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**Global Policies, Local Actions: The Role of National Legislation in  
Sustainable Biodiversity Prospecting**

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# Global Policies, Local Actions: The Role of National Legislation in Sustainable Biodiversity Prospecting<sup>#</sup>

Michael A. Gollin\* & Sarah A. Laird\*\*†

## I. INTRODUCTION

In recent years, people seeking to promote sustainable development of biodiversity have focused on global initiatives in international law and policy, such as the 1992 United Nations Conference on Environment and Development ("UNCED")<sup>1</sup> in Brazil. These efforts have resulted in notable achievements, including the Convention on Biological Diversity ("CBD"),<sup>2</sup> which commits signatory countries to conserve biodiversity, use its components, and equitably share resulting benefits. [1]

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<sup>1</sup> United Nations Conference on Environment and Development, June 3-14, 1992, 31 I.L.M. 814. The Conference, held in Rio de Janeiro, produced a set of documents that establish the environmental conservation and sustainable development agenda for the next several decades. See Edith Brown Weiss, *Introductory Note to United Nations Conference on Environment and Development*, 31 I.L.M. 814 (1992).

<sup>2</sup> United Nations Convention on Biological Diversity, June 5, 1992, U.N. Doc. DPI/1307 (1992), reprinted in 31 I.L.M. 818 (1992). Article 1 of the CBD states that its objectives are, *inter alia*, 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, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies." *Id.* at art. 1.

As crystallized in Rene Dubos's famous aphorism, "Think Globally, . . . Act Locally,"<sup>3</sup> however, global initiatives are inadequate without local actions attuned to the different needs of each locality. Dubos observed almost two decades ago:

The most valuable achievement of the international conferences was probably . . . to reveal that the best and commonly the only possible way to deal with global problems is not through a global approach but through the search for techniques best suited to the natural, social and economic conditions peculiar to each locality. Our planet is so diverse, from all points of view, that its problems can be tackled effectively only by dealing with them at the regional level, in their unique physical, climatic and cultural contexts.<sup>4</sup> [2]

Can global initiatives on biodiversity successfully be brought to the local level? The answer should be yes, judging by the great variety of individual projects around the world having the sustainable development of biodiversity as their goal. Many of these projects are led and supported by consortia of academic institutions, non-profit organizations, governmental agencies, and corporations, and many involve biodiversity prospecting. [3]

The answer, however, is not so simple, because such local projects are often hampered by inadequate national laws and regulations that fail to set forth effective standards and procedures for those engaged in conserving and developing the components of biodiversity. As a result, without adequate measures for conservation and compensation, it may be too easy for a developer to remove biological resources, while without established standards and procedures, it may be too difficult for the parties to reach fair contracts about benefit sharing. Finally, government structures may make it impractical for sample collection to occur, so that no development takes place, to the detriment of all. [4]

The best way to move from promising global policies to local realities, then, may be through the intermediate level, national law and regulation. Many countries have begun to evaluate whether their domestic laws satisfy the imperatives of sustainable development of biodiversity. With few exceptions, however, little progress has been made in passing national legislation and implementing regulation that would promote the global goals of sustainable development of biodiversity. Now is a good time to do so. [5]

In Part II, this article surveys some of the international legal standards affecting national legislation for sustainable development of biodiversity. The background and objectives of the CBD are discussed, together with the opportunities for national action. Other instruments of international environmental law, international trade law, and intellectual property law are also discussed. Finally, the

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<sup>3</sup> Rene Dubos, *Think Globally, But Act Locally*, in CELEBRATIONS OF LIFE 83 (1981).

<sup>4</sup> *Id.* at 84.

effort to establish indigenous peoples' rights in international law is reviewed. Part III examines the role of national laws in source countries engaged in biodiversity prospecting, including contract, intellectual property, and conservation laws. The few special laws implementing the CBD give some idea of how countries may proceed to realize the goals of the CBD. [6]

## II. INTERNATIONAL LEGAL STANDARDS AFFECTING NATIONAL BIODIVERSITY PROSPECTING LEGISLATION AND CONTRACTS

### A. *The Convention on Biological Diversity*

During the 1980s, developed countries and developing countries debated a basic issue of sovereignty—under what terms should there be access to the genetic resources concentrated in developing countries and access to the advanced technologies of the developed countries?<sup>5</sup> Developing nations opposed open access to their genetic resources, and sought increased access to the technology that is developed from it.<sup>6</sup> Industrialized nations, the United States in particular, sought to maintain access to biodiversity and to strengthen intellectual property rights for biotechnology, which would limit developing countries' access to the source materials. The Convention on Biological Diversity reflects a negotiated resolution to this debate.<sup>7</sup> The signatories of the CBD agreed that biodiversity is a sovereign national resource; they agreed that access to biological resources should be provided, but requires national permission.<sup>8</sup> The signatories also agreed that the benefits of developing biodiversity, including technology, should be shared with the source country.<sup>9</sup> This basic agreement may be called the “grand bargain” of the CBD. The CBD has been signed by 150 countries and ratified by 144.<sup>10</sup> Several nations have issued interpretative statements of the CBD.<sup>11</sup> [7]

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<sup>5</sup> W. V. Reid et al., *A New Lease on Life*, in BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 1, 23-24 (Walter V. Reid et al. eds., 1993) [hereinafter *A New Lease on Life*].

<sup>6</sup> *Id.*

<sup>7</sup> *Id.* at 24. See Melinda Chandler, *The Biodiversity Convention: Selected Issues of Interest to the International Lawyer*, 4 COLO. J. INT. ENVTL. L. & POL'Y. 141 (1993).

<sup>8</sup> See Convention on Biodiversity, *supra* note 2, arts. 3 & 15.

<sup>9</sup> *Id.* arts. 1 & 16.

<sup>10</sup> See UNITED NATIONS ENVIRONMENT PROGRAMME, *List of Ratifications for the Convention on Biological Diversity* (March 8, 1996), available on the World Wide Web at <http://www.unep.ch/bio/ratifica.html>.

