevant to the Board's consideration because they indicate from the municipality's perspective, the nature of the past, present, and future uses of a proposed site or lands in close proximity to a site. The Board is thus better able to determine whether the relative impacts created by energy facilities on the use of land are acceptable."¹⁵⁸

Thus, municipal plans and land use bylaws are clearly relevant to a determination of the public interest in any given case.¹⁵⁹ It follows that municipalities would be well advised to include consideration of energy projects, including wind power projects, in their planning documents and land use bylaws.

Despite their relevance, the EUB was equally clear that it did not consider itself bound or constrained in any way by any planning tools of a municipality in making its decision.¹⁶⁰ In the case of the Rosssdale power plant, the Board concluded that it:

... is not bound (...) to give expression to the City's land-use policies, plans, and instruments in determining the applications before it. Approval or rejection of the application is based on the public interest criteria contained

¹⁵⁷ *Ibid.* at 6-7.

¹⁵⁸ EUB Decision 2001-101: *AES Calgary ULC, 525-MW Natural Gas-Fired Power Plant Application No. 2001113* (11 December 2001) at 4.

¹⁵⁹ For another example, see: Natural Resources Conservation Board, *Alberta Sulphur Terminals Ltd. Sulphur Forming and Shipping Facility near Bruderheim*, Board Decision NR 2009-01, July 2009.

¹⁶⁰ *Ibid.* at 41.

in the Board's enabling legislation."¹⁶¹

In sum, according to the AUC's predecessor, the EUB was entitled, but not mandated, to consider evidence of current and past municipal land use and development plans, bylaws and policies. It did so if it considered this evidence to be relevant to its determination of whether a proposed project was in the public interest. Whether it did so or not, however, the presence of s. 619 in the *MGA* meant that it was not bound by any of these plans or bylaws in reaching its decision. There is no reason to believe that the AUC (or a court on appeal for that matter) would take a different view given the clear language of s. 619.

(ii) *Regulating Wind Power through Municipal Plans and Land Use Bylaws*

As noted, because of s. 619 of the *MGA*, even where a proposed wind power development conflicts with municipal planning documents and land use bylaws, the AUC could still approve the project. Nonetheless, because the AUC will likely take such documents into consideration in its public interest calculation, it is advisable for municipalities to address wind power development in their policies, statutory plans and land use bylaws.¹⁶²

Moreover, there are limits to the language of s. 619. A close reading reveals that it does not entirely remove municipal authority to impose conditions and requirements for energy development. On several occasions, the EUB noted that s. 619 gives precedence to Board approvals, but only to the extent that the Board's decision actually deals with land use matters. The Board stated as follows:

EUB approvals of energy facilities will take precedence over land-use planning instruments enacted by municipalities to the extent that the Board has addressed land-use issues in its decision. The following passage from Professor F.A. Laux's *Planning Law and Practice in Alberta* (2d ed.) on page 3 — 17 is instructive:

Where the NRCB or the AEUB [now the ERCB and the AUC] has sanctioned a project that also requires planning approval, the project may not be vetoed or altered in any way by the planning body in respect of considerations and issues that have been addressed by the provincial body. On the other hand, the planning agency's powers remain unfettered in respect of planning considerations and issues that

¹⁶¹ EUB Decision 2001-33: *EPCOR Power Development Corporation and EPCOR Generation Inc., Rosedale Power Plant Unit 11 (RD 11) Application No. 990289* (8 May 2001) at 11. On a leave to appeal application, Berger J.A. held that the Board had properly drawn a distinction between land-use effects which it said were relevant and land-use plans and policies which the Board referenced but held were properly within the jurisdiction of municipalities: *ConCerv v. Alberta (Energy & Utilities Board)*, 2001 CarswellAlta 1136, [2001] A.J. NO. 1128 (C.A.).

¹⁶² For those municipalities interested in attracting wind power development, it is also advisable to do so because the "presence of land-use planning policies specifically designed for wind power generation has emerged as a common feature in communities which have been successful at attracting wind power development." (Szybalski, *supra* note 45 at 24.)

have not been addressed by the provincial body.¹⁶³

Thus, in an appeal under s. 619(5) concerning an application by AES Calgary Ltd. (AES) to construct a power plant east of Calgary, the MGB emphasized that, although the EUB was not constrained by land use planning documents, it had acknowledged that the details of land use planning for the site was to be left to the municipality. AES had obtained EUB approval to construct the plant, but when it applied for redesignation of the site to allow for the project, the M.D. of Rockyview refused to pass the bylaw amendment it had drafted with AES. The MGB concluded that although s. 619 required the M.D. to pass the bylaw, this did not mean that the municipality was left without any control over planning and development. According to the MGB:

... section 619 was written to allow a municipality some control over how a mega-project is developed. There are many planning considerations despite the overall approval issued by a body that is not the municipal council. The MD [of Rockyview] and AES identified those considerations and prepared a comprehensive bylaw amendment which is intended to provide municipal control over the issuing of development and building permits.¹⁶⁴

According to the MGB, s. 619 does not mean that the municipality is without authority or involvement in the implementation of the EUB approval. To the contrary, the municipality retains “substantial control over the issuance of development permits and the rules under which the power plant must be constructed.”¹⁶⁵ Because the EUB had not addressed numerous land use matters in its decision, the MGB found that all of the following were local concerns that could properly be addressed by the municipality through a land use bylaw amendment: traffic impacts; access and construction of access roads; construction management; dust and noise control; chemical storage and waste disposal; landscaping; storm and water management; and reclamation. The MGB also held that the municipality could set minimum setback requirements for transmission and cooling towers from any roads, the maximum facility capacity limits and restrictions on the height of buildings and structures, as well as place conditions on the issuance of a development permit, such as requiring the preparation of a satisfactory construction management plan and traffic impact analysis.¹⁶⁶ All such conditions imposed by the municipality would be consistent with the Board approval pursuant to s. 619 either because they were the same as the Board’s, or because the Board had not specifically set out the details on these matters in its decision.¹⁶⁷

¹⁶³ EUB Decision 2001-33, *supra* note 161 at 10.

¹⁶⁴ *AES Calgary ULC (Re)* (July 2, 2002), S02/ROCK/MD-012, [2002] A.M.G.B.O. No. 110, ¶89.

¹⁶⁵ *Ibid.* at para. 91.

¹⁶⁶ *Ibid.*

¹⁶⁷ Of course, as a practical matter, many Alberta municipalities lack the technical and scientific expertise to properly evaluate industrial facility applications. Municipalities may have to seek assistance from consultants while being unable to recover such costs through development permit fees. Consequently, although they may have the legal authority to impose detailed technical terms and conditions on development permits, many municipalities may not have the ability to do so in practice.

Thus, in law, there is room for Alberta municipalities to impose conditions on energy developments, including wind generation facilities, even if they are not able to control the overall approval of projects. Consequently, it can only benefit municipalities to have relevant plans and bylaws in place. Some of the issues a municipality might want to address with respect to commercial wind power developments include site selection criteria, tower height, noise, visual impacts, property line setbacks, setbacks to dwellings, and public safety considerations.

(A) The Municipal District of Pincher Creek No. 9

One Alberta municipality that has taken an active role in regulating such matters in the wind power development context is the Municipal District of Pincher Creek No. 9 (M.D. No. 9). M.D. No. 9 is home to the highest concentration of electricity generating wind turbines in Canada.¹⁶⁸ Despite the welcomed economic benefits,¹⁶⁹ as wind power development increased in the region, so did concerns of residents.¹⁷⁰ In 2008, the M.D. reviewed its land use bylaw and statutory plans and introduced some significant changes intended to deal with the impacts of this growing industry.

M.D. No. 9's current land use bylaw is Land Use Bylaw No. 1140-08.¹⁷¹ Under the LUB, wind power developments require a development permit.¹⁷² Section 53 deals specifically with wind power developments, referred to as "wind energy conversion systems" (WECS). They are defined as structures "designed to convert wind energy into mechanical or electrical energy."¹⁷³ Commercial wind farm developments (*i.e.*, power plants consisting of a group of wind turbines and related facilities connected to the same substation or metering point) are a discretionary use allowed only in a land use district designated as "Wind Farm Industrial."¹⁷⁴

A review of s. 53 of the LUB reveals that M.D. No. 9 has decided to regulate several aspects of the wind power development process. First, s. 53.15 requires an application for a development permit to be submitted for each titled parcel of land involved in a proposed wind power project. Second, the Municipal Planning Committee (MPC) may approve the application on a case-by-case basis, but it must hold a public meeting "in order to solicit the views of the public in regard to the applica-

¹⁶⁸ Blackwell, *supra* note 36.

¹⁶⁹ For example, taxes paid by wind farms in M.D. No. 9 comprised over 23 per cent of the total tax revenue in 2008: *ibid.*

¹⁷⁰ See Marty, *supra* note 41, Blackwell, *supra* note 36, and Oldman River Regional Services Commission, *Municipal District of Pincher Creek No. 9 Wind Energy Conversion Systems Review*, 2007.

¹⁷¹ *Municipal District of Pincher Creek No. 9, Land Use Bylaw No. 1140-08* (LUB).

¹⁷² LUB, Part III: Development Permits, at 27.

¹⁷³ *Ibid.*, s. 6.150.

¹⁷⁴ *Ibid.*, s. 53.11. Also designated to the Wind Farm Industrial land use district is a single WECS with a total height of 35m or greater: s. 53.10. Shorter single wind turbines are a permitted or discretionary use in other land use districts provided they are allowed by the relevant area structure plans: see *ibid.*, s. 53.11.

tion” prior to approval.¹⁷⁵ Third, s. 53 sets out specific requirements for the development permit application. For commercial wind farms, these include information and surveys regarding visual representations, turbine specifications, assessments of noise and shadow or flicker impacts, and decommissioning plans.¹⁷⁶ The LUB also stipulates a maximum five year development timeline for the proposed wind project.¹⁷⁷ Fourth, the LUB sets out specific requirements in regard to minimum setbacks from municipal roadways, provincial highways, and property lines.¹⁷⁸ The MPC has discretion to increase required setbacks if, in its opinion, the stipulated setbacks are “not sufficient to reduce the impact of a WECS.”¹⁷⁹ The LUB also sets out other municipal requirements, including some for minimum blade clearance, tower access and safety, and the colour and finish for the WECS.¹⁸⁰ With respect to noise impacts, the only applicable provision appears to be s. 53.26 which states that “at no time shall the modeled sound level of a WECS at the wind farm boundary exceed 45dBA unless a caveat is agreed to by the affected land owner and registered on the affected title.”¹⁸¹

M.D. No. 9’s LUB works in conjunction with the M.D.’s Municipal Development Plan (MDP) which has also been amended in recent years to address wind power developments. Generally, the purpose of any MDP is to “convey the kind of place a community wishes to be in the future.”¹⁸² Pincher Creek’s MDP expressly states that the municipality supports the integration of wind power facilities with other land uses in the municipal district. Further, in recognition that “changes will occur as wind technology evolves,” the MDP requires that a review be conducted every three years (or at such time when 500 WECS have been constructed).¹⁸³ The review must include an analysis of the M.D.’s wind energy policies including an evaluation of the density of existing WECS, permits approved and currently valid permits for WECS, visual impacts on the landscape, public opinion on existing de-

¹⁷⁵ *Ibid.*, s. 53.16 and s. 53.17.

¹⁷⁶ *Ibid.*, s. 53.21.

¹⁷⁷ *Ibid.*, s. 53.19. The five-year time period for development permits is of course less than ideal from a proponent’s point of view who likely would prefer a longer period of certainty, especially as regards securing financing for the project. Because municipal development permits cannot be subsequently changed once issued, however, municipalities prefer to issue permits for limited time periods in order to retain their ability to alter any terms and conditions as needed.

¹⁷⁸ *Ibid.*, s. 53.24–53.28.

¹⁷⁹ *Ibid.*, s. 53.29.

¹⁸⁰ *Ibid.*, s. 53.30–53.38.

¹⁸¹ *Ibid.*, s. 53.26. An application for leave to appeal a decision by the M.D. to relax this requirement was dismissed in *Heritage Wind Farm Development Inc. v. Pincher Creek (Municipal District) No. 9*, 2010 ABCA 181. For a successful leave to appeal application brought against a development permit issued by M.D. No. 9, see: *Sylvester v. Pincher Creek (Municipal District) No. 9 Subdivision & Development Appeal Board*, 2008 ABCA 92.

¹⁸² *Municipal District of Pincher Creek No. 9, Municipal Development Plan Bylaw No. 1062-02, Schedule A (MDP)* at 3.

¹⁸³ MDP, *ibid.* at 19.

velopment, and public consultation.¹⁸⁴ The review's findings may place limitations on the density of future development, determine where in the M.D. wind developments will be encouraged, and determine any other issues deemed necessary by Council. The MDP also states that the M.D. encourages the repowering of existing or depreciated wind energy developments and that it will ensure that obsolete or abandoned developments are decommissioned.¹⁸⁵

Thus, M.D. No. 9 has turned its attention to some of the impacts and concerns from potentially large-scale and widespread wind development. It has, as it is entitled to do, included provisions in its MDP and land use bylaw to address such concerns. Companies wanting to build good community relations are of course well advised to adhere to the municipality's requirements and the AUC, in its project review, should consider them in its consideration of the public interest.

(iii) *Practical Difficulties*

As noted, s. 619 of the *MGA* says that any approval by the AUC prevails over any municipal plan or bylaw. It also says that where matters have been stipulated by the AUC, a municipality must approve an application for a development permit that is "consistent" with the AUC approval "to the extent that it complies" with the AUC approval. Thus, where details with respect to acceptable setbacks and noise levels for example have been dealt with by the AUC in its project approval, a municipality could not impose its own requirements unless they were consistent with those of the AUC. Where, however, certain matters have not been dealt with by the Commission, a municipality could, as noted earlier, impose its own requirements with respect to the details of how a wind development will proceed.

But how can or do the complex set of provisions in s. 619 of the *MGA* work in practice? As noted above, developers are typically required to obtain development permits from municipalities before they obtain all necessary approvals from the province. The AUC, for example, asks proponents to include required development permits in their applications to the AUC. To the extent that there are any conflicts between the already-issued development permit and the later provincial approval, this may result in the conflicting provisions of the development permit being rendered inoperative through the operation of s. 619. But how can the municipality know what will or will not be addressed by the AUC in its approval if the municipality is being asked to issue its development permits first? This practice leaves the municipality in the awkward situation of not knowing what a subsequent approval by the AUC will contain. The municipality is also not in a position to evaluate the AUC approval, nor does it have the benefit of the provincial review of technical and scientific issues when it is considering the development permit application.

Even if development permits were issued *after* AUC approvals, practical difficulties would remain. For example, if a matter were raised at an AUC hearing, but not specifically referred to in the AUC's decision or conditions of approval, could a municipality impose conditions or otherwise address that specific issue in the municipal approval? Moreover, if the AUC approval were granted and subsequently, a new matter was raised during the development permit application process (that had

¹⁸⁴ *Ibid.*

¹⁸⁵ *Ibid.* at 20.

not been discussed in any way at the AUC stage), could the municipality approve the application and deal with that new matter on its own? In short, would the municipality be obliged to approve the application on the basis that the application complies with the AUC approval (even though a specific matter had not been addressed)?

Clearly, there is a need for judicial direction with respect to the workings of s. 619 of the *MGA*. Until such questions are dealt with squarely by the courts, significant practical difficulties will remain.

(iv) Inconsistent Development Permit Conditions or Bylaws

As noted, there is room within the wording of s. 619 of the *MGA* for municipalities to set out the details with respect to acceptable setbacks and noise/sound levels for example where such matters have not been directly dealt with by the AUC in its project approval. A municipality can impose its own requirements as long as they are not inconsistent with those of the AUC. Another key set of questions in regard to s. 619 concerns the meaning of the words “consistent” and “complies with” in s. 619(2). Could, for example, a municipality’s requirements be stricter than those set out in the AUC’s approval? Could a municipality’s requirements be more strict than those set out in provincial rules of general application?

In a situation where a matter has been specifically dealt with in an AUC approval, it appears that a municipality could not impose more stringent conditions than the AUC in its development permit. If, for example, a municipality tried to require more strict sound level requirements in its development permit than those required by the AUC, a proponent could argue that this runs counter to s. 619(2) of the *MGA*. As noted, s. 619(2) requires municipalities to approve a development permit application to the extent that it “complies with” the approval issued by the AUC. As long as the application complies with the sound level requirements specified in the AUC approval, then the municipality will have to issue the development permit. Moreover, the municipality may be required to amend its statutory plan and land use bylaw to accommodate the proposed development on the terms in the AUC approval.

Significant difficulties arise, however, in situations where the AUC has not in its approval set out specifics with respect to all matters. As noted above, energy tribunals in Alberta have noted that s. 619 of the *MGA* still leaves many details of industrial projects in the purview of municipalities. Where nothing has been said on a particular matter by the AUC in the context of wind power developments, the relevant municipality should be free to regulate. But what if, rather than specifying requirements on certain matters in its project approval, rules of general application, like ASRD’s guidelines with respect to setbacks or AUC’s Rule 012 in regard to noise, apply to the project? Could a municipality lower or increase those provincial rules of general application through its issuance of development permits?

Along with s. 619 of the *MGA*, another legislative provision is important in this regard. This is s. 13 of the *MGA* which states that “[i]f there is an inconsistency between a bylaw and this or another enactment, the bylaw is of no effect to the

extent of the inconsistency.”¹⁸⁶ Because the *MGA* does not define “inconsistency” or “conflict”, judicial interpretations likely apply.¹⁸⁷

In the seminal case of *Spraytech*, the Supreme Court of Canada adopted the “impossibility of dual compliance” test to determine inconsistency between a municipal bylaw and a provincial enactment.¹⁸⁸ According to the Court, where two levels of legislation exist on the same matter, if it is possible to follow both laws, there is no “conflict” or “inconsistency” requiring one of the laws to be struck down. Rather, a conflict arises only where following one law necessarily requires non-compliance with the other. Post-*Spraytech*, the Supreme Court has added another element to possible inconsistency between a provincial and municipal enactment. In *Rothmans*,¹⁸⁹ the Court held that an enactment that “displaces or frustrates” the legislative purpose of the higher-level legislator is inconsistent and thereby *ultra vires*. In that case, because the federal and provincial laws at issue were enacted for the “same health-related purposes,” the Court held the provincial law did not frustrate the purpose of the federal law.¹⁹⁰ Further, since it was possible to comply with both laws (per *Spraytech*), both could stand.

Thus, where there is no provincial rule covering the matter, a municipality’s rules could apply provided of course they have been validly enacted pursuant to its statutory mandate. Where the matters properly relate to local land use planning and development, for instance, a municipality like M.D. No. 9 can adopt rules and impose conditions to regulate aspects of wind power developments. Ultimately, the ability of municipalities to regulate wind power developments will therefore depend in large part on the scope and extent of the issues actually considered and addressed by the AUC. It will depend on whether the AUC forgoes considering matters it deems to be of a purely local nature and more properly within municipal control.¹⁹¹

Even where a provincial rule covers the same matter (for example, allowable setbacks or noise levels), however, a municipal bylaw or development permit condition is not automatically invalid simply because the provincial rule or condition exists. Rather, as noted, the key issue is whether there is “inconsistency” or “con-

¹⁸⁶ A further provision of the *MGA* might also be relevant in some cases of provincial and municipal conflicts. Section 620 states that when a condition of an approval issued by a defined government person or agency conflicts with a condition of a development permit, the provincial condition prevails. Section 620, however, applies only to certain types of provincial approvals and these do not include approvals by the AUC (or the ERCB or NRCB).

¹⁸⁷ In *Croplife*, *supra* note 33, the parties conceded that a provision similar to s. 13 of the *MGA* should be interpreted through the tests for “inconsistency” and “conflict” developed in the case law.

¹⁸⁸ *Supra* note 6.

¹⁸⁹ *Rothmans, Benson & Hedges Inc. v. Saskatchewan*, 2005 SCC 13 (*Rothmans*).

¹⁹⁰ *Ibid.* at paras. 25-26.

¹⁹¹ See also *Wenig et al.*, *supra* note 12 at 50. In practice, even where the provincial energy boards like the AUC do outline certain details in their project approvals (and thereby oust municipal jurisdiction on these), it is likely that, in trying to establish and maintain good community relations, project proponents will nonetheless strive to meet any applicable municipal requirements wherever possible.

flict” between the municipal and provincial requirements. Where compliance with both is possible, there is, according to the case law, no conflict or inconsistency. Thus, for example, where a municipality has adopted a 100 metre setback but the provincial rule of general application is 50 metres, both requirements could be complied with by complying with the more strict 100 metre setback. This is not the case, however, where the municipal standard is less strict. Thus, where a municipality imposes more stringent conditions with respect to an aspect of wind power projects, such conditions will likely be valid unless and until a provincial enactment or specific condition of a licence or approval clearly overrides them.¹⁹²

6. CONCLUSION

This article has considered the role of municipalities with respect to wind power development in Alberta. Although a level of government with legislated mandates and legitimate interests and concerns over wind power development within their borders, municipal governments are clearly subordinate to provincial decision-making in the current regime.

With respect to the setting of energy and land use policy for the province as a whole, municipalities are granted a limited role at best. As for the critical AUC project approval stage, the requirements that proponents consult with affected municipalities and obtain required development permits represent important opportunities for municipal concerns to be addressed. Where consensus with the proponent is not possible, however, it is the AUC that will make the final decision with respect to approval and the terms and conditions associated with that approval. Within this process, affected municipalities may or may not obtain standing to participate fully in any hearing before the AUC. This is so despite the fact that local land use matters typically arise in determining whether a project is in the public interest. Further, municipalities are rarely awarded costs for participating in energy project hearings, representing a further barrier to their effective participation. Ultimately, within the AUC project approval process, municipalities are simply an intervenor, like any other.

The ability of Alberta municipalities to impose conditions on wind power projects through their own approval processes is also limited by the current legislative framework. Pursuant to s. 619 of the *MGA*, AUC approvals take precedence over any municipal plan, land use bylaw or municipal subdivision or development decision. Thus, a municipality could not deny a development permit for a project which the AUC has approved. Nonetheless, with respect to matters not specifically addressed by the AUC, this article has delineated the ability of municipalities to impose their own requirements. This is also the case in regard to requirements that are not inconsistent or in conflict with provincial rules of general application.

This article began with an outline of the pros and cons of centralized (*i.e.*, provincial) versus decentralized (*i.e.*, local/municipal) decision-making in the context of wind power development in Alberta. Where the correct balance lies is al-

¹⁹² On the oil and gas side, it has been noted that provincial setback requirements are minimums only that may be augmented by municipalities. See, for example, EUB Decision 2000-20: *Dynergy Canada Energy Inc. v. Application for Pipeline Licence Applications, Okotoks Field*, 31 March 2000.

ways an open question and ought to be revisited from time to time as circumstances change. Although this article has not endeavored to answer this fundamental question, by outlining the current role of municipalities vis-à-vis wind power development decision-making in the province, it represents a necessary first step in that direction.

Climate Change and the Protection of Drinking Water in Ontario: An Opportunity to Adopt Adaptive Management?

*Patricia Hania**

Climate change is a threat to the protection and conservation of drinking water sources. However, the Ontario Ministry of the Environment's (MOE) recent regulatory response to climate change falls short by failing to develop a policy that is premised upon adaptive management (AM). Given the high level of uncertainty associated with climate change, an adaptive management strategy is promoted by Ontario's Expert Panel on Climate Change Adaptation, is supported by the jurisprudence, is put forth in the ecological literature and is reinforced by the practices of water resources managers in other jurisdictions. Yet, adaptive management is a missing element of the MOE's regulatory response. This oversight raises questions whether existing and future drinking water sources will be protected from the consequences of climate change.

This article offers lessons for both the practice and theory of environmental stewardship, specifically the issue of water governance. First, this paper offers the MOE a practical recommendation: a province-wide climate change policy that is premised upon AM should be adopted. This climate change policy can be enacted under s. 7(5)(b) of the Clean Water Act, 2002 and should be integrated into s. 26.5 of the regulatory amendment. Secondly, the critical examination of the legal perspective of adaptive management identifies the need to reorient the jurisprudence to support an ecological resiliency perspective of adaptive management. At present, the jurisprudence is an institutional barrier to protecting and conserving aquatic ecosystems. Thirdly, this article expands the environmental governance literature by bridging the pluralist environmental regulatory approach promoted by legal scholars Gunningham and Sinclair with resiliency theory, as articulated in the natural science literature. Finally, this article attempts to address the present challenge facing both regulatory bodies and scholars, that is: how to align the nature of a governance structure and the nature of how aquatic systems function under stress. The environmental stress considered in this paper is climate change and its consequences upon the quality and quantity of drinking water within the Great Lakes basin.

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Le problème des changements climatiques menace la protection et la conservation des sources d'eau potable. Toutefois, dans sa récente réglementation visant à répondre aux préoccupations entourant les changements climatiques, le ministère de l'Environnement de l'Ontario (MEO) a échoué, car il a négligé de formuler une politique fondée sur la gestion adaptative. Compte tenu du degré élevé d'incertitude lié aux changements climatiques, le Comité d'experts sur l'adaptation au changement climatique de l'Ontario encourage l'adoption d'une stratégie de gestion adaptative. Cette approche est soutenue par la jurisprudence et la documentation en matière d'écologie et est renforcée par les pratiques des gestionnaires des ressources hydriques dans d'autres provinces. Il demeure que la gestion adaptative a été omise de la réglementation provenant du MEO. Cette omission soulève des questions à savoir si les sources d'eau potable existantes et futures seront protégées des conséquences des changements climatiques.

Cet article contient des leçons tirées de la pratique et de la théorie de la gestion de l'environnement, et plus particulièrement, des problématiques entourant la gestion de l'eau. Tout d'abord, l'auteure de cet article propose une recommandation pratique au MEO : l'adoption d'une politique provinciale visant à lutter contre les changements climatiques fondée sur la gestion adaptative. Cette politique en matière de changements climatiques peut être édictée en vertu de l'article 7(5)b) de la Loi sur l'eau saine et devrait être intégrée à l'article 26.5 des modifications réglementaires. Deuxièmement, une analyse critique de l'aspect juridique de la gestion adaptative montre le besoin de réorienter la jurisprudence afin qu'elle privilégie une gestion adaptative fondée sur la résilience écologique. À l'heure actuelle, la jurisprudence représente un obstacle institutionnel à la protection et à la conservation des écosystèmes aquatiques. Troisièmement, l'auteure ajoute à la documentation en matière de gouvernance environnementale en faisant le pont entre l'approche pluraliste à la réglementation environnementale, soutenue par les juristes Gunningham et Sinclair, et celle de la résilience, que l'on retrouve dans la documentation du domaine des sciences naturelles. Finalement, l'auteure se penche sur le défi actuel que doivent relever les organismes de réglementation et les universitaires, soit : la façon de concilier la nature d'une structure de gouvernance à celle du fonctionnement des systèmes aquatiques en état de stress. Le stress environnemental dont il est question dans cet article renvoie à la problématique des changements climatiques et à leurs conséquences sur la qualité et la quantité d'eau potable dans le bassin des Grands Lacs.

1. INTRODUCTION

Climate change and its impending impacts upon the quality and quantity of source waters will inevitably affect the safety of drinking water. In simple language, climate change can be described as a change in the world's climate system that cannot be explained by natural variability. Anthropogenic activities are viewed as one of the primary causes of the increase in greenhouse gases in the atmosphere and the warming of the climate.¹

In the Great Lakes region of Ontario, climate change is a looming complex

¹ A glossary by the Intergovernmental Panel on Climate Change (1995), online: IPCC <<http://www.ipcc.ch/pdf/glossary/ipcc-glossary.pdf>>.

environmental problem that exhibits “multi-source, cross-media and inter-jurisdictional”² elements. Current climate change research predicts that the aesthetic drinking water parameters (such as taste and odour) will be altered. The presence of algal blooms in surface waters will increase, which may result in changes to the physical, chemical and biological characteristics of drinking water. Moreover, the research points to an increase in both air and water temperatures. This temperature increase will in turn affect rates of transpiration and evapotranspiration into the atmosphere that may result in an increase in sudden, intense precipitation events that will further affect groundwater discharge rates. These changes to air, surface and groundwater sources are interrelated and reinforce the ecological complexity of this problem.