<sup>11</sup> See DOCUMENTS IN INTERNATIONAL ENVIRONMENTAL LAW 872-73 (Philippe Sands et al. eds., 1994) (containing interpretive statements of France, Italy, Switzerland and the United Kingdom);

The CBD sets forth certain principles and standards for signatories to follow, and a mechanism for implementing them.<sup>12</sup> The era of the CBD is just beginning. Although most countries have now signed the treaty, many (including the United States) have not yet ratified it or passed implementing legislation.<sup>13</sup> At the second annual Conference of the Parties to the CBD, delegates agreed to establish the permanent location of the Convention Secretariat in Montreal, Canada;<sup>14</sup> current undertakings of the Secretariat include drafting a protocol on biosafety, publishing the Global Biodiversity Outlook, and identifying the role indigenous peoples play in biodiversity.<sup>15</sup> [8]

Article 1 of the CBD links the goals of conservation, sustainable development of biodiversity, and fair and equitable sharing of the resulting benefits.<sup>16</sup> It reflects the principle of reciprocity between access to genetic resources and transfer of relevant technology.<sup>17</sup> Article 3 recognizes a sovereign national right to exploit domestic biological resources.<sup>18</sup> [9]

The Convention calls for countries to develop plans, programs, and policies for conservation and sustainable use,<sup>19</sup> to conduct inventory and monitoring of biodiversity,<sup>20</sup> and to promote *in situ* and *ex situ* conservation.<sup>21</sup> Countries are

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see also S. EXEC. DOC. NO. 30, 103d Cong., 2d Sess. 2-25 (1994) (interpretive statement of the United States).

12 CBD, *supra* note 2, arts. 3-7.

13 UNITED NATIONS ENVIRONMENT PROGRAMME, *List of Ratifications*, *supra* note 10.

14 *Montreal Named Site of Biodiversity Convention Secretariat*, ECO-LOG WK., Nov. 24, 1995, available in WESTLAW, 1995 WL 10729366.

15 UNITED NATIONS ENVIRONMENT PROGRAMME, *Biodiversity Secretariat Open for Business in Montreal*, UNEP PRESS RELEASES, Feb. 1996, available on the World Wide Web at <http://www.unep.ch/bio/pr2-96.html>.

16 Convention on Biological Diversity, *supra* note 2, art. 1.

17 *Id.*

18 *Id.* art. 3.

19 *Id.* art. 6.

20 *Id.* art. 7.

21 *Id.* arts. 8-9.

directed to analyze and minimize the impact of development on biodiversity,<sup>22</sup> and to conduct research, training and education in relevant areas.<sup>23</sup> [10]

Article 15 directs countries to facilitate access, not to "shut the greenhouse door."<sup>24</sup> It states that access shall be on mutually agreed terms, and subject to the prior informed consent of the contracting party (the signatory nation).<sup>25</sup> Article 16 contemplates the transfer of relevant technology to countries providing genetic resources on mutually agreeable terms.<sup>26</sup> Article 19 includes further directives about the transfer of biotechnology.<sup>27</sup> [11]

President Clinton's interpretive statement for the United States made clear the view that the CBD does not require private companies to accept anything other than mutually agreeable terms;<sup>28</sup> rather, the CBD requires governments to promote relevant transfers.<sup>29</sup> Examples of relevant biotechnology transfers in the United States include the International Cooperative Biodiversity Groups program, and the U.S. Agency for International Development-funded Biodiversity Conservation Network grant program. Both fund consortia of conservation groups, local representatives, collectors, and industry, and involve technology transfer.<sup>30</sup> [12]

Other provisions of the CBD promote exchange of information and technical cooperation.<sup>31</sup> The remaining articles establish mechanisms for financing and

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<sup>22</sup> *Id.* arts. 10, 14.

<sup>23</sup> *Id.* arts. 12-13.

<sup>24</sup> *Id.* art. 15.

<sup>25</sup> *Id.*

<sup>26</sup> *Id.* art. 16.

<sup>27</sup> *Id.*

<sup>28</sup> See Message from the President of the United States Transmitting the Convention on Biological Diversity, June 4, 1993, S. TREATY DOC. NO. 20, 103d Cong., 1st. Sess. (1993) (letter of submittal from the President).

<sup>29</sup> Convention on Biological Diversity, *supra* note 2, art. 19.

<sup>30</sup> See Francesca T. Grifo, *Chemical Prospecting: An Overview of the International Cooperative Biodiversity Groups Program*, in EMERGING CONNECTIONS: BIODIVERSITY, BIOTECHNOLOGY, AND SUSTAINABLE DEVELOPMENT IN HEALTH AND AGRICULTURE, PROCEEDINGS OF THE PAN AMERICAN HEALTH ORGANIZATION CONFERENCE, SAN JOSE, COSTA RICA 1 (Julie Feinsilver, ed. 1994); see also Joseph T. Baker et al., *Natural Product Drug Discovery and Development: New Perspectives on International Collaboration*, 58 J. NAT. PRODS. 1325, 1334 (1995).

<sup>31</sup> Convention on Biological Diversity, *supra* note 2, arts. 17-18.

governance.<sup>32</sup> There are no mandatory sanctions; thus the only means of enforcement is via the moral persuasions of the signatory nations.<sup>33</sup> The Global Environment Facility of the United Nations Development Programme and the International Bank for Reconstruction and Development are designated as the temporary financial institutions for CBD implementation: a permanent institution will not be named until the Conference of the Parties designates an institutional structure.<sup>34</sup> [13]

The CBD has outlined a blue print for activity, but has failed to fully detail all necessary provisions. As one commentator has noted, "[t]he Convention's provisions establish minimum, not maximum standards. They are too general and limited to be final goals. Instead, they are starting points, seeds that must grow and reproduce."<sup>35</sup> In the end, many details must be worked out before the Convention can serve as a viable mechanism to promote biodiversity goals. These details require action at the national level. [14]

## B. *The Convention on Global Climate*

The Convention on Global Climate includes provisions directed to reducing greenhouse gases such as carbon dioxide.<sup>36</sup> One way to accomplish this is by conservation of forest cover,<sup>37</sup> and efforts are underway to implement international arrangements to reduce carbon dioxide by preserving forests.<sup>38</sup> One such arrangement is for industrialized nations to buy credits from countries that set aside forests for conservation instead of destruction. [15]

## C. *Agenda 21*

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<sup>32</sup> *Id.* arts. 20-42.

<sup>33</sup> June Starr & Kenneth C. Hardy, *Not by Seeds Alone: The Biodiversity Treaty and the Role for Native Agriculture*, 12 STANFORD ENVTL. L. J. 85, 107 (1993).

<sup>34</sup> Convention on Biological Diversity, *supra* note 2, art. 39; see also Christine T. Tjandraningsih, *Biodiversity Conference Likely to See Clash of Views*, Kyodo News Service, Japan Economic Newswire, Nov. 5, 1995, available in LEXIS, World Library, ALLWLD file.

<sup>35</sup> David Downes, *Biodiversity Symposium: The Convention on Biological Diversity: Seeds of Green Trade?*, 8 TUL. ENVTL. L.J. 163, 167 (1994).

<sup>36</sup> United Nations Conference on Environment and Development: Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 849 (1992).

<sup>37</sup> *Id.* art. 4.

<sup>38</sup> See, e.g., Asia Pacific Leaders' Conference on Climate Change, Feb. 20, 1995, available in WESTLAW, Intlenvl Database, 95 WL 795741.

Agenda 21,<sup>39</sup> signed at the 1992 UNCED Rio Conference, contains several undertakings that guide nations in implementing legislation relevant to bioprospecting.<sup>40</sup> Section 15 calls for governments to help source countries and their people share the benefits of biotechnological development and commercial utilization of genetic resources.<sup>41</sup> It specifically refers to protection of indigenous and traditional knowledge,<sup>42</sup> presumably through some sort of intellectual property rights. Section 16 relates primarily to biotechnology safety issues,<sup>43</sup> but also supports intellectual property rights,<sup>44</sup> including farmers' and breeders' rights.<sup>45</sup> Section 26 directs member states to adopt policies and laws that protect indigenous intellectual and cultural property.<sup>46</sup> Section 34 relates to technology transfer and also refers to the need to protect intellectual property rights.<sup>47</sup> [16]

D. *The General Agreement on Tariffs and Trade*

The Uruguay Round of trade negotiations, sponsored by the General Agreement on Tariffs and Trade ("GATT"),<sup>48</sup> concluded April 15, 1994 with the signing of several multilateral trade agreements.<sup>49</sup> These agreements establish a new World Trade Organization ("WTO") to replace the GATT Secretariat,<sup>50</sup> provide

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<sup>39</sup> Agenda 21, U.N. Conference on Environment and Development, U.N. Doc. A/CONF.151/26/Rev.1 (1992).

<sup>40</sup> *Id.*

<sup>41</sup> *Id.* § 15.

<sup>42</sup> *Id.* § 17.

<sup>43</sup> *Id.*

<sup>44</sup> *Id.* § 16.

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> *Id.* § 26.

<sup>48</sup> General Agreement on Tariffs and Trade, *opened for signature Apr. 15, 1994, in GATT Secretariat, The Results of the Uruguay Round of Multilateral Trade Negotiations 21, GATT Sales No. 1994-4 (1994).*

<sup>49</sup> See Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, 33 I.L.M. 1143. The "Results" of the Uruguay Round include the "Agreement Establishing the World Trade Organization," which includes all Multilateral Trade Agreements, the "Ministerial Declarations and Decisions," and the "Understanding on Commitments in Financial Services."

<sup>50</sup> *Id.*

additional restrictions on non-tariff trade barriers, and set new standards for intellectual property protection.<sup>51</sup> [17]

The intent of the new agreements is to empower the WTO to restrict a nation's ability to impose export and import barriers.<sup>52</sup> Environmentalists have raised concerns that the WTO will not permit nations to restrict importation of goods based on how they were produced,<sup>53</sup> and thus it could be considered an unfair trade practice to ban a product on grounds that it was obtained unsustainably. This concern finds support in the so-called Tuna Dolphin case, in which a GATT panel held that the United States could not ban the importation of Mexican tuna that was caught using practices that kill dolphins.<sup>54</sup> [18]

Despite the outcry that it raised in the environmental community, the significance of the Tuna Dolphin panel decision may have been overstated. First, the decision was never actually issued as a formal opinion, because Mexico and United States turned to negotiation instead.<sup>55</sup> Second, United States labeling laws were not affected, so it is permissible to label tuna "dolphin-friendly."<sup>56</sup> [19]

Applying these considerations, it may be difficult in the biodiversity prospecting context to restrict trade in natural products such as specimens, samples, and extracts harvested in an inappropriate manner. Restrictions (a) based on the characteristics of sustainably obtained products themselves, such as more precisely identified products, or those collected from a plentiful source, or (b) requiring appropriate labeling of sustainably and non-sustainably produced goods, are more likely to pass muster under GATT. [20]

## E. *Intellectual Property Treaties and Agreements*

### 1. Trade-Related Aspects of Intellectual Property Rights

<sup>51</sup> *Id.* See also Note, *Developing Countries*, 108 HARV. L. REV. 1715, 1715-1724 (1995).

<sup>52</sup> General Agreement on Tariffs and Trade—Multilateral Trade Negotiations (The Uruguay Round): Agreement Establishing the Multilateral Trade Organization (World Trade Organization), Dec. 5, 1993, art. III, 33 I.L.M. 13 (1994).

<sup>53</sup> THE OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE, THE GATT URUGUAY ROUND AGREEMENTS: REPORT ON ENVIRONMENTAL ISSUES 60 (Aug. 1994).

<sup>54</sup> See Don Mayer & David Hoch, *International Environmental Protection and the GATT: The Tuna/Dolphin Controversy*, 31 AM. BUS. L.J. 187, 189 (1993).

<sup>55</sup> *Id.* at 218.

<sup>56</sup> See *id.* at 214.