In the Great Lakes basin, the jurisdictional issues concerning water governance are equally complex. There are elements of international, national, provincial and state responsibility, which means no one regulatory authority has the prime responsibility for water governance or for responding to climate change. This fragmented regulatory state raises issues of institutional co-ordination and regulatory oversight and gives rise to competing perspectives: Should the regulatory responsibility for water governance and research into the effects of climate change be centralized and assigned to a single regulatory body, which has priority decision-making status over other governing bodies? Or should the decision-making authority on water governance issues related to climate change be directed at a local watershed level, as set out in Ontario’s *Clean Water Act, 2006*?³ Currently, the climate change issue can be fairly described as being in a state of regulatory limbo.

This article considers whether a move towards adaptive management (AM) would assist Ontario’s Ministry of the Environment (MOE) to respond to the challenges presented by climate change when developing a source protection plan (SPP) under the CWA. An SPP is developed according to the requirements set out in s. 22 of the CWA. The legislative content requirements of the SPP include a recently approved assessment report,⁴ a range of policies and any other matter set out in the regulation. In light of the current state of climate change research, it is argued in this paper that climate change is a threat to the quality and the quantity of Ontario’s drinking water sources. Together the MOE’s SPP and the recently introduced s. 26.5 of O. Reg. 246/10⁵ falls short by failing to develop a policy response

² R.K. Craig, “Climate Change, Regulatory Fragmentation, and Water Triage” (2008) 79(3) U. Col. L. Rev. 825.

³ S.O. 2006, c. 22 [hereinafter known as CWA].

⁴ *Ibid.*, s. 15.

⁵ Section 26.5 reads as follows: “Policies specifying the actions to be taken by persons or bodies in the source protection area to ensure that data on the climate conditions in the area is gathered on an ongoing basis, including data related to precipitation, stream, flow, temperature, evapotranspiration and solar radiation.” On June 22, 2010, Ontario’s Ministry of the Environment announced that amending regulation O. Reg. 246/10 will come into effect July 1, 2010. O. Reg. 246/10 is made under the CWA and amends O. Reg. 287/07. Service Ontario, online: <http://www.e-laws.gov.on.ca/html/source/regs/english/2010/elaws_src_regs_r10246_e.htm>. On January 15, 2010, the proposed regulation was registered on Ontario’s Environmental Registry under No. 010-8766, Regulation Proposal; also see its supporting document

to climate change that is premised upon AM. Adaptive management is defined in the resource management literature: “[a]daptive resource management acknowledges the deep uncertainties of resource management and attempts to winnow those uncertainties over time by a process of using management actions as experiments to test policy.”⁶

This article concludes that without an AM strategy that is premised upon the precautionary approach, it is doubtful that the management approach put forth in s. 26.5 of O. Reg. 246/10 will protect existing and future drinking water sources from the consequences of climate change. Due to a high level of uncertainty, an AM approach to climate change is promoted by Ontario’s *Expert Panel on Climate Change Adaptation*,⁷ is supported by the jurisprudence, is put forth in the ecological literature and is reinforced by the practices of water resources managers in other jurisdictions.⁸ Yet, an AM strategy is a missing element of the MOE’s regulatory response.

Following this introduction, the remaining article is structured into five parts. Part One presents the concept of AM. In Part Two, climate change research specific to the Great Lakes basin and the impact upon the quality and quantity of drinking water sources is discussed. Examined in Part Three is the legal perspective of AM, as defined by jurisprudence. Part Four provides a legal analysis of the content of a SPP under the CWA and the MOE’s water source protection regulation. Finally, the conclusion is set out in Part Five.

2. PART ONE: WHAT IS ADAPTIVE MANAGEMENT?

In the natural science literature, the concept of adaptive management is attrib-

No. 010-6726, Policy Proposal — Source Protection Plans under the *Clean Water Act, 2006*: A Discussion Paper on Requirements for the Content and Preparation of Source Protection Plans (*Clean Water Act, 2006*, S.O. 2006, c. 22), online: <http://www.ene.gov.on.ca/environment/envision/env_reg/er/documents/2009/010-6726.pdf>.

⁶ L. Gunderson & S. Light, “Adaptive Management and Adaptive Governance in the Everglades Ecosystem” (2006) 39 *Policy Sci.* 323 at 324-25.

⁷ D. Pearson & I. Burton *et al.*, “Adapting to Climate Change in Ontario: Towards the Design and Implementation of a Strategy and Action Plan” (November 2009) at 5, online: <<http://www.ene.gov.on.ca/publications/7300e.pdf>>.

⁸ U.S. Department of the Interior website, online: <<http://www.doi.gov/initiatives/AdaptiveManagement/index.html>>. Also see American Water Resources Association, online: <<http://www.awra.org/meetings/SnowBird2009/>>. For a case analysis of adaptive management for water resources in Australia refer to: A. Gilmour, G. Walkerden & J. Scandol, “Adaptive management of the water cycle on the urban fringe: three Australian case studies” (1999) *Conservation Ecology* 3(1): 11, online: <http://www.consecol.org/vol3/iss1/art11/>. Please refer to: E. Brodie *et al.*, “An Adaptive Management Framework for Connected Groundwater-Surface Water Resources in Australia” (2007), online: <<http://adl.brs.gov.au/brsShop/data/adaptivemgtframeworkgroundwatersurfacewater.pdf>>.

uted to the seminal works of C.S. Holling and Carl Walters.⁹ Holling and Walters argued that an active adaptive approach is an appropriate natural resource policy response for complex, dynamic ecosystems. Adaptive management (AM) is premised upon a systems perspective. It introduces experimentation, learning, continuous monitoring, ongoing evaluation of program goals and outcomes as well as the potential to re-design existing management practices.¹⁰ In their view, “[n]ot only is the science incomplete, the system is a moving target, evolving because the impacts of management and the progressive expansion of the scale of human influences on the plant. Hence, the actions needed by management must be ones that achieve ever-changing understanding as well as the social goals desired.”¹¹ It is the uncertainty surrounding scientific knowledge, the changing state of the ecosystem, the environmental problem and the management outcome that demands an adaptive management approach.

In the jurisprudence, Madam Justice Tremblay-Lamer in *Pembina Institute for Appropriate Development v. Canada (Attorney General)*,¹² stated that “[t]he concept of ‘adaptive management’ responds to the difficulty, or impossibility, of predicting all the environmental consequences of a project on the basis of existing knowledge . . .”¹³ She continued by stating that:

[A]daptive management permits projects with uncertain, yet potentially adverse environmental impacts to proceed based on flexible management strategies capable of adjusting to new information regarding adverse environmental impacts where sufficient information regarding those impacts and potential mitigation measures already exists.¹⁴

This legal perspective of AM encourages a responsive management approach to addressing environmental effects that is premised upon an ongoing response to changing information and conditions concerning the resource in question. As a resource management strategy, it is viewed as an appropriate approach when uncertainty characterizes the environmental problem and management outcome.

⁹ T. Coleman, “Legal Barriers to the Restoration of Aquatic Systems and the Utilization of Adaptive Management” (1998-1999) 23 *Vt. L. Review* 177; B.C. Karkkainen, “Adaptive Ecosystem Management and Regulatory Penalty Defaults: Towards a Bounded Pragmatism” (2002-2003) 87 *Minn. L. Rev.* 943; J. Thrower, “Adaptive Management and NEPA: How a Nonequilibrium View of Ecosystems Mandates Flexible Regulation” (2006) 33 *Ecology L.Q.* 871; M.J. Angelo, “Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience” (2008-2009) 87 *Neb. L. Rev.* 950. Each of these authors attribute the concept of adaptive management to C.S. Holling, a Canadian ecologist and C.J. Walters, a Canadian fish biologist. Their seminal work on adaptive management is cited by these authors as: C.S. Holling *et al.*, “Adaptive Environmental Assessment and Management” 1-2 (C.S. Holling, ed., 1978) and Carl Walters, “Adaptive Management of Renewable Resources”, (Wayne M. Gez, ed., 1986).

¹⁰ J.B. Ruhl, “Taking Adaptive Management Seriously: A Case Study of the *Endangered Species Act*” (2004) 52 *Kansas L. Rev.* 1249.

¹¹ C.J. Walters & C.S. Holling, “Large-Scale Management Experiments and Learning By Doing” (1990) 71(6) *Ecology* 2060 at 2067.

¹² 2008 CarswellNat 508, [2008] F.C.J. No. 324.

¹³ *Ibid.* at para. 32.

¹⁴ *Ibid.*

In North America, resource managers are expected to rely upon the concept of AM to inform on-the-ground decision-making. For example, the U.S. Department of the Interior directs its managers faced with decisions framed by uncertainty to apply the Department's "operational"¹⁵ definition of AM. Similarly, the American Water Resources Association promotes a comparable definition of AM for water resource management. In other jurisdictions, water resource managers have also adopted AM, as a policy measure, to address and anticipate environmental problems.¹⁶

The implementation of AM with its experimental nature, however, is not without its problems. As illustrated by a case study analysis of the restoration project of Lake Apopka, in central Florida, surprises can occur.¹⁷ Even though the restoration project was successful in shifting Lake Apopka from a degraded, eutrophic state back into a clear lake, an unanticipated bird kill occurred. In investigating the bird kill, it was found that the birds had died from organo-chlorine pesticide (OCPs) poisoning. One aspect of the restoration strategy included the winter flooding of the farmlands to recreate wetlands. Even though a risk assessment of the flooding strategy was conducted, which included an examination of the historical application of pesticides (DDT and its breakdown products DDE, toxaphene, dieldrin and chlordane) on the farm lands, it was not anticipated that fish from the adjacent canals would swim into the OCP contaminated flooded fields and would be eaten by the migratory birds, causing "accelerated bioaccumulation to the birds."¹⁸ In response to the bird kill, extensive soil testing and further research was conducted and the agency responsible redirected its strategy to "restore the farmlands to vegetated marshes rather than open-water"¹⁹ wetlands. The flexibility of AM approach allowed for changes to management practices in response to the policy failure of the bird kill. After many years of restoration, Lake Apopka is now characterized as a resilient aquatic ecosystem, as result of "a long term process of trial and error."²⁰

Even with this long history of adaptive management in other jurisdictions, it appears that in Ontario the MOE missed an opportunity to adopt an AM approach with respect to climate change when it introduced its regulatory amendment to the CWA. Under s. 26.5 of the regulation, the permissive climate change policy is left to the discretion of the local Source Protection Committee (SPC) to consider as a component of the SPP.²¹ The problem is that this discretionary policy is limited to the activity of collecting climate data (for example, collecting "precipitation, stream, flow, temperature, evapotranspiration and solar radiation"²² data) at a local watershed level. On its face, the provision does not require establishing a correlation of the local data with regional or global climatic conditions and there is no

¹⁵ *Supra* note 8. See U.S. DOI website.

¹⁶ *Ibid.*

¹⁷ M.J. Angelo, "Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience" (2008-2009) 87 Neb. L. Rev. 950.

¹⁸ *Ibid.*

¹⁹ *Ibid.* at 988.

²⁰ *Ibid.* at 1006.

²¹ *Supra* note 5.

²² *Ibid.*

reporting requirement. Moreover, the policy overlooks the need to adopt an adaptive approach that is responsive to the data collected. The lack of an adaptive framework raises doubt that the SPC, which is charged with managing the local watershed, will adopt a systematic, integrated, proactive management approach to the climate change problem.

Finally and importantly, a failure to adopt an AM approach threatens the “resilience”²³ of aquatic systems and raises questions as to whether the key regulatory objective of the SPP, that is, protection of drinking water sources can be achieved. In the ecological literature, resilience is defined as “[t]he ability of an ecosystem to recover from or resist disturbances and perturbation, so that the key components and processes of the system remain the same.”²⁴ A loss of resilience makes an aquatic system more fragile and vulnerable to change; changes that can adversely affect the quality of a drinking water source. The danger exists that this lack of an adaptive climate change policy may contribute to the Great Lakes basin experiencing loss of resiliency and degradation.²⁵

²³ C.S. Holling, “Resilience and Stability of Ecological Systems” (1973) 4 *Annual Review of Ecology and Systematics* 1 in R.K. Turner, K. Button & P. Nijkamp, *Ecosystems and Nature: Economics, Science and Policy* (Cheltenham: Edward Elgar, 1999). The term is attributed to C.S. Holling, a world-renowned ecologist and expert in “resilience theory.” He defines resilience as the persistence of the relationships within a system and the system’s ability to absorb change. When resiliency in the system is lost, the system becomes unpredictable and an ecosystem regime change can be triggered. Numerous scholars have engaged in Holling’s resiliency theory. Also see C.R. Allen & C.S. Holling, *Discontinuities in Ecosystems and Other Complex Systems* (New York: Columbia University Press, 2008); F. Berkes, J. Colding & C. Folke, *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change* (Cambridge: Cambridge University Press, 2003); F. Berkes, “Understanding Uncertainty and Reducing Vulnerability: Lesson From Resilience Thinking” (2007) 41 *Nat. Hazards* 283; F. Berkes & C.S. Seixas, “Building Resilience in Lagoon Social-Ecosystems: A Local-Level Perspective” (2005) 8 *Ecosystems* 967; C. Folke, S. Carpenter, *et al.*, *Panarchy: Understanding Transformations in Human and Natural Systems* (Washington: Island Press, 2002). L. Gunderson & S.L. Light, “Adaptive management and adaptive governance in everglades ecosystem” (2006) 39 *Policy Sci.* 323; L. Gunderson, C.S. Holling & B. Walker, “Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations” (2002) 31(5) *Journal of Human Environment* 437; L. Gunderson, C.S. Holling & S. Light, *Barriers and Bridges to the Renewal of Ecosystems and Institutions* (New York: Columbia University Press, 1995); F. Moberg & V. Galaz, “Resilience: Going from Conventional to Adaptive Freshwater Management for Human and Ecosystem Compatibility” (2005), online: Swedish Water Policy Briefs <www.siwi.org>; G. Peterson, C.R. Allen & C.S. Holling, “Ecological Resilience, Biodiversity, and Scale” (1998, Spring) 1 *Ecosystems* 6.