The agreement under GATT on Trade Related Aspects of Intellectual Property Rights ("TRIPS")<sup>57</sup> requires nations to meet minimum standards for protecting patents, copyrights, trademarks, and trade secrets.<sup>58</sup> It incorporates provisions of the Paris Convention, the Berne Convention, and other international intellectual property treaties.<sup>59</sup> It is based on the recognition that failure to provide adequate and effective intellectual property protection is a barrier to legitimate trade.<sup>60</sup> The agreement extends national treatment and most-favored nation treatment to countries with intellectual property protection, and restricts compulsory licensing.<sup>61</sup>

Depending on their economic status, developing nations are allowed up to ten years to come into compliance with TRIPS.<sup>62</sup> Importantly, the TRIPS agreement allows some flexibility in how to meet standards and whether to exceed them. Bilateral negotiations may force many countries to accelerate their intellectual property reform under TRIPS.<sup>63</sup> Countries looking at implementation of both TRIPS and the CBD should examine how the two sets of laws interact with each other. For example, a country interested in promoting biodiversity prospecting should consider greater patent protection for biotechnology inventions than TRIPS requires. It should also consider enacting such legislation now rather than waiting the allowed five or ten years. [22]

The United States Trade Representative is exerting pressure through bilateral agreements for stronger, earlier protection than that required by TRIPS.<sup>64</sup> The United States Agency for International Development ("USAID") is also being enlisted to provide assistance in implementing stronger intellectual property rights laws:<sup>65</sup> bills have been introduced in Congress to require USAID and the Patent and

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<sup>57</sup> Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, GATT Doc. MTN/FAII - A1C, reprinted in 33 I.L.M. 1197 (1994) [hereinafter TRIPS Agreement].

<sup>58</sup> *Id.*

<sup>59</sup> *Id.* art. 1(3).

<sup>60</sup> *Id.* preamble.

<sup>61</sup> *Id.* arts. 3, 4, 21.

<sup>62</sup> *Id.* arts. 65, 66.

<sup>63</sup> *Id.* art. 24.

<sup>64</sup> United States Trade Representative, *Announcement on Foreign Government Procurement (Title VII) and Intellectual Property Protection (Special 301)*, 12 INT'L TRADE REP. 791 (BNA) (May 3, 1995)

<sup>65</sup> 19 U.S.C. § 2171(d)(1)(B) (1994).

Trademark Office ("PTO") to provide training and technical assistance to developing countries,<sup>66</sup> and to tie foreign aid to progress on intellectual property.<sup>67</sup> [23]

## 2. Patent, Copyright, and Trademark Conventions

The Paris Convention of 1883 provides that signatories must accord foreign patent applicants and owners the same treatment and rights as domestic patentees.<sup>68</sup> The century-old reciprocity required under the Paris Convention is still the only system approaching substantive world-wide patent rights at the present time. The Patent Cooperation Treaty provides a procedure for filing a single application that can then be considered independently by most national patent offices.<sup>69</sup> No substantive international intellectual property rights are granted under the Paris Convention, however. [24]

The Berne Convention of 1886 establishes international standards for copyright protection. The Convention stipulates that member nations must provide protection for all copyrighted material, with minimal requirements for notice and registration,<sup>70</sup> making copyright the simplest universal intellectual property rights system in the world. [25]

The Madrid Convention is a preliminary agreement to standardize trademark practice around the world.<sup>71</sup> It provides procedural advantages, but does not create a worldwide trademark right,<sup>72</sup> and prosecution still proceeds through individual

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<sup>66</sup> H.R. 4239, 103d Cong., 2d Sess. § 1 (1994) (referred to the House Foreign Affairs Subcommittee, where it received no action).

<sup>67</sup> S. 2041, 103d Cong., 2d Sess. § 4 (1994) (referred to the Senate Finance Committee, where it received no action).

<sup>68</sup> Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, 13 U.S.T. 1, 828 U.N.T.S. 107, as revised at the Stockholm Revision Conference, July 14, 1967, 21 U.S.T. 1538, 828 U.N.T.S. 305.

<sup>69</sup> Patent Cooperation Treaty, June 19, 1970, 28 U.S.T. 7645, T.I.A.S. No. 8733.

<sup>70</sup> Berne Convention for the Protection of Literary and Artistic Works of Sept. 9, 1886, as revised, July 24, 1971, art. 5., S. TREATY DOC. NO. 27, 99th Cong. 1st Sess. (1971).

<sup>71</sup> Madrid Agreement Concerning the International Registration of Marks, Apr. 14, 1891, as revised, July 14, 1967, 828 U.N.T.S. 389. *See also* Draft Regulations Under the Madrid Agreement, WIPO Doc. GT/PM/VI/2 (Mar. 8, 1994).

<sup>72</sup> Madrid Agreement, *supra* note 71, art. 4.

<sup>73</sup> *Id.* art. 1

national offices.<sup>73</sup> Because the United States is not yet a party to the Convention, it is of little domestic significance.<sup>74</sup> [26]

### 3. The World Intellectual Property Organization

The World Intellectual Property Organization (“WIPO”) was established by convention in 1967,<sup>75</sup> and became a United Nations specialized agency in 1974.<sup>76</sup> Its membership includes over 120 countries.<sup>77</sup> The organization’s purpose is to promote the international protection of intellectual property and to facilitate international transfers of technology.<sup>78</sup> To serve this goal, WIPO administers several multi-lateral intellectual property treaties, including the Paris Union, the Patent Cooperation Treaty, and the Berne Convention.<sup>79</sup> WIPO’s headquarters are located in Geneva, Switzerland.<sup>80</sup> [27]

#### F. *The Rights of Indigenous Peoples*

There is a strong movement to establish some form of protection for the cultural and intellectual creations of indigenous peoples. This effort was accelerated by the United Nations' designation of 1993 as the Year of the World's Indigenous Peoples.<sup>81</sup> This movement has largely been spear-headed by indigenous peoples themselves, in conjunction with social scientists and human rights activists. So far, there appears to be a broad consensus that indigenous peoples' traditional knowledge and creations should be protected, and there is a rapidly growing body of

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<sup>74</sup> Implementing legislation was introduced in the 104th Congress, but no final action was taken on it. The Madrid Protocol Implementation Act, H.R. 1270, 104th Cong., 1st Sess. (1995).

<sup>75</sup> Convention Establishing the World Intellectual Property Organization, July 14, 1967, 21 U.S.T. 1749, 828 U.N.T.S. 3

<sup>76</sup> WIPO (Description of Organization), available on the World Wide Web at [http://ra.irv.uit.no/trade\\_law/i\\_p/wipo/art/wipo.html](http://ra.irv.uit.no/trade_law/i_p/wipo/art/wipo.html).

<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

<sup>79</sup> *Id.*

<sup>80</sup> *Id.*

<sup>81</sup> *International Year of the World's Indigenous Peoples, 1993*, U.N. General Assembly Resolution, 47 Sess., U.N. Doc. A/RES/47/75 (1992).

suggestions as to the possible sources of protection for indigenous intellectual property rights.<sup>82</sup> [28]

Through instruments such as the June 1993 Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples,<sup>83</sup> tribal delegates and representatives of indigenous peoples have asserted the right of self-determination and ownership of their cultural property.<sup>84</sup> Similar declarations have been made by many other indigenous communities.<sup>85</sup> [29]

The Mataatua Declaration directs indigenous peoples to develop their own code of ethics for outside users, and to monitor legal and commercial activities related to cultural heritage.<sup>86</sup> It also states that existing mechanisms for protection are inadequate and suggests recognition of collective ownership, retroactive coverage, protection against debasement of culturally significant items, a co-operative rather than competitive framework, descendants as beneficiaries, and multi-generational coverage.<sup>87</sup> It further states that property rights for flora and fauna must recognize indigenous communities' guardianship;<sup>88</sup> that there should be a moratorium on commercialization until it is subject to indigenous management;<sup>89</sup> and that companies and private and governmental institutions should not experiment with or commercialize biogenetic resources without the consent of indigenous peoples.<sup>90</sup> [30]

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<sup>82</sup> See, e.g., INTELLECTUAL PROPERTY RIGHTS FOR INDIGENOUS PEOPLES: A SOURCEBOOK (Tom Greaves ed., 1994) (discussing the use of intellectual property rights for the protection of indigenous cultures).

<sup>83</sup> The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples, UN E/CN.4/Sub.2/AC.4/1993/CRP.5, July 26, 1993

<sup>84</sup> *Id.* § 2.1.

<sup>85</sup> Some examples include: the Declaration of Principles from the World Council of Indigenous Peoples (1984); the Kari-Oca Declaration and Indigenous Peoples Earth Charter from the Kari-Oca World Indigenous Conference (May 28, 1992); the Charter of the Indigenous-Tribal Peoples of the Tropical Forests (1992); the Recommendations from the Conference: Voices of the Earth: Indigenous Peoples, New Partners, and the Right to Self-Determination in Practice (Nov. 10-11 1993); and the Statement /Basic Points of Agreement from the COICA/UNDP Regional Meeting: Intellectual Property Rights and Biodiversity (Sept. 28-30 1994).

<sup>86</sup> Mataatua Declaration, *supra* note 83, § 1.3.

<sup>87</sup> *Id.* § 2.5.

<sup>88</sup> *Id.* § 2.6.

<sup>89</sup> *Id.* § 2.8.

<sup>90</sup> *Id.* § 2.9.

The Mataatua Declaration was the subject of a United Nations Economic and Social Council meeting and report.<sup>91</sup> Irene Daes has also performed a related study of the protection of cultural and intellectual property of indigenous peoples.<sup>92</sup> This study notes the near absence of participation of indigenous peoples and their political leadership in bioprospecting agreements.<sup>93</sup> The study concludes with a recommendation that alternate forms of protection should be established to protect the cultural property and technology of indigenous groups. [31]

In his proposed "A Covenant on Intellectual, Cultural, and Scientific Property: A Basic Code of Ethics and Conduct for Equitable Partnerships Between Responsible Corporations, Scientists, or Institutions, and Indigenous Groups," the anthropologist Darrell Posey listed several international instruments that provide a basis for what he now calls "Traditional Resource Rights."<sup>94</sup> [32]

Local communities and indigenous peoples generally have two types of rights at stake in their relationships with biodiversity prospectors: (1) the right to control their land and the natural resources on those lands,<sup>95</sup> and (2) the right to control, and receive benefits from, the dissemination and use of their knowledge.<sup>96</sup> Of primary importance to indigenous peoples and local communities is the right to self-determination and the establishment of land and resource rights. To meet these ends, traditional knowledge would need to be recognized as an intellectual creation

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91 UN E/CN.4/Sub.2/1993/29, Aug. 23, 1993.

92 UN E/CN.4/Sub.2/1993/28, July 28, 1993.

93 *Id.* at 24-25.

94 Darrell A. Posey, *International Agreements and Intellectual Property Right Protection for Indigenous Peoples*, in *INTELLECTUAL PROPERTY RIGHTS FOR INDIGENOUS PEOPLES: A SOURCEBOOK* 244 (Tom Greaves ed., 1994). Some of the international organizations and agreements already providing a basis for traditional resource rights include materials developed by the International Labor Organization ("ILO Convention 169"), the 1948 Universal Declaration of Human Rights ("UDHR"), the UN Economic and Social Council ("ECOSOC"), the UN Educational, Scientific and Cultural Organization ("UNESCO"), and the Food and Agriculture Organization ("FAO"). *Id.* at 227-232. In 1985, UNESCO and WIPO produced the Model Provisions for National Laws on Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions. Although traditional knowledge is not explicitly referred to in the model provisions, some have proposed that a national law building on the provisions could include traditional knowledge of genetic resources as "knowledge of folklore" to be protected. See MICHAEL FLITNER ET AL., *REVIEW OF NATIONAL ACTION ON ACCESS TO GENETIC RESOURCES AND IPRS ON SEVERAL DEVELOPING COUNTRIES* 8 (World Wildlife Fund Int'l Oct. 1995).