²⁴ S.A. Levin, *The Princeton Guide to Ecology* (Princeton: Princeton University Press, 2009) 399 at 789.

²⁵ Great Lakes Water Quality Board, “Climate Change and Water Quality in the Great Lakes Basin (August, 2003), online: <<http://www.ijc.org/php/publications/html/climate/part1/index.htm>>. Also refer to D. Dempsey, J. Elder & D. Scavia, “Great Lakes Restoration & the Threat of Global

3. PART TWO: CLIMATE CHANGE — WHAT IS THE IMPACT UPON THE QUALITY AND QUANTITY OF DRINKING WATER SOURCES?

Climate change research exposes how the quality and quantity of drinking water sources may be impacted. This research points to a situation of water stress where climate change with its uncertain nature must be recognized as a threat to drinking water sources. Moreover, recognizing climate change as a threat to drinking water raises questions of governance, in particular, how can resource specific legislation (*CWA*) be responsive to the consequences of climate change?

(a) What is the predicted impact upon the quality of drinking water sources?

The International Joint Commission (IJC), a bi-national commission established under the 1909 Boundary Waters Treaty²⁶ to manage and protect waters along the United States and Canadian border, points to several indicators of an emerging water crisis in the Great Lakes basin. Specifically, the IJC reports that climate change may bring more frequent and intense precipitation episodes that in turn may result in an increase in pollutants rapidly moving into surface and groundwater. In agricultural areas, springtime factors can lead to “a high runoff and pollution-loading period because of fertilizer and pesticide application combined with little vegetative cover,”²⁷ which may increase the vulnerability of the receiving watershed. The IJC puts it clearly: increased storm run-off may result in an increase in pollution such as nitrates or *E. coli*, into surface and groundwater sources, which in turn may lead to potential health risks.²⁸

In their 2006 report on the link between climate change and water source protection in Ontario, de Loë and Berg conducted a comprehensive review of existing climate change research.²⁹ Their report confirms the IJC’s findings that air and water temperatures, evaporation rates and precipitation events are likely to increase in the future within the Great Lakes basin.³⁰ Specifically, they state: “In Ontario, climate change is expected to affect water quality, streamflow, lake levels, groundwater infiltration, and patterns of groundwater recharge and discharge to streams.”³¹ Their research reveals that as the water and air temperatures increase water managers may be faced with such issues as: increased concentrations of pol-

Warming” (May 2008), online: <<http://www.healthylakes.org/wordpress/wp-content/uploads/2008/05/how-global-warming-report-081.pdf>>.

²⁶ *Treaty relating to Boundary Waters*, United States and United Kingdom, 11 January 1909, 36 U.S. Stat. 2448, U.K.T.S. 1910 No. 23.

²⁷ *Supra* note 20. See <http://www.ijc.org/rel/pdf/climate_change_2003.pdf>.

²⁸ *Ibid.*

²⁹ R. de Loë & A. Berg, “Mainstreaming Climate Change in Drinking Water Source Protection Planning in Ontario” Prepared for Pollution Probe and Canadian Water Resources Association (March 2006), online: <http://policyresearch.gc.ca/doclib/de-Loe_andBerg_%20Mainstreaming-Climate-Change_andSource-Water-Protection.pdf>.

³⁰ *Ibid.* at 7.

³¹ *Ibid.* at 10.

lutants, lower dissolved oxygen levels, increased turbidity and algae growth, water losses in wetlands, groundwater and surface water and increased water use, to name a few of the impacts of climate change upon a drinking water source. Presented below in chart format is de Loë and Berg’s research findings, which outline the predicted changes to the hydrological cycle and includes the predicted impact upon drinking water sources.

Hydrologic Parameter	Expected Changes in the 21 st Century, Great Lakes Basin
Runoff	<ul style="list-style-type: none"> • Decreased annual runoff, but increased winter runoff. • Earlier and lower spring freshet (that is, the flow resulting from reductions in melting snow and ice). The authors state: “studies of spring freshet . . . show that the freshet occurred progressively earlier as the 20th century drew to a close.” . . . “reductions in snow cover and warmer air temperatures are expected to contribute to an earlier and lower freshet.” • Summer and fall low runoff flows are lower and last longer. • Increased frequency of high flows due to extreme precipitation events. <p><i>Predicted Drinking Water Impact:</i></p> <ul style="list-style-type: none"> • Reduced water quality because less water is available for dilution of sewage treatment plant effluent and run-off from agricultural and urban land. • Increase in water turbidity — increased erosion from flashier stream flows. • Increase in water treatment costs due to decreased water quality. • At well points — increased frequency of flooding-related damage due to more high intensity storms. • Greater frequency of waterborne diseases. • Increased transportation of contaminants from the land and surface to water bodies.
Lake Levels	<ul style="list-style-type: none"> • Lower net basin supplies and declining levels due to increased evaporation and timing of precipitation. • Increased frequency of low water levels. <p><i>Predicted Drinking Water Impact:</i></p> <ul style="list-style-type: none"> • Decreased water quality resulting from lower water volume, increased non-point source pollution, and increased chemical reactions between water, sediments and pollutants. • Increased water treatment costs due to reduced lake water quality. • Increased costs associated with moving water supply intakes.
Ground water recharge Ground water discharge	<ul style="list-style-type: none"> • Decreased groundwater recharge, with shallow aquifers being especially sensitive; due to greater frequency of droughts and extreme precipitation events.

Hydrologic Parameter	Expected Changes in the 21 st Century, Great Lakes Basin
	<ul style="list-style-type: none"> • Changes in amount and timing of base-flow to streams, lakes and wetlands. <i>Predicted Drinking Water Impact:</i> • In turn, reductions in groundwater levels may reduce stream flow and raise water temperature as base-flow declines. • Changes to wetland form and function (for example, filtering capacity), as discharge decreases. • Increased frequency of shallow wells drying up in rural areas.
Ice coverage	<ul style="list-style-type: none"> • Ice cover season reduced, or eliminated completely. <i>Predicted Drinking Water Impact:</i> • Water turbidity problems caused by increased shore erosion and sedimentation • Change in water chemistry — increased water temperatures due to decreased ice coverage.
Snow coverage	<ul style="list-style-type: none"> • Reduced snow coverage (depth, area and duration). <i>Predicted Drinking Water Impact:</i> • Reduced Water Quantity — Lower freshet contributing to less base-flow.
Water temperature	<ul style="list-style-type: none"> • Increased water temperature in surface water bodies. <i>Predicted Drinking Water Impact:</i> • Reduced water quality resulting from greater biological activity (e.g., algae production as water temperature increases). • Greater frequency of taste and odour problems in drinking water supplies.
Soil moisture	<ul style="list-style-type: none"> • Soil moisture may increase by as much as 80 per cent during the winter in the basin, but decrease by as much as 30 per cent in summer and autumn. <i>Predicted Drinking Water Impact:</i> • Potential Dispute — Increased demand for irrigation to supplement soil moisture on drought prone soils thus leading to increased demand by users, competition and conflict over reduced access to water supply.

This summary chart delineates the affected elements of the hydrological cycle and the expected impact linked to climate change that must be taken into account when drafting an AM policy. Interestingly, this delineation is a reductionist perspective, in which each hydrological parameter is isolated from the whole system (*i.e.*, hydrological). The benefit of this reductionist perspective is that it provides a workable framework to analyze the consequences of climate change. The downside, however, is that the functioning of an ecosystem, as a system, can be overlooked. The danger of failing to apply a systems perspective is that the interrelated human and natural dimensions of the climate change problem can become decoupled, which may have the further effect of disengaging the inter-relatedness of sys-

tems (for example, the inter-relatedness of the hydrological, ecosystem and human systems). The net result of a reductionist perspective, is that the adaptation measures set out in a climate change policy may place greater emphasis upon one component of the system — the human system and the impact upon human uses of the aquatic resources. Rather, a systems perspective is required to understand the inter-relatedness of human-natural systems. A key aspect of the natural system is its provision of “ecosystem services.”³² Ecosystem services are integral to sustaining not only healthy human systems but also resilient natural systems.

Ecosystems in Ontario, and specifically wetlands, provide important natural processes that protect drinking water sources;³³ and, yet are vulnerable to the impact of climate change. The wetland’s ecosystem services of maintaining shoreline integrity, reducing erosion, filtering of contaminants and absorbing excess storm water offer humans protection against poor quality drinking water at the source while also contributing to the healthy functioning and structure of the watershed’s ecosystem. Essentially, a healthy, functioning wetland offers the first natural water source protection barrier³⁴ for human consumptive purposes. Recognizing the inter-relatedness aspect of the natural and human systems reinforces the supposition that the issue of climate change should be viewed as a coupled human-natural systems problem that impacts not only human activities but also the condition and ensuing protection of the water source.

Climate change research implicates water quality on the supply side — that is, at the water tap. The Intergovernmental Panel on Climate Change (IPCC) has identified climate change as a threat to the quality of drinking water. The IPCC has reported that residents of developed countries are at risk of being exposed to endocrine-disruptive substances via their drinking water as a result of pollution-loading.³⁵ For example, the quality of drinking water at the tap in residential homes in Toronto has been a recent concern. Specifically, in the media it was reported that routine testing of lead levels in the drinking water at the tap revealed a spike in the

³² J. Ranaganathan, M. Munasinghe & F. Irwin, *Policies for Sustainable Governance of Global Ecosystem Services World Resources Institute* (Northampton: Edward Elgar, 2008) at 9. These authors describe ecosystem services as: *provisioning* services (food, fresh water, fiber and fuel), *regulating* services (biophysical processes that control climate, flood, diseases, air and water quality, pollination and erosion), *cultural* services (recreational, aesthetic or spiritual places) and *supporting* services (underlying ecosystem processes such as soil, photosynthesis and nutrient cycling).

³³ Natural Resources Canada, “Climate Change Impacts and Adaptation: A Canadian Perspective Impacts on Water Supply Report,” online: <http://adaptation.nrcan.gc.ca/perspective/water_3_e.php>.

³⁴ *Supra* note 24 at 1 of the Report the authors state: “‘A multi-barrier approach’ includes the first of five stages: ‘Source water protection to keep water sources clean as possible.’”

³⁵ IPCC, “*Technical Paper VI: Climate Change and Water*,” (June 2008) at 104, online: Intergovernmental Panel on Climate Change/UNEP <<http://www.ipcc.ch/pdf/technical-papers/climate-change-water-en.pdf>>. Refer to Section 1.3.2 Projected changes 1.3.2.2 Water resources.

levels of lead during the summer months.³⁶ Municipal water authorities suspect that lead enters the drinking water at “microscopic levels.”³⁷ This finding might leave one questioning whether there is a correlation between the increase in air and water temperatures under climate change conditions and what appears to be warmer water running through either the municipal service line or the plumbing system in a home. Municipal officials surmise that the warmer water increases not only the corrosion of the lead in the pipes but also contributes to the subsequent release of the lead particles into the drinking water.³⁸

In sum, this presentation of water quality issues predicted to occur as a result of climatic changes highlights the vulnerability of the drinking water sources and management systems.

(b) What is the predicted impact of climate change upon the quantity of drinking water?

Environment Canada highlights the nexus between climate change and human health. Given that “ground water is the source of drinking water for about 30% of Canadians and U.S. residents in the Great Lakes region and specifically in Ontario, over 90% of the rural population is supplied by ground water for drinking water,”³⁹ these rural communities are vulnerable to water stresses that can result in a health risk to Canadians.

Yet, the impact of climate change upon the quantity of groundwater is uncertain, as result of the lack of research. The authors of *The Sustainable Management of Groundwater in Canada 2009 Report*⁴⁰ concede that an assessment of the possible consequences of climate change upon groundwater recharge has not been completed for Canada. This lack of research suggests that neither the regional nor local impacts of global climate change upon groundwater are presently well understood. These authors argue that the combination of “reduced recharge in much of southern Canada and increased water demand in a warming climate will affect groundwater levels in coming decades.”⁴¹ This lack of research on the impact of climate change upon groundwater not only reinforces the uncertainty debate surrounding the cli-

³⁶ City of Toronto, “Regulated Lead Sampling Results for Private Residential Plumbing for period of December 2007 to April 2008 and July 2008 to October 2008,” online: <http://www.toronto.ca/water/publications/pdf/regulated_lead_data_summary_rounds_1_n_2.pdf>.

³⁷ D. Vincent, “Lead taints city’s water Aging pipes get blame as tests of 100 homes reveal more than half have high level of toxins” *Toronto Star* (14 January 2009), online: *Toronto Star* <<http://www.yourhome.ca/homes/article/570605>>.

³⁸ *Ibid.*

³⁹ Environment Canada, Environment Canada Health Impacts online: <<http://www.ec.gc.ca/cc/default.asp?lang=En&n=0B072979-1>>.

⁴⁰ Council of Canadian Academies, “The Sustainable Management of Groundwater in Canada: The Expert Panel on Groundwater” (June 2009), online: <[http://www.scienceadvice.ca/uploads/eng/assessments%20and%20publications%20and%20news%20releases/groundwater/\(2009-05-11\)%20report%20in%20focus%20-%20gw.pdf](http://www.scienceadvice.ca/uploads/eng/assessments%20and%20publications%20and%20news%20releases/groundwater/(2009-05-11)%20report%20in%20focus%20-%20gw.pdf)>.

⁴¹ *Ibid.* at 42.

mate change issue, but also points to the need to adopt the precautionary principle and a protective stance towards groundwater to ensure both the sustainability of the resource as well as equitable access for present and future residents of Ontario.

In sum, this climate change research highlights the uncertain nature of the impact upon the quality and quantity of drinking water sources and the inherent complexity of this environmental dilemma. Climate change introduces both temporal and spatial scale characteristics into the regulatory problem. Moreover, uncertainty exists regarding the timing of the predictions and the extent of the change that will occur to both aquatic and human systems. Climatic changes to aquatic systems can occur both slowly and rapidly. This variability in timing will affect the ability to assess the timing and nature of the change to the ecosystem.⁴² The spatial scale perspective recognizes that water quality and quantity issues may occur at a local, regional and global level. In other words, climate change is a “threat multiplier problem”⁴³ because it includes different interactions at both temporal and spatial scales and uncertainty exists regarding the effects of the numerous stressors upon a drinking water source. For these reasons and others, Professor Norm Yan, a water scientist⁴⁴ argues that climate change requires a re-evaluation of water quality standards. An evaluation that should be premised upon a framework that is inclusive of the multiple stressors affecting the aquatic system. But, in essence, these issues of scale, uncertainty and vulnerability are questions of water governance and regulation. Specifically, how should a regulation be drafted to take into account these characteristics of the climate change problem?

(c) How can an adaptive regulatory response to the climate change research be framed?

Water stress issues within the Great Lakes basin have arisen and will continue to arise as result of the consequences of climate change. The research reviewed for this paper exposes the vulnerability of drinking water sources to the consequences of climate change. Recognizing climate change as a threat to drinking water raises questions of how regulation can be structured to respond to the consequences of climate change.

AM offers a flexible management strategy that can complement a comprehensive regulatory approach to the climate change issue. The pervasive and cumulative impact of climate change demands that a mix of regulatory instruments be considered. Existing command and control regulations should be maintained, as a mini-

⁴² J. Smol, “The Power of the Past: The Long-term Environmental Changes in Aquatic Ecosystems” (Professor Smol, Queen’s University, Kingston, Ontario) (Paper Presented to the Freshwater Summit, June 1, 2010 Bracebridge Ontario) [unpublished]. As per the program guide, Professor Smol indicates that “[m]eta-analyses of paleolimnological profiles can now be used to help disentangle the effects of climate warming from other environmental variables to determine how various components of lake ecosystems are responding to these multiple stressors.”

⁴³ *Ibid.*

⁴⁴ N. Yan, “Assessing the Present Issues in Canadian Freshwater Ecosystems” (Professor Norm Yan, York University, Toronto Ontario) (Paper Presented to the Freshwater Summit, June 1, 2010 Bracebridge, Ontario) [unpublished].

mum, to ensure that greenhouse gas emissions do not increase and cause further degradation, but also adaptive climate change regulatory measures should be considered.

From a legal governance perspective, perhaps adaptation can take on the form of “adaptive” regulation.⁴⁵ In addition to introducing legislative measures to support water conservation, adaptive regulation could include provisions that address ongoing monitoring, feedback information loops, and continuous institutional learning mechanisms that include the goal of identifying the cumulative and pervasive impacts of climate change upon drinking water sources in a timely and cost-efficient manner.⁴⁶

But, the challenge remains: how to integrate an AM approach into the MOE’s SPP regulation and the governance of water? Bakker, a leading scholar of water regulation in Canada, submits that there is a “subtle, but important”⁴⁷ difference between water governance and water management. In her conception, water governance refers primarily to decision-making processes.⁴⁸ It relates “to how we make decisions and the who gets to decide.”⁴⁹ In contrast, water management addresses principally the “operational approaches”⁵⁰ and includes “the models, principles and information we use to make those decisions.”⁵¹ Other scholars promote regulatory mechanisms such as market instruments, soft law methods to conserve water resources, harmonization agreements and other measures to govern aquatic systems.⁵²

⁴⁵ This term “adaptive regulation” is coined from the term Adaptive Governance. See C. Folke, T. Hahn, *et al.*, “Adaptive Governance of Social-Ecological Systems” (2005) 30 *Annu. Rev. Environ. Resour.* 441.; D. Huitema *et al.*, “Adaptive Water Governance: Assessing the Institutional Prescriptions of Adaptive (Co-)Management from a Governance Perspective and Defining a Research Agenda”, (2009) 14(1) *Ecology and Society* 26; L. Gunderson & S.S. Light, “Adaptive management and adaptive governance in the everglades ecosystem” (2006) 39 *Policy Sci.* 323.

⁴⁶ B. Cosens, “Transboundary River Governance in the Face of Uncertainty: Resilience Theory and the Columbia River Treaty” (2010) 30 *J. Land Resources & Envtl. L.* 229 at 254. Cosens argues that water planning can no longer rely on historical data rather than future oriented scenario planning should be used to identify the impacts of climate change. In her view, a legal framework must provide water managers the flexibility and authorization to respond to actual outcomes in a timely fashion. Also see A.E. Camacho, “Adapting Governance to Climate Change: Managing Uncertainty Through Learning Infrastructure” (2009-2010) 59 *Emory L.J.* 1 at 39. Camacho contends that the monitoring of adaptive management activities can promote institutional learning, which further reinforces accountability and effective resource management.

⁴⁷ K. Bakker, *Eau Canada: The Future of Canada’s Water* (Vancouver: UBC Press, 2007) at 16.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*

⁵⁰ *Ibid.*

⁵¹ *Ibid.*

⁵² B. Atrs & P. Leroy, *Institutional Dynamics in Environmental Governance* (Dordrecht: Springer 2006); J. Barde & S. Smith, “Do Economic Instruments Help the Environment” OECD (1997) *Observer Vol. A.*; J. Black, “Critical Reflections on Regulation”

In an important and influential contribution to the legal literature on governance, Lobel discusses the recent shift away from regulation to governance where governance is defined as a “range of activities, functions and exercise of control by both public and private actors in promotion of social, political and economic ends.”⁵³ This participatory and collaborative-based governance model moves law away from a prescriptive, command and control approach and introduces both “economic efficiency and democratic legitimacy,”⁵⁴ as complementary elements of governance. These features of governance are also supported by additional principles of: diversity, competition, subsidiarity, policy domain integration, non-coerciveness, adaptability and dynamic learning.

Adopting a similar pluralistic orientation, Gunningham and Sinclair present a principled-based approach to environmental regulation that they argue is applicable to a broad range of situations, regardless of the political and social context. Their design framework is premised upon the use of flexible and multiple complementary instruments and is grounded in the following five design principles:

1. Creating policy mixes that incorporate instrument and institutional combinations;
2. Relying upon less interventionist measures;
3. Building an escalatory regulatory response that is responsive to achieving policy goals;
4. Fostering a participatory approach that empowers stakeholders to act as surrogate regulators; and
5. Maximizing opportunities for continuous improvement of a firm’s environmental performance, thus establishing win-win situations.⁵⁵

(2002) 27 *Austral. J.L. Phil.* 1; D.R. Boyd, *Unnatural Law: Rethinking Canadian Environmental Law and Policy* (Vancouver: UBC Press, 2003); O.M., Brandes, D. Brooks & M. M’Gonigle, “Moving Water Conservation to Centre Stage” in K. Bakker, ed., *Eau Canada: The Future of Canada’s Water* (Vancouver: UBC Press, 2007); O.M. Brandes & T. Maas, “What we govern and what governs us: Developing sustainability in Canadian water management” Polis Project on Ecological Governance (Toronto: 59th CWRA Conference paper) (June 2006), Polis Project University of Victoria, online: <<http://www.poliswaterproject.org/outreach>>. B. Cantin, D.M. Shrubsole & Ait-Ouyahia, “Using Economic Principles for Water Management Demand: Introduction” (2005) *Canadian Water Resources Journal* Vol. 30(1) 1; D. Driesen, “Economic Instruments for Sustainable Development” in B. Richardson & S. Wood, eds., *Environmental Law for Sustainability* (Portland: Hart, 2006) 277; T. Jeppesen, *Environmental Regulation in a Federal System: Framing Environmental Policy in the European Union* (Cheltenham: Edward Elgar 2002); A. Jordan, R.K.W. Wurzel & A.R. Zito, “‘New’ Instruments of Environmental Governance?: National Experiences and Prospects” (London: Frank Cass, 2003); J. Newig & J. Fritsch, “Environmental Governance: Participatory, Multi-Level — and Effective?” (2009) 17 *Environmental Policy and Governance* 197.

⁵³ O. Lobel, “The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought” (2004-2005) 89 *Minn. L. Rev.* 342 at 344.

⁵⁴ *Ibid.*

⁵⁵ N. Gunningham & D. Sinclair, “*Integrative Regulation: A Principled-Based Approach to Environmental Policy*” (1999) 24 *Law & Soc. Inquiry* 853. The genesis of Gun-

Gunningham and Sinclair's "Integrative Regulation"⁵⁶ approach offers some insight into developing an adaptive regulatory system. Conceptually, it is the notion of change that underpins both their "Integrative" approach to regulation and an adaptive management approach to managing aquatic systems. In Gunningham and Sinclair's conception of governance, the scope of environmental regulation should be broadened to include a range of regulatory instruments. In their view, a single-instrument, narrow regulatory strategy is no longer relevant. Rather, their call for change in environmental regulation advocates for "not just conventional forms of direct ('command and control') regulation but also . . . more flexible, imaginative, and innovative forms of social control that seek to harness not just governments but also business and third parties."⁵⁷ In line with Lobel's observation of a regulatory shift from government to governance, Gunningham and Sinclair's prescription represents a fundamental change to the "traditional"⁵⁸ environmental regulatory paradigm.

In order to achieve an optimal regulatory policy, Gunningham and Sinclair also submit that the environmental regulation should be both "efficient and effective."⁵⁹ In their view, effective means "achieving their purported policy goals" and efficient means achieving the goals at the "least cost."⁶⁰ On its face, their reliance upon effectiveness and efficiency as evaluation criteria suggests that policy makers should be primarily concerned with economic issues.⁶¹ Yet, in the context of water governance, the danger exists that when environmental policy outcomes are evaluated by a limited criteria of effectiveness and efficiency that the economic perspective may prevail over ecological considerations of how an aquatic system functions and responds to a disturbance such as climate change.⁶² In other words, a policy maker in applying the five principles to a water governance strategy could overlook the dynamic, non-linear, adaptive and complex nature of aquatic systems.

Given Gunningham and Sinclair's evaluative environmental policy framework

ningham and Sinclair's "Integrative Regulatory Approach" can be found in the earlier collaborative work of Gunningham and Grabosky, which culminated into the well-known book entitled *Smart Regulation*, a regulatory governance text that included Sinclair as a key contributor: N. Gunningham & P. Grabosky, *Smart Regulation: Designing Environmental Policy* (Oxford: Oxford University Press, 1998).

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*

⁵⁸ R. Durant, D.J. Fiorino & R. O'Leary, "Introduction" in R. Durant, D.J. Fiorino, R. O'Leary, eds., *Environmental Governance Reconsidered: Challenges, Choices, and Opportunities* (Cambridge: MIT Press, 2004).

⁵⁹ *Supra* note 59 at 856.

⁶⁰ *Ibid.*

⁶¹ N. Gunningham & P. Grabosky, *Smart Regulation: Designing Environmental Policy* (Oxford: Oxford University Press, 1998) at 27. Specifically, their definition of "optimality" reflects an economic orientation.

⁶² A.C. Aman, Jr., "The Globalizing State: A Future Oriented Perspective on the Public/Private Distinction, Federalism, and Democracy" 1998 31(3) *Vand. J. Transnat'l L.* 769.

is missing an ecologically-based concept, I argue that in the context of water governance their “Integrative Regulatory Approach” should be expanded to include the adaptive based ecological concept of resiliency. An ecosystem is resilient when it exhibits the capacity “to absorb recurrent disturbances”⁶³ (for example, a climate change disturbance such as floods, droughts, sudden and intense rainfall, pest infestation) by maintaining structures, processes and feedbacks inherent in the ecosystem, without shifting into another state (that is, “a regime shift or flip”⁶⁴).

Applying a lens of resiliency allows a policy maker to consider how a specific aquatic system responds to a disturbance and multiple stressors (for example, change in water temperature, drought, floods, etc.) that have the potential to trigger a loss of resiliency within the system. The policy maker can consider such questions as: Does the loss of resiliency affect how an aquatic system functions? How and by how much are the water quality and quantity parameters impacted by climatic factors? A resiliency perspective recognizes that a change to an aquatic system often occurs in a non-linear manner where a change caused by climatic conditions can occur at a small scale but can also trigger a major shift in the natural system. In other words, a governance system should consider both the natural functioning of an aquatic system under climatic conditions and the possibility of the occurrence of an ecological surprise⁶⁵ — that is, a sudden ecological change that the management system did not predict.

In order to meet this drinking water governance challenge, the MOE should adopt AM, as conceptual framework to guide their regulatory response to climate change. Their climate change policy should recognize climate change as a multiple stressor threat that should be managed from an adaptive perspective. This perspective should take into account the issues of uncertainty and scale, specifically those of a temporal and spatial scale. The AM regulatory response should also be premised upon the precautionary principle and a protective stance towards aquatic systems that can be tied to the notion of ecological resiliency.

Adaptive regulatory methods of continuous monitoring and adaptive learning raise the additional issue of institutional capacity to adapt to change.⁶⁶ An adaptive regulatory governance structure demands institutional flexibility, a responsive organizational culture that can adapt easily to the changing circumstances and emerging scientific knowledge that climate change is expected to present. In other words, institutional readiness will need to be assessed by the Ministry to determine the capacity of the institution (for example, SPC) to be responsive, flexible and self-reflective in its ability to identify the presence of barriers to integrating an adaptive governance approach. Moreover, the complexity of the climate change issue will require a coordinated institutional response to allow for input from the numerous

⁶³ F. Berkes, “Understanding uncertainty and reducing vulnerability: lessons from resilience thinking” (2007) 41 *Natural Hazard* 283. Also refer to *supra* note 25.

⁶⁴ *Ibid.* at 285.

⁶⁵ C.S. Holling, “Surprise For Science, Resilience For Ecosystems, and Incentives For People” (1996) 6(3) *Ecological Applications* 733 at 734-735. Also attributed to Professor J. Smol.