95 S. A. Laird, *Natural Products and the Commercialization of Traditional Knowledge*, in *INTELLECTUAL PROPERTY RIGHTS FOR INDIGENOUS PEOPLES: A SOURCEBOOK* 145, 150 (Tom Greaves ed., 1994).

96 Amy E. Carroll, Note, *Not Always the Best Medicine: Biotechnology and the Global Impact of U.S. Patent Law*, 44 AM. U. L. REV. 2433, 2478-79 (1995).

of a particular community, rather than the "common heritage of mankind," and communities would need to be afforded control over the process by which their knowledge is recorded and used. This would include allowing them to choose whether to participate in information and technology transfer, and what type of benefits to return to the community. [33]

There are a number of international and national laws that could be used to protect the interests of local communities, including human rights laws,<sup>97</sup> environmental laws, intellectual property laws,<sup>98</sup> transnational business regulations,<sup>99</sup> and national or local tort<sup>100</sup> and property laws.<sup>101</sup> In each situation, a fundamental choice must be made between public or private law, national or international law, and state responsibility or corporate/individual liability. [34]

In many cases, western systems of law may not be appropriate to a particular community, and may not best protect communal systems of knowledge.<sup>102</sup> A

<sup>97</sup> See, e.g., UNITED NATIONS COMMISSION ON HUMAN RIGHTS SUB-COMMISSION ON PREVENTION OF DISCRIMINATION AND PROTECTION OF MINORITIES, DRAFT UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES, 34 I.L.M. 541 (1995).

<sup>98</sup> *Id.* at 542. See generally Teresa De Turrís, *Copyright Protection of Privacy Interests in Unpublished Works*, 2 ANN. SURVEY OF AM. L. 277 (1994) (discussing the impact of intellectual property law on local communities).

<sup>99</sup> Lester I. Yano, *Protection of the Ethnobiological Knowledge of Indigenous Peoples*, 41 U.C.L.A. L. REV. 443 (1993). But see Michael H. Shuman, *Gattzilla v. Communities*, 27 CORNELL INT'L L.J. 527, 530 (arguing that GATT "systematically strips communities of powers they might otherwise use to protect themselves against the adverse effects of the global economy").

<sup>100</sup> RESTATEMENT (SECOND) OF TORTS § 46 (1986 APP.) (using community standards used to determine harm); RESTATEMENT (SECOND) OF TORTS § 222A (defining conversion); RESTATEMENT (SECOND) OF TORTS § 223 (identifying ways of committing conversion); RESTATEMENT (SECOND) OF TORTS § 226 (defining conversion by destruction or alteration).

<sup>101</sup> 16 U.S.C. § 470 (1994) (providing for the conservation of historic sites, buildings, objects, and antiquities); see also Michael J. Huft, *Indigenous Peoples and Drug Discovery Research: A Question of Intellectual Property Rights*, 89 NW. U. L. REV. 1678, 1726 (1995).

<sup>102</sup> See, e.g., The Bellagio Declaration, Cultural Agency/Cultural Authority: Politics and Poetics of Intellectual Property in the Post-Colonial Era, Mar. 3, 1994 (on file with the authors) (acknowledging the difficulties of applying Western legal protection of individual rights to the protection of rights of entire communities).

<sup>103</sup> In 1988, the Proyecto de Estudio para el Manejo de Areas Silvestres de Kuna Yala (The Study Project for the Management of the Forested Area of the Kuna Territory, or PEMASKY) and la Asociacion de Empleados Kunas (A.E.K.) produced the *Programma de Investigacion Montioreo y Cooperacion Cientifica: Informacion para los Investigadores* (Research Program Scientific Monitoring and Cooperation: Information for Researchers) (on file with the authors). This publication grew out of the Kuna initiative, launched in 1983, to set aside a 60,000 hectare forest as a nature reserve, and to integrate traditional Kuna and Western scientific knowledge.

number of communities, such as the Kuna in Panama,<sup>103</sup> the Awa in Ecuador,<sup>104</sup> the Inuit Tapirisat in Canada,<sup>105</sup> and the Zuni in the United States,<sup>106</sup> have designed research agreements, codes of conduct for visiting researchers, and commercial agreements, all requiring respect for cultural norms, prior informed consent, and technology and expertise transfer.<sup>107</sup> [35]

Existing intellectual property laws are generally directed to protecting new creations, and are therefore inapplicable to traditional (existing) knowledge. Such laws are also built upon foundations of individual or corporate rights, and may be difficult to apply to a vaguely defined and fluid group such as a local community. Land use laws may be more readily adapted to protect access, but are inadequate to protect knowledge.<sup>108</sup> A significant amount of effort will be required to find appropriate ways to recognize traditional knowledge and the creativity of indigenous peoples. [36]

### III. THE ROLE OF NATIONAL LEGISLATION FOR BIODIVERSITY PROSPECTING IN SOURCE COUNTRIES

#### A. *General Considerations*

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<sup>104</sup> The Awa live in the biologically diverse Province of Cachi, in Ecuador. The Awa Federation is a legal institution that administers the land (1,000 hectares) held under communal title by the Awa, and that makes collective decisions regarding its use. The Federation also works on the development of socio-economic infrastructure, including two bilingual schools. In 1988, the Awa acquired legal recognition as citizens and communal title to their land, and since then have proceeded to claim and demarcate their territory, including planing a 50 meter-wide border with fruit trees, and expelling colonist settlers. In April 1993, the Awa Federation signed its first convention with a research institution (the New York Botanical Garden). *Reglamentos para la Realizacion de Estudios Cientificos en el Territorio de la Federacion Awa (Regulation of Scientific Research in Awa Federation Territory)* (on file with the authors).

<sup>105</sup> The Inuit Tapirisat of Canada produced a background paper which outlined conditions and principles for access to knowledge and control over the research process. *Negotiating Research Relationships With the North* (on file with the authors).

<sup>106</sup> See Daniela Soleri et al., *Gifts from the Creator: Intellectual Property Rights and Folk Crop Varieties*, in *INTELLECTUAL PROPERTY RIGHTS FOR INDIGENOUS PEOPLES: A SOURCEBOOK 19, 21* (Tom Greaves ed., 1994).