⁶⁶ P. Crabbe & M. Robin, “Institutional Adaption of Water Resource Infrastructures To Climate Change in Eastern Ontario” (2006) 78 *Climate Change* 103.

and diverse stakeholders (for example, resource managers, legislators, community members and diverse stakeholders) charged with managing water resources in the Great Lakes basin.⁶⁷ Yet, the question remains: Is the MOE prepared to meet the challenge of climate change in an adaptive manner?

In the next section of the paper, the jurisprudence is explored to ascertain the legal connotations of AM and its potential application in the context of an amended CWA.

4. PART THREE: WHAT IS LEGAL PERSPECTIVE OF ADAPTIVE MANAGEMENT?

How is AM defined in the jurisprudence? In the legal decisions reviewed below, AM is positioned as a resource management strategy that is complementary to the precautionary principle and is an appropriate approach when uncertainty characterizes the environmental problem; and, is defined: “Adaptive Management assumes knowledge is provisional and focuses on management as a learning process or continuous experiment incorporating the results of previous actions and allows managers to remain flexible and adapt to uncertainty.”⁶⁸

The concept of AM has been discussed in a line of cases, with *Bow Valley Naturalists Society v. Canada (Minister of Canadian Heritage)*⁶⁹ being one of the first cases in which the term was briefly referenced but not explained. In *Newfoundland and Labrador Wildlife Federation v. Newfoundland (Minister of Environment and Labour)*⁷⁰ [NLWF] Justice L. D. Barry, in *obiter*, relied upon the above definition, which was set out in Ministry’s Forestry Guidelines. This definition implies that an institutional culture of continuous learning in which knowledge is viewed as provisional as well as experimental and where managers and their processes are expected to be open to change and unpredictable situations is a condition of this management strategy. In other words, this definition exposes the institutional cultural context of AM that reinforces experimental learning, and openness to both change and uncertainty.

In *Canadian Parks & Wilderness Society [CPWS] v. Canada (Minister of Canadian Heritage)*⁷¹ [CPWS], Evans J.A., writing for the majority of the Federal Court of Appeal, defined AM in relation to the precautionary principle as being a “concept” that:

...responds to the difficulty, or impossibility, of predicting all the environmental consequences of a project on the basis of existing knowledge. It counters the potentially paralyzing effect of the precautionary principle on

⁶⁷ C. S. Holling & G. K. Meffe, “Command and Control and the Pathology of Natural Resource Management” (April 1996) 10(2) *Conservation Biology* 328 at 335. These authors argue that “[w]e must also modify our institutions and policies to recognize the pathology” of command and control methods of managing natural resources.

⁶⁸ NLWF [2001] N.J. No. 125, ¶40.

⁶⁹ [2001] F.C.J. No. 18, 2001 CarswellNat 39, ¶52 (Fed. C.A.). The Court stated “the new adaptive management principle employed in environmental assessments.”

⁷⁰ *Supra* note 72.

⁷¹ [2003] F.C.J. No. 703, 2003 CarswellNat 1232 (Fed. C.A.) [hereinafter known as *Canadian Parks & Wilderness Society*].

otherwise socially and economically useful projects. The principle states that a project should not be undertaken if it may have serious adverse environmental consequences, even if it is not possible to prove with any degree of certainty that these consequences will in fact materialize. AM techniques and the precautionary principle are important tools for maintaining ecological integrity.⁷²

The subject matter of the dispute concerned the construction of a winter road in Wood Buffalo National Park. At the trial level, the court dismissed the Society's application for judicial review, holding that the Minister had the power to approve a road for non-park purposes.

On appeal, the CA considered the concept of AM under the second legal issue: "Was the Minister's approval of the road in breach of statutory requirement that 'ecological integrity' shall be the 'first priority' of the Minister when considering all aspects of park management?"⁷³ The Federal Court dismissed the appeal.

In the legal analysis, Evans J.A. reviewed the government's decision-making statement, which referenced AM. Specifically, the Court noted that the Minister "stated that any adverse environmental impact of the road would be insignificant, both because of the design and limited use and because of the measures that would be taken to monitor and mitigate any unforeseen problems through "adaptive management techniques."⁷⁴ This statement suggests that AM is viewed as a "technique . . . to monitor and mitigate any unforeseen problems"⁷⁵ that could arise as result of the construction of the road.

The above definition of AM, as offered by the Court, signals that AM and the precautionary principle are complementary and are mutually interdependent concepts that can be applied to resource management decisions that are framed by environmental uncertainty. As a management technique, the Court presents AM as a proxy for the precautionary principle, namely as a means to "monitor" the "unforeseen"⁷⁶ environmental impact presented by the proposed project.

It is with this frame of reference of AM that the Court then considered the "damage to the Park's ecological integrity"⁷⁷ and the reasonableness of the Minister's decision to approve the construction of a road. The Court held that the Minister's decision to build the road was reasonable in part because "the construction and maintenance agreement . . . provides for extensive mitigation measures and AM techniques, together with enforcement provisions."⁷⁸ In other words, the Court deferred to the Minister's expertise to review specific documents, such as the environmental screening assessment report, permits and agreements between the parties and to implement AM techniques, which, together with the precautionary principle should lead to protecting the environmental integrity of the park.

Interestingly, in the Court's concluding statement, Evans J.A. demonstrated an

⁷² *Ibid.* at para. 24.

⁷³ *Ibid.* at para. 65.

⁷⁴ *Ibid.* at para. 24.

⁷⁵ *Ibid.* at para. 23.

⁷⁶ *Ibid.*

⁷⁷ *Ibid.* at para. 101. Sub-heading.

⁷⁸ *Ibid.* at para. 105.

engineering approach to AM. In *obiter dicta*, Evans J.A. explained that it is reasonable for a decision-maker to have considered the ecological integrity of the Park as a first priority when the decision-maker considers “whatever possible harm might result from the road was likely to be of limited significance and would be adequately controlled by measures put in place to mitigate it, particularly when the high degree of reversibility of the project is borne in mind.”⁷⁹ In other words, the use of “mitigative measures and AM techniques to identify and deal with unforeseen effects”⁸⁰ of the construction of a winter road through the Park can be engineered to offset the destruction of the natural habitat of the “bison, caribou, and fur-bearing animals.”⁸¹

Essentially, the Court characterized AM as an engineered solution to an environmental problem. This perspective suggests that an adverse environmental impact can be quantified and resolved by implementing engineering-based measures and AM techniques. In their book entitled *Resiliency Thinking*,⁸² Walker and Salt differentiate between engineering resiliency (that is, a system that “bounce[s] back”⁸³) and ecological resiliency (that is, a system that “retain[s] its ability to get back”⁸⁴). Engineering resiliency refers to a system that bounces back — specifically, “how quickly a system, often a mechanical system, can return to some point of equilibrium when disturbed.”⁸⁵ The speed at which the system can bounce back is the key to engineering resiliency.

Unlike engineering resiliency, ecological resiliency considers thresholds and the system’s ability to get back, that is, the “capacity to absorb disturbance and still behave in the same way.”⁸⁶ Thus, ecological resiliency relates to how “ecosystems services”⁸⁷ function and the “ability of the system to recover at all.”⁸⁸ This thinking on ecological resiliency with its focus on thresholds, the structure and function of supporting ecosystem processes suggests that the Minister’s management of the park, which includes maintaining the “ecological integrity, through the protection of natural resources and natural processes,”⁸⁹ could support the statutory definition of ecological integrity.⁹⁰

⁷⁹ *Ibid.* at para. 107.

⁸⁰ *Ibid.* at para. 101.

⁸¹ *Ibid.* at para. 104.

⁸² B. Walker & D. Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*, (NY: Island Press, 2006).

⁸³ *Ibid.* at 63.

⁸⁴ *Ibid.*

⁸⁵ *Ibid.* at 62.

⁸⁶ *Ibid.*

⁸⁷ *Supra* note 34.

⁸⁸ *Supra* note 93 at 63.

⁸⁹ *Supra* note 62 at para. 34, refers to: *Canada National Parks Act*, S.C. 2000, c. 32, s. 8(2).

⁹⁰ *Ibid.* The statutory definition of ecological integrity, which under s. 2(1) of the *Canada National Parks Act*, S.C. 2000, c. 32 is defined as follows: “ecological integrity means, with respect to a park, a condition that is determined to be characteristic of its natural

However, a reading of the decision reveals that Evans J.A. applied an engineering resiliency perspective where the focus is on the system's ability to bounce back. The Court's comments on the reversibility of the project illustrate this point. At paragraph 107, Evans J.A. considered "whatever possible harm might result from the road was likely to be of limited significance" in part because of "the high degree of reversibility of the project. . . ." This view that the construction of the road is reversible implies that the ecosystem could bounce back to its original state because, in the Court's view, the environmental impact of the project was deemed to be insignificant and the building of the road could be reversed. In other words, the destruction and the degradation of an ecosystem, including as referenced in the statutory definition of ecological integrity, its "abiotic components and the composition and abundance of native species and biological communities,"⁹¹ are irrelevant. Yet, these abiotic components are often life-sustaining aspects of the habitat of the "bison, caribou and fur-bearing animals."⁹² In the end, the adoption of an engineering resiliency perspective resulted in the Court overlooking the ecological resiliency of the ecosystem, which includes the functioning of the abiotic components of the ecosystem and supporting processes.

Perhaps, if the ecological integrity of the park's diverse ecosystems with its rates of change had been linked to the concept of ecological resiliency,⁹³ then an

region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes." This statutory definition of ecological integrity considers "rates of change and supporting processes." Oddly, it appears that the Court overlooked an ecosystem's rates of change, as explicitly referenced in the statutory definition. Moreover, it appears that the Court's interpretation of the statutory definition of ecological integrity failed to take into account not only the assigned meaning under an exhaustive statutory definition, but also that the qualifying phrase that followed the term "ecological integrity" includes the term "rates of change." Professor Sullivan, in her book, *Statutory Interpretation* (Toronto: Irwin, 1997) at page 72 states that: "'exhaustive' definitions are introduced by the word 'means,' followed by a definition that comprises the sole meaning the word may bear throughout the statute and any regulations made under it." She further explains that "the meaning assigned to" the word "may not be varied or supplemented by ordinary usage or by other convention." Applying Sullivan's explanation of an exhaustive statutory definition to the statutory definition of "ecological integrity" should have directed the Court to qualify the definition by the phrase that followed the term. In other words, the phrase (that is "a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes") should be used to qualify the term "ecological integrity" and the interpretation of the definition should be limited to the words set out in the phrase. Given this line of reasoning, the statutory definition of "ecological integrity" of the park could be interpreted to include rates of change and supporting processes from an ecological perspective. Interestingly, emergent change is a core element of AM (that is, AM assumes that temporary knowledge is provisional, flexible, and open to both change and uncertainty).

91 *Ibid.*

92 *Ibid.* at para. 104.

93 *Supra* note 25.

ecological perspective of AM that takes into account change could have been used to instruct the Court on the environmental impact of the road construction.

In summary, the concept of AM is an insignificant aspect of this decision in that deference is afforded to the expertise of the decision-maker to introduce mitigative measures and AM techniques that are in essence viewed by the Court as engineered solutions to address adverse environmental effects. Unfortunately, an opportunity to frame the statutory definition of ecological integrity by ecological resiliency was lost, thus further hampering the application of ecological concepts to an environmental law problem.

The description of AM set out in the *CPSW* decision was expounded upon in *Pembina Institute for Appropriate Development v. Canada (Attorney General)*⁹⁴ (*Pembina*) where Madam Justice Tremblay-Lamer stated that:

adaptive management permits projects with uncertain, yet potentially adverse environmental impacts to proceed based on flexible management strategies capable of adjusting to new information regarding adverse environmental impacts where sufficient information regarding those impacts and potential mitigation measures already exists.⁹⁵

Pembina Institute, in conjunction with several environmental non-profit organizations, brought forward an application for judicial review, which argued that the environmental assessment completed for the Alberta Kearl oil sands mine project “did not comply with the mandatory steps in the *Canadian Environmental Assessment Act*, S.C. 1992, c. 37 [CEAA].”⁹⁶ The reviewable errors related primarily to three issues regarding the Cumulative Effects Management Association (CEMA), watershed management and landscape reclamation, endangered species and greenhouse gas emissions.⁹⁷

It was on the issue of greenhouse gas emissions that the judicial review application was allowed. The Court held that the Federal Environmental Assessment Panel had erred in law by failing to set out its rationale for the greenhouse gas emission conclusion. In the end, the Court remitted the matter back to the same Panel.⁹⁸

Madam Justice Tremblay-Lamer framed her legal analysis by considering the “guiding tenets: precautionary principle”⁹⁹ and the complementary doctrine of AM.

⁹⁴ [2008] F.C.J. No. 324, 2008 CarswellNat 508 (F.C.).

⁹⁵ *Ibid.* at para. 32.

⁹⁶ *Ibid.* at para. 2.

⁹⁷ *Ibid.* at para. 36.

⁹⁸ *Ibid.* at para. 80.

⁹⁹ *Ibid.* at para. 33. In *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, 2001 SCC 40, [2001] 2 S.C.R. 241, the Supreme Court of Canada adopted the following definition of the precautionary principle, as it relates to sustainable development and scientific uncertainty: “Environmental measures must anticipate, prevent and attack causes of environmental degradation. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.” In other words, scientific uncertainty should not be used as a bar to implement measures that may prevent environmental degradation.

Both concepts were presented as a “prism” to view the scope of the Panel’s duties.¹⁰⁰ She relied upon the following explanation of AM as set out in the *CPWS* decision by Evans J.A. of the Federal Court of Appeal, Alberta: “The concept of ‘adaptive management’ responds to the difficulty, or impossibility, of predicting all the environmental consequences of a project on the basis of existing knowledge. It counters the potentially paralyzing effect of the precautionary principle.”¹⁰¹

In the same paragraph of the decision, she further stated that,

in my opinion, adaptive management permits projects with uncertain, yet potentially adverse environmental impacts to proceed based on flexible management strategies capable of adjusting to new information regarding adverse environmental impacts where sufficient information regarding those impacts and potential mitigation measures already exists.¹⁰²

Finally, in her summary statement on the “the dynamic and fluid nature”¹⁰³ of the *CEAA*’s environmental assessment process, AM was presented as one component that offers the flexibility of follow-up processes and complements the environmental assessment’s additional aspects of “early assessment of adverse environmental consequences as well as mitigation measures.”¹⁰⁴ In other words, AM is further framed as a continuous improvement tool where adaptive follow-up processes are envisioned that could take into account “new information and changed circumstances.”¹⁰⁵

Applying the notion of guiding tenets to the three legal issues, Madam Justice Tremblay-Lamer, in deciding issue one, the watershed management issue, relied directly upon the legal interpretation of AM set out in the *Canadian Parks & Wilderness Society* decision, referenced above in this paper.

With respect to the end pit lakes technology, the Court held that “the Panel took a precautionary approach by demanding that an operator validate modeling predictions by testing end pit lake technology,”¹⁰⁶ which included “a physical test case and continued research, well in advance of the slated closure date of 60 years.”¹⁰⁷ The Panel’s approach is found to be consistent with an adaptive management concept which includes “continued study of potential impacts on valued environmental components”¹⁰⁸ and “ensures that new information is obtained which facilitates the adaption of project implementation as required.”¹⁰⁹

Continuing with a sub-issue of the reclamation of the peat lands, Madam Justice Tremblay-Lamer continued to align the uncertainty of the effects of environmental issues with AM. The use of AM as a technique to respond to uncertain

¹⁰⁰ *Ibid.* at para. 33.

¹⁰¹ *Ibid.* at para. 32.

¹⁰² *Ibid.*

¹⁰³ *Ibid.* at para. 34.

¹⁰⁴ *Ibid.*

¹⁰⁵ *Ibid.*

¹⁰⁶ *Ibid.* at para. 55.

¹⁰⁷ *Ibid.* at para. 57.

¹⁰⁸ *Ibid.* at para. 58.

¹⁰⁹ *Ibid.*

environmental effects is demonstrated by the following statement: “[W]hile uncertainties with respect to reclamation of peat-accumulating wetlands remain, they could be addressed through AM given the existence of generally known replacement measures contained in Imperial Oil’s mine closure plan.”¹¹⁰

Finally, in this decision, the concept of AM is expanded from the description provided by Evans J.A. in *Canadian Parks & Wilderness Society* to suggest that AM is a flexible resource management strategy. As a resource management strategy, it avoids a rigid approach to addressing environmental effects while also continuously responding to changing information and changed circumstances regarding the environmental effects upon the resource in question.

In summary, in *Bow Valley*, *NLWF*, *CPWS* and *Pembina*, the legal perspective of AM promotes the standpoint of a resource management strategy that can be implemented to monitor the environmental impact of a range of projects (for example, a meeting facility, a winter road, an oil sands development, and a forestry plan) under an environmental assessment. As a complementary concept to the precautionary principle, AM is viewed as a technique to address the uncertainty and risks presented by the proponent’s proposal. The inherent flexibility of AM allows for follow-up on issues of concern and continuous adaptive processes that are responsive to new information regarding the state of the affected ecosystem and its changed circumstances. This dynamic management strategy is suggestive of an institutional culture that fosters temporary knowledge, flexibility, experimental learning, and openness to both change and uncertainty. As a monitoring technique, AM is incorrectly characterized in the jurisprudence as an engineered-oriented solution that can be implemented to mitigate the environmental effects presented by a project. The problem with an engineered-oriented solution is that the ecological resiliency of the natural system can be lost, which can result in the ecosystem flipping into an alternative state, perhaps a state of environmental degradation.

To conclude, this legal review of adaptive management exposes a tension in adjudicating environmental disputes. The Court seeks to create certainty in the law.¹¹¹ In contrast, the environmental problem before the court is often characterized by uncertainty. In theory, an AM approach is responsive to the uncertainty of scientific knowledge and the outcomes of management techniques by continuously monitoring, evaluating and re-designing management practices. Legal scholar, B. Karkkainen contends that AM shifts the focus away from fixed rules to the consideration of an integrative approach of science and management that is based upon ongoing experimentation and adjustment of management practices.¹¹² This shifting away from fixed legal rules implies that a greater reliance might be placed upon the discretion of the administrative decision-maker charged with managing the natural resource, as demonstrated by the jurisprudence reviewed in this article.

Given the courts are not experts in principles of environmental management or

¹¹⁰ *Ibid.* at para. 62.

¹¹¹ A.S. Garmestani, C.R. Allen & H. Cabezas, “Panarchy, Adaptive Management and Governance: Policy Options for Building Resilience” (2008-2009) 87 Neb. L. Rev. 1036 at 1042.

¹¹² B.C. Karkkainen, “Adaptive Ecosystem Management and Regulatory Penalty Defaults: Towards a Bounded Pragmatism” (2002-2003) 87 Minn. L. Rev. 943 at 956.

policy, this legal analysis raises important questions regarding the role of the court in shaping environmental policy. How should a court acknowledge the uncertainty of environmental problems and advance contemporary concepts, such as ecological resiliency? Is it reasonable to expect the Courts to develop environmental law, and on what basis? Is it the responsibility of the federal department or environmental group advancing the claim to put forth the concept of ecological resiliency? Indirectly, these questions also raise the role of courts, the state and non-state actors in governing natural resources and leads into the next section of this article where the governance of drinking water under Ontario's *CWA* is examined.

5. PART FOUR: INTEGRATING AM INTO THE CWA

In Ontario, the legislative framework for ensuring that drinking water is safe is the *CWA*. Under the Act, water governance is envisioned at a local watershed level where a Source Protection Committee (SPC) is charged with the responsibility of drafting a Source Protection Plan (SPP). In this section of the paper, the content of the SPP, under the Act, is examined to determine whether an AM strategy can be supported by the legislative context.

(a) The Walkerton Inquiry — The Precursor to The Clean Water Act, 2006

The *CWA* was enacted subsequent to the release of the Honourable Dennis R. O'Connor's Walkerton Inquiry Report in 2002. The *CWA* is an endorsement of the recommendations set out in the Report and of Justice O'Connor's goal of restoring public confidence in "the safety of Ontario's drinking water."¹¹³ To achieve this goal of safe drinking water, a five-stage multi-barrier approach was put forward.¹¹⁴ Implementing the first stage of water source protection was viewed as the initial line of defense and as a cost-effective means of "selecting and protecting reliable, high-quality drinking water sources"¹¹⁵ against the infiltration of hazards, such as pathogen, chemical and radionuclide contaminants. To realize the first stage (*i.e.*, water source protection), a range of measures was outlined in the Inquiry's Report, including for example, the use of watershed protection plans, upgrading sewage

¹¹³ Justice O'Connor, "Part One Report of the Walkerton Commission of Inquiry" (January 18, 2002), online: <<http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part1/>>. At Summary at 2.

¹¹⁴ Justice O'Connor, "Part Two Report of the Walkerton Commission of Inquiry" (January 18, 2002), online: <http://www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton/part2/Chapter_3.pdf>. In Report Two — Chapter 3: A Multi-Barrier Approach to Drinking Water Safety, Justice O'Connor describes the multi-barrier report as follows: "In summary, the multi-barrier approach includes five elements designed to ensure safe drinking water in communal systems: a good source of water, effective treatment of the water, a secure distribution system, continuous monitoring of the system, and an appropriate response to adverse results."

¹¹⁵ *Ibid.* at 8.

treatment and selecting the appropriate water source.¹¹⁶

Specifically, a watershed protection plan was presented in the Report as comprising a number of components, such as water budget, land use maps, well head locations, and identification of point and non-point sources of contaminants and was premised upon “an adaptive model of risks to water sources.”¹¹⁷ Justice O’Connor envisioned a dynamic development plan process that required not only “constant updating to reflect changing circumstances” and the incorporation of new knowledge gained from closing “knowledge gaps,” but also that the “new data collected” would be “used to continuously refine watershed models.”¹¹⁸

In sum, the direction of Justice O’Connor’s Report is strongly suggestive of an AM strategy. The recommendations include the need to consider new information and the changing conditions of an aquatic system, while also recognizing that knowledge gaps may exist that may require watershed models to be continuously refined.

(b) What form of water governance does the CWA promote?

Under the CWA, a local form of governance is set out. The decision-making capacity has been devolved from the provincial Conservation Authority to local watershed committees called “Source Protection Committees” (SPC). The SPC consists of municipal, industry, agricultural, environmental, health and general public representatives.¹¹⁹ The SPC model reflects a movement away from traditional state-centred governance to a community model of decision-making. The SPC is charged with drafting the Source Protection Plan (SPP).

(c) What is the content of a source protection plan?

In drafting an SPP, the SPC is charged with first developing a terms of reference, then an assessment report, and finally, the SPP, which may include a range of policies incorporating programs, enforcement orders, consultation protocol, and any other matter set out in the regulation.¹²⁰

The content of an SPP must also include a number of mandatory policies that achieve particular objectives. Specifically, the legislative requirement for these mandatory policies is as follows:

22. (2) A source protection plan shall, in accordance with the regulations, set out the following:

2. Policies intended to achieve the following objectives for every area identified in the assessment report as an area where an activity is or would be a significant drinking water threat:

i. Ensuring that the activity never becomes a significant drinking water threat.

¹¹⁶ *Ibid.* at Chapter Three at 74.

¹¹⁷ *Ibid.* at Chapter Four: 4.3.5.2 Components of Plans.

¹¹⁸ *Ibid.* at Chapter Four: 4.3.10 Review of Plans.

¹¹⁹ *Supra* note 3. O. Reg. 288/07.

¹²⁰ *Supra* note 3, s. 22 of CWA.

- ii. Ensuring that, if the activity is being engaged in, the activity ceases to be a significant drinking water threat.
- 3. Policies intended to assist in achieving every target established under section 85 for the source protection area, if the Minister has directed under subsection 85(6) that a report be prepared that recommends policies that should be set out in the source protection plan to assist in achieving the target.
- 4. Policies governing,
 - i. the monitoring, in every area that is identified in the assessment report as an area where an activity is or would be a significant drinking water threat, of the activity, and
 - ii. the monitoring, in every area that is identified in the assessment report as an area where a condition is a significant drinking water threat, of the condition.
- 5. Policies governing,
 - i. the monitoring of an activity in an area, if the area is identified in the assessment report as a vulnerable area, the activity is listed in the assessment report as an activity that is or would be a drinking water threat, subparagraph 4 i does not apply and the monitoring of the activity is advisable to assist in preventing the activity from becoming a significant drinking water threat, and
 - ii. the monitoring of a condition in an area, if the area is identified in the assessment report as a vulnerable area, the condition is listed in the assessment report as a condition that is a drinking water threat, subparagraph 4 ii does not apply and the monitoring of the condition is advisable to assist in preventing the condition from becoming a significant drinking water threat.
- 6. Policies governing monitoring to assist in implementing and in determining the effectiveness of every policy set out in the source protection plan under paragraph 3.
- 7. Policies governing the monitoring of a drinking water issue identified in the assessment report, if the monitoring of the drinking water issue is advisable.

Based upon the above, it appears that six types of mandatory¹²¹ policies to be included in a source protection plan:

1. *Activity policy* — s. 22(2)2. (i)(ii): This policy does not relate to conditions but is limited to activities that are identified in the assessment report as either a present or future significant drinking water threat¹²² (SDW threat). If an activity is identified as a present or future SDW threat, then this policy is contingent upon achieving one of two objectives: i) the activity never becomes an SDW threat ii) the activity ceases to be an SDW threat. This is the only policy to have a prescribed legislative objective.
2. *Greats Lakes target policy* — s. 22(2)3: This policy relates to targets set for the Great Lakes.
3. *Activity and condition monitoring policy* — s. 22(2)4: This two-part monitoring policy is directed at both activities and conditions. If the assessment report identifies an area where an activity or a condition is either a present or future SDW threat, then the activity or condition should be monitored according to the policy.
4. *Vulnerable area monitoring policy* — s. 22(2)5: This discretionary two-part monitoring policy is limited to areas identified as vulnerable in the assessment report and is directed at both activities and conditions. In this vulnerable monitoring policy, a temporal distinction has been made between activities and conditions. Specifically, if an activity is identified in the assessment report as either a present or future SDW threat, then monitoring the activity is advisable to prevent the activity from becoming a SDW threat. Unlike an activity, monitoring a condition is limited to a condition that is considered a present SDW threat.
5. *Implementation and effectiveness policies* — s. 22(2)6: Each policy developed under the source protection plan will be complemented by an implementation policy and a policy to assess the effectiveness of a policy supporting the plan.
6. *Drinking water issue monitoring policy* — s. 22(2)7: This policy appears to be a basket policy in that, if a drinking water issue “relating to

¹²¹ *Ibid.*, s. 22.(2). A source protection plan shall, in accordance with the regulations, set out the following: Note: The use of the word “shall” in foregoing statement denotes a mandatory legislative requirement.

¹²² *Ibid.*, s. 2(1), Definitions:

“significant drinking water threat” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a significant risk; Note: the term “significant” is not defined under the s. 2 of the CWA.

“drinking water threat” means an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulations as a drinking water threat;

the quantity and quality of water in” a vulnerable area¹²³ is identified in the assessment report as an issue to be monitored, then the issue may be monitored. But, under the provision and the Act, the meaning of a drinking water issue is unclear.

In addition, the SPP may also include discretionary policies that can relate to s. 57, a designated Great Lakes policy, a condition, incentive, education and outreach programs, and the prohibition of land use or activity, to name a few of the additional discretionary components of a plan.¹²⁴

Finally, the CWA places an obligatory duty upon the Source Protection Authority (SPA) to provide the SPC with scientific, technical and administrative support.¹²⁵ This provision creates a mandatory oversight advisory role for the SPA regarding scientific, technical and administrative matters. In other words, it is the role of the SPA to provide the SPC with scientific support regarding issues that are a threat to the quality and quantity of Ontario’s drinking water. Following this argument, it is reasonable to expect that this oversight responsibility, which is at a provincial level, will allow the SPA to endorse a province-wide policy response to climate change. A provincial climate change policy that could be then directed at, and adopted by a local SPC.

(d) What is the difference between an activity and a condition?