<sup>107</sup> See generally S.A. Laird, *Research Agreements for Projects, Institutions and Communities in tropical Countries* (World Wildlife Fund Int'l 1995); S.A. Laird, *Commercial Agreements for Biodiversity Prospecting* (World Wildlife Fund Int'l 1995).

<sup>108</sup> See Dinah Shelton, *Fair Play, Fair Pay: Strengthening Local Livelihood Systems Through Compensation for Access to and Use of Traditional Knowledge and Biological Resources* (World Wildlife Fund Int'l 1993).

Bioprospecting may be subject to a wide variety of national laws in each country where it takes place. Contract law defines the formation, scope and enforcement of biodiversity prospecting agreements. Intellectual property law establishes the rights of local and foreign inventors and creators to protect their creations from competitors. Environmental laws may require analysis of the environmental impact of commercial activity such as bioprospecting. Conservation laws may set aside certain tracts of land and ecosystems for special protection. Natural resources laws typically regulate the extraction of timber, minerals and oil, and hunting and fishing. Other laws may protect the cultural heritage or antiquities of a nation, preventing unauthorized export of traditional knowledge. [37]

## B. *Intellectual Property Rights*

Intellectual property rights include a wide variety of laws intended to promote technical ingenuity and cultural creativity by granting private ownership rights.<sup>109</sup> These include national laws regarding patents, copyrights, trademarks, trade secrets, and related subjects.<sup>110</sup> [38]

### 1. General Rationale and Criticisms

Intellectual property laws may also serve as tools to promote conservation of biodiversity while promoting sustainable development and the equitable sharing of benefits.<sup>111</sup> A summary overview of the principal issues involved in the interaction of biodiversity prospecting and intellectual property rights follows. [39]

It is a testament to the vigor and adaptability of intellectual property that people are looking to intellectual property rights systems as instruments of environmental conservation and advancement of human rights, in addition to their traditional role of fostering innovation, creativity, and commerce.<sup>112</sup> The public policy rationale for intellectual property rights laws, which usually are complicated and expensive to administer and enforce, is generally that each

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<sup>109</sup> See Michael A. Gollin, *Using Intellectual Property to Improve Environmental Protection*, 4 HARV. J. L. & TECH. 193, 199 (1991) [hereinafter Gollin, *Using Intellectual Property*].

<sup>110</sup> *Id.* at 199-200.

<sup>111</sup> Michael A. Gollin, *An Intellectual Property Rights Framework for Biodiversity Prospecting*, in BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 159, 163 (Walter V. Reid et al. eds., 1993) [hereinafter Gollin, *IPR Framework*].

<sup>112</sup> “Intellectual property laws, typically viewed only as engines of industrial and cultural progress, have recently received attention as tools for achieving the broader goals of conserving biodiversity while promoting sustainable development and the equitable sharing of the resulting benefits.” *Id.*

intellectual property right helps society fulfill several of the following somewhat overlapping policy goals:<sup>113</sup>

- *Provide incentives for people to be creative:* The prospect of exclusive rights or a competitive advantage secured by an intellectual property right is a potent motivator to encourage people to engage in creative endeavors.
- *Reward creativity:* Linked with the incentive function, rewarding people for their completed creative acts encourages them and others to do more.
- *Allow individuals to own the products of their creative "sweat of the brow:"* If a person labors to produce a creative output, society may find it fair to grant that person some form of ownership, instead of allowing the product to go into the public domain, thereby leaving the laborer empty-handed.
- *Satisfy principles of moral or natural rights:* Artists, inventors, and other creative people often feel a sense of parenthood toward their work, a relationship that goes beyond tangible property rights, and society can support this relationship by imposing restrictions on the use or destruction of intellectual property.<sup>114</sup>
- *Promote public disclosure of new information:* Sharing of new information is enhanced if people are encouraged to disclose it and can do so on their own terms.<sup>115</sup>
- *Facilitate technology transfer:* By establishing assignable property rights, intellectual property laws allow people to buy, sell, lease, or trade intangible property as they would real or tangible property.<sup>116</sup>
- *Facilitate technology development:* Development and dissemination of technology requires investment, and intellectual property rights encourage investment by offering investors a way to obtain financial returns.

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113 See generally Pauline Newman, Judge Pauline Newman Luncheon Speech to ABA-IPL Section, 48 PAT. TRADEMARK & COPYRIGHT J. 277 (BNA 1994).

114 For example, the Copyright Act prohibits destruction or modification of works of visual art. See 17 U.S.C. § 106A (1988 & Supp. V 1993).

115 Patent laws require full disclosure of inventions; trade secret laws allow people to share confidential information in their work. Without such laws, people would keep inventions secret and closely held.

116 DONALD S. CHISUM & MICHAEL A. JACOBS, UNDERSTANDING INTELLECTUAL PROPERTY LAW § 1(C) (Matthew Bender 1992).

- *Implement industrial policy:* By establishing, strengthening, weakening, or eliminating intellectual property protection, industries and activities can be supported or discouraged. [40]

Intellectual property rights have been subject to many criticisms, particularly when applied to biological resources, indigenous knowledge, and national heritage. Some criticisms are that they:

- *Keep technology out of the public domain:* This typical characteristic of intellectual property rights allows the owner to obtain a competitive advantage, and is critical to serving the public policy goals outlined above.
- *Increase the costs of technologies:* As with the previous point, the increased cost to the consumer is an instrument of incentive and reward to the intellectual property owner.
- *Create monopolies:* This is similar to the previous point, but also concerns economic centralization.
- *Concentrate industry on protectable, rather than environmentally or socially appropriate chemicals, cultivars, or other species:* A technology subject to intellectual property protection is more likely to be commercialized and disseminated than a public domain technology, because of the prospect for higher economic return.
- *Push people from cooperation into competition:* At the individual level, intellectual property rights can be tools for commercialism, which can cause biodiversity providers, collectors, and biotechnology researchers to deal more sharply with each other and their competitors than they would in a mere academic relationship. At the societal level, however, the goal of advancing technology may be better served, on balance, by such competition.
- *Are expensive to obtain and maintain:* Although copyrights and trade secrets are relatively simple to protect, patents are expensive and complex, and therefore poor and unsophisticated individuals or organizations may be put at a disadvantage compared to multinational corporations and other biodiversity end users.
- *Require elaborate national legal and regulatory institutions:* A patent and trademark office, copyright registry, and a court system able to handle intellectual property cases all require substantial commitments of national funds and expertise.