The mandatory policies, under s. 22(2) of the CWA, distinguish between an activity and a condition. It appears that this distinction relates to the definition of a “drinking water threat” and a “significant drinking water threat” under the definition section of the CWA. Subsection 2(1) defines:

“drinking water threat” means an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulations as a drinking water threat;
 “significant drinking water threat” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a significant risk;

[Note: the term “significant” is not defined under the s. 2 of the CWA.]

A reading of these two definitions suggests that a “drinking water threat” can be characterized as an activity or a condition. In the first definition of a drinking water threat, the use of “or” points to a disjunctive meaning suggesting that the terms activity and condition listed before and after the “or” are alternative and separate ways of defining a drinking water threat.¹²⁶ As set out in the definition, the condition or activity is either currently adversely affecting or has the potential to

¹²³ *Ibid.* Assessment reports — s. 15(2)(f) describe the drinking water issues relating to the quality and quantity of water in each of the vulnerable areas identified under clauses (d) and (e).

¹²⁴ *Ibid.* s. 22(3) to (13).

¹²⁵ *Ibid.*, s. 7(5)(b).

¹²⁶ R. Sullivan, *Statutory Interpretation* (Toronto: Irwin, 1997) at 79.

adversely affect either the quality or quantity of a drinking water source. Moreover, a condition and an activity can also be prescribed under a regulation as a drinking water threat.

A drinking water threat is deemed “significant” by being identified under the risk assessment protocol, as a current or future risk.

Based upon this interpretation, it appears that the legislative intent was to:

- i) differentiate between a condition and an activity;
- ii) create two categories of drinking water threat — a condition and an activity; and
- iii) identify a threat as significant — present and future threat.

However, the statutory meaning of the term “condition” remains open because the Act does not provide for a legislative definition of the word. Rather, the legislation provides a statutory definition for the term “activity.” Activity is defined as “includes a land use.”¹²⁷

(e) What is the effect of not defining the term condition?

The CWA does not set out a definition of the term “condition.” This lack of statutory definition has been carried over into O. Reg. 287/07 and into the amending O. Reg. 246/10. Yet, the distinction between an activity and a condition is important to the climate change problem. While climate change can be attributed to human activities, the cumulative and pervasive nature of the problem combined with the issues of scale suggests that the consequences of climate change may not necessarily be attributed to any one activity. Both the pervasive and cumulative impacts of climate change present decision-makers with the problem of both spatial (that is, the significance of the impact may differ at the local, regional or global level) and temporal scales. The issue of scale suggests that the risk of a drinking water threat from climate change consequences may not necessarily be attributed to one activity within a specific location and to a precise time period; thus, it may be difficult to predict and quantify. The issue of scale coupled with the pervasive and cumulative nature of climate change suggests that the climate change issue must be considered comprehensively. In the end, the lack of a definition for the term “condition” in both the CWA and regulation has resulted in a condition being deemed insignificant. The lack of defining the term “condition” is problematic when considering the issue of climate change. The uncertain nature of climate change requires a continuous monitoring of the condition of the water source to assess subtle but important changes. But, with a regulatory direction that targets activities (that is, the land use activity) a danger exists that the SPC may overlook subtle changes to the processes and functions of the ecosystem.

To avoid this inconsistency between an activity and a condition, a broader perspective should be adopted that will allow for the consideration of the climate change under the statutory meaning of a condition. In terms of protecting existing and future drinking water sources, it is essential that the condition of either the quality or quantity of the drinking water source be considered. The supposition that

¹²⁷ *Supra* note 3, s. 2(1).

climate change does impact the state of a water source is supported by the climate change research reviewed earlier in this paper and further reinforces the conclusion that climate change should be considered under the statutory term of “condition.” This conclusion indicates the need to amend the regulation further to explicitly define the term “condition.”

(f) How is climate change provided for under O. Reg. 246/10?

Under s. 26.5 of the regulation, a climate change policy is explicitly considered. This permissive policy is effectively a data-gathering directive requiring specific climatic variables (*i.e.*, “precipitation, stream, flow, temperature, evapotranspiration and solar radiation data”) to be collected. However, the policy is incomplete. The policy fails to consider that in addition to collecting data and in order to adapt to and manage the risks of climate change while also protecting vulnerable communities and ecosystems, integrative management activities should be incorporated into the MOE’s climate change policy. Strategically, a broader policy approach can take into account several factors including the local watershed conditions, human impact and how the aquatic system responds to climate change stressors. In order to understand the natural system’s response to the stressors presented by climate change the management strategy also requires consideration of the resiliency of the aquatic system. Aquatic systems are resilient but, to a point. A change in the state of the aquatic system needs to be assessed through such management activities as longitudinal research, monitoring and analysis of the aquatic system changes, learning from and adapting to the monitoring results, changing institutional management systems in response to the information.¹²⁸ All these activities are supportive of an AM approach.

In the regulation, the concentration upon policies related to activities not conditions combined with the permissive nature of the climate change policy raises doubt that the present threat of climate change will be considered in a comprehensive manner. The implementation of the climate change policy is left to the discretion of the local SPC. Under the legislation and regulation, the SPC’s focus is upon activities within the local watershed. The danger exists that conditions related to the consequences of climate change such as a heavy rainfall, an algae bloom, and the release of contaminants from the sediment bed that may occur at a regional level might be overlooked by an SPC because of the local, activity-oriented nature of the regulations.

A reading of the discussion paper supporting the regulatory amendments indicates that the Ministry adopted a risk management approach¹²⁹ to protecting water sources. The range of policies that support the Ministry’s risk management direction is viewed as falling along “a continuum — moving from non-binding and/or informal approaches that are least invasive to approaches that are both formal and legally binding.”¹³⁰ This method implies that the Ministry intends to “reduce risks

¹²⁸ A. Kinzig, L. Gunderson, *et al.*, *Assessing and Managing Resilience in Social-ecological systems: A Practitioner’s Workbook*, (June 2007) Resilience Alliance online: <<http://www.resalliance.org>>. These authors set out a framework to assess resiliency.

¹²⁹ *Supra* note 5. Policy Proposal: SPP Discussion Paper at 8-9.

¹³⁰ *Ibid.* at 8.

and manage threats”¹³¹ to drinking water sources by implementing a course of action that includes a range of policies and a shared model of governance that requires integration and adaption to other institutional systems; yet, is missing overarching governance principles.

The omission of governance principles such as the precautionary principle and AM does not support the direction set out by the Walkerton Inquiry’s Report. In the Report, Justice O’Connor considered both the condition of a watershed and the need to adopt a precautionary approach for source protection, as illustrated by several of his recommendations.¹³² However, it seems the Ministry overlooked both of these aspects. Guiding principles can be used by the SPC as a normative framework to address, for example, the uncertainty and the emerging scientific information that can arise with climate change and can direct the on-ground activities of water managers.

Moreover, these guiding principles of precautionary principle and adaptive management can be tied to the MOE’s Statement of Environmental Values (SEV). The Ministry is directed to incorporate the SEVs when it “develops Acts, regulations and policies.”¹³³ This SEV policy directive reinforces the implementation of the precautionary principle as a guiding tenet. For example, the SEV directive states: “The Ministry uses a precautionary, science-based approach in its decision-making to protect human health and the environment.”¹³⁴ An AM principle is reinforced by the following SEV: “Planning and management for environmental protection should strive for continuous improvement and effectiveness through adaptive management.”¹³⁵ The inclusion of these guiding principles is key to grounding the Ministry’s strategic direction in its SEVs.

The adoption of an AM approach to climate change can contribute to the protection the quality and quantity of drinking water sources. Both the legal and ecological perspectives present adaptive management as a responsive and emergent strategy that can be tailored, in theory, to changing circumstances and new information. The legal perspective introduces the precautionary principle as a guiding tenet that can be used to frame the policy, while the resource management approach advances a hands-on approach with its promotion of experimental policies that allow for the testing of results. This experimental policy approach leads, in theory, to iterative learning, a broad governance system, and a concern for supporting the diversity within the socio-ecosystem and protecting the source water. As a decision-making tool directed at SPC, the following elements, which are presented below in no particular order, can be introduced as an adaptive management response, under s. 7(5)(b):

- Acceptance of scientific and technical uncertainty,
- Emergent change — planning and managing for change,
- Monitoring and feed-back loops,

131 *Ibid.*

132 *Supra* note 128 at Recommendation #19 at page 21 and Recommendation #38 at 24.

133 *Supra* note 5 at SPP Discussion Paper.

134 *Ibid.*

135 *Ibid.*

- Learning while doing,
- Evaluation of effectiveness,
- Flexible, responsive policies and institutional systems,
- Broad systems' perspective balanced with a place-based local impact analysis,
- Ecological, social and political context,
- Stakeholder engagement including industry and civil society, industry and government actors,
- Precautionary and preventive approach to manage risks while taking advantage of new opportunities, and
- SEVs.¹³⁶

6. PART FIVE — CONCLUSION: ADAPTIVE MANAGEMENT: THE MISSING ELEMENT

This paper considers the question of whether an adaptive management policy can be adopted as a response to the challenges presented by climate change when developing an SPP under the CWA and its proposed regulation. The answer is yes!

As argued, climate change is a threat to the protection of existing and future drinking water sources. Climate change presents a decision-maker with a cumulative, pervasive, environmental problem in which ecological resiliency limits are at play, temporal and spatial issues of scale prevail, uncertainty has evolved as result of the scientific and community debate surrounding global warming and scientific knowledge is evolving with regard to the impact of climate change upon the quality and quantity of Ontario's drinking water sources.

The consequences of climate change upon the Great Lakes basin can be ascribed to past and present anthropocentric activities that have resulted in the degradation of the condition of drinking water sources in Ontario. Ecological changes to the Great Lakes basin have occurred and it is expected that these changes will continue to occur into the future. But it is the ecological resiliency of this watershed, or lack thereof, and human interventions such as the implementation of resource management policies that illustrate the interconnection of this human-natural system. The climate change problem must be framed as a socio-political construct that requires integration of its ecological features into the Ministry's overarching governance response.

The MOE's response to protecting Ontario's future and existing sources of drinking water is focused upon human activities rather than upon promoting an understanding of the ecological functioning of an ecosystem. In the regulation, the Ministry's risk-management approach overlooks how the natural system's provi-

¹³⁶ Also see D. Swanson *et al.*, *Technological Forecasting & Social Change* 77 (2010) 924 at 935. These authors set out seven tools for creating an adaptive policy, which include: 1) integrative and forward looking analysis 2) Multi-stakeholder deliberation 3) Enable self-organization and social networking 4) Decentralization of decision-making 5) Promote variation 6) Automatic Adjustment 7) Formal Policy review and continuous learning.

sion of “ecosystem services” offers the first line of defense in water source protection. This oversight is costly and fails to achieve the first stage of the multi-barrier source approach — that is, protection of “reliable, high quality drinking water sources.”¹³⁷

In the regulation, the concentration on activities subordinates a threat that is considered a condition and disregards the statutory definition of a drinking water threat that is set out in the *CWA*. The danger exists that the “condition” of a drinking water source will become insignificant because the focus of the regulation is directed primarily towards “activities.” The climate change research reviewed in this article demonstrates that the condition of a water source may be or may become adversely affected by an environmental event such as a heavy rainfall, pollution-loading from a spring run-off, algae bloom, a change in the water chemistry, and physical and biological processes resulting from warmer water temperatures, to name a few consequences of climate change.

In actual fact, it was the condition of the drinking water source — municipal well 5 in the Walkerton water contamination incident — that resulted in the deaths of seven residents and caused over 2,300 residents to become ill. In the Walkerton Inquiry, Justice O’Connor held that an extreme rainfall event contributed in part to the polluted condition of the town’s drinking water source. Yet, in drafting the regulations, Ministry officials appeared to have overlooked the need to define the term “condition.” The statutory definition under the *CWA* includes both a “condition” and an “activity” and demonstrates a legislative intent to differentiate between a condition and an activity. Thus, in the regulation, a “condition” should be afforded equal weight as an “activity” when devising the policy response.

The consequence of failing to define the term “condition” also raises doubt that a precautionary approach to protecting drinking water sources will be achieved. The regulatory focus is directed towards the management of risks related to anthropocentric-based activities, not the protection of how an aquatic system functions under the stress of a pervasive and cumulative environmental problem, such as climate change. Unlike a precautionary approach, a risk-management approach is often premised upon the probability of the outcome. A precautionary approach recognizes that a change will occur but that the “scale or probability of the impact”¹³⁸ is difficult to predict with certainty. This uncertainty regarding, for example, the temporal and spatial nature of the problem, defines a condition such as climate change and reinforces the need for the application of a precautionary approach and a protective stance of water sources. It is this uncertainty that further demands a proactive rather than a reactive policy response that is grounded in the precautionary principle and an AM approach to water source protection.

To achieve an effective SPP, it is recommended that both a “condition” and an “activity” be given equal weight in the regulation as directed by the statutory definition and the cause-and-effect nature of the problem. The consequences of climate change illustrate the cause-and-effect nature of this environmental problem. In simple terms, the cause of climate change is human-based activity, and the effect is the

¹³⁷ *Supra* note 128.

¹³⁸ S. Dovers, *Environmental and Sustainability Policy: Creation, Implementation, Evaluation* (Annandale: The Federation Press, 2005) at 83.

release of greenhouse gases into the atmosphere, leading to the warming of the climate and its subsequent adverse impact upon the condition of the quantity and quality of Ontario's drinking water sources.

Given that climate change is one of the environmental challenges of the 21st century, the Ministry must adopt a progressive policy approach that is responsive to the challenges that climate change currently presents and will continue to present to its water resource managers and water law scholars.¹³⁹ The legal and ecological perspectives of AM discussed in this paper identify adaptive management as an appropriate resource management policy response when uncertainty frames an environmental problem. In order to protect drinking water sources from the uncertain future impact of climate change, it is recommended that the Ministry adopt an overarching climate change provincial policy that is based upon AM and social-ecological principles such as ecological resiliency, sustainability, precaution, and pollution prevention, to name a few.

¹³⁹ J.B. Ruhl, "Climate Change Adaption and the Structural Transformation of Environmental Law" (2010) 40 *Envtl. L.* 363 at 402.