- *May conflict with moral views opposing property rights in innovations involving living organisms, medical inventions,<sup>117</sup> and traditional knowledge.<sup>118</sup> [41]*

These criticisms bear on the political process of legal reform of intellectual property rights, and can shape the outcome of a system. Base-line standards for the principal types of intellectual property rights are already established by the TRIPS agreement, however, and it will be very difficult for signatory countries to avoid those standards in domestic legislation.<sup>119</sup> [42]

Applying these issues to biodiversity prospecting, intellectual property rights can also promote ingenuity in finding, identifying, developing, and commercializing genetic and biochemical products. A principal concern should be whether a particular country's intellectual property laws are adequate to promote a sustainable biodiversity prospecting trade, or whether reform is necessary. For example, patents may cover too much or too little, and their duration may be longer or shorter than ideal. There may be no legal recourse for violating a trade secrecy agreement, or there may be too many people claiming rights to the same invention. [43]

Countries reform their intellectual property laws as their technology and cultural practices change. It is important for those involved with biodiversity prospecting to understand the basic sources of intellectual property law, and their application to biodiversity conservation and development. It is equally important to remember that "the devil is in the details" and that generalizations without closer examination are suspect. It is simplistic to say that intellectual property laws are "good" or "bad" in general, without reference to a particular law as applied in a particular situation. [44]

The aspects of biodiversity to which intellectual property laws may be applied include: an ecosystem; the species comprising it; knowledge pertaining to a habitat or species; inventories of plant, animal, and microbe species and their place and time of collection; information about a species' usefulness; extracts and purified compounds; methods of preparing such materials; and methods of administering them. Protection may also apply to seeds, plasmids, and isolated genes, pure-bred or hybrid crops or animals, synthetic derivatives of compounds and genetic material, and products prepared from such compounds. These components may be important in medicine, agriculture, or industry. Cultural resources such as traditional

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117 See, e.g., Wendy W. Yang, Note, *Patent Policy and Medical Procedure Patents: The Case for Statutory Exclusion From Patentability*, 1 B.U. J. SCI. & TECH. L. 5 (1995).

118 See Sheldon, *Fair Pay, Fair Play*, *supra* note 108.

119 See Carlos Alberto Primo Braga, *The Economics of Intellectual Property Rights and the GATT: A View from the South*, 22 VAND. J. TRANSNAT'L L. 243, 250 (1989).

knowledge, art, and music may also be protected. The basic types of intellectual property are described below. [45]

## 2. Trade Secrets

Under TRIPS, member nations must protect trade secrets.<sup>120</sup> Information is subject to protection if it (a) is secret in the sense that it is not generally known or accessible to persons who normally deal with that kind of information;<sup>121</sup> (b) has commercial value because it is secret;<sup>122</sup> and (c) has been subject to reasonable steps, under the circumstances, by the person lawfully in control of the information, to keep it secret.<sup>123</sup> [46]

Individuals and organizations may prevent information lawfully within their control from being disclosed to, acquired by, or used by others without consent in a manner contrary to honest commercial practices. "A manner contrary to honest commercial practices" is defined to mean at least breach of contract, breach of confidence, inducement to breach, and acquisition of information by individuals who knew or were grossly negligent in failing to know that such practices were involved in acquiring the information.<sup>124</sup> Governments are also required to protect the secrecy of undisclosed data regarding chemicals when the information is submitted to obtain marketing approval for pharmaceutical or agricultural products.<sup>125</sup> [47]

In practice, particular measures are necessary to establish a trade secret. For example, documents must be marked "CONFIDENTIAL" and separated; access to a building or plantation may be restricted; and any disclosure should be subject to a confidentiality agreement.<sup>126</sup> A trade secret may endure forever provided that the information, formula, or device remains secret.<sup>127</sup> The owner of a trade secret may

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<sup>120</sup> See TRIPS Agreement, *supra* note 57, art. 39.

<sup>121</sup> *Id.* art. 39(2).

<sup>122</sup> *Id.*

<sup>123</sup> *Id.*

<sup>124</sup> *Id.* art. 7(2).

<sup>125</sup> *Id.* art. 39(3).

<sup>126</sup> See *id.* art. 39(2); UNIFORM TRADE SECRET ACT § 1(4) (1985). For an overview of the maintenance of a trade secret through secrecy, see ROGER M. MILGRIM, MILGRIM ON TRADE SECRETS § 1.01[2] (1994).

<sup>127</sup> MILGRIM, *supra* note 126, § 1.03. A classic example is the formula for Coca-Cola. *Coca-Cola Bottling Co. v. Coca-Cola Co.*, 107 F.R.D. 288, 289, 294, 227 U.S.P.Q. (BNA) 18 (D.Del. 1985) (holding

license or assign the right to use the trade secret, subject to an agreement to keep the information secret.<sup>128</sup> [48]

Trade secrecy law may be difficult to apply to ethnobotanical knowledge. If an extractive technique and treatment method is handed down from generation to generation of traditional healers, it might be protectable. If the information is published by a researcher, government entity, or anyone else, however, the trade secret rights are permanently extinguished.<sup>129</sup> Thus, immeasurable damage to the legal rights of indigenous peoples may be caused by the careless publication of information that was learned in confidence. Prior informed consent should always be sought when indigenous knowledge is recorded, and the implications of publication should be made clear to all involved. [49]

### 3. Patents

A utility patent conveys from the government to an inventor the right, for a limited time of usually ten to twenty years, to exclude others from making, using, or selling an invention.<sup>130</sup> The subject matter of a patent may be a composition of matter, a method, or an apparatus.<sup>131</sup> [50]

The TRIPS Agreement contains detailed provisions regarding patent protection, and developing countries must come into compliance with TRIPS within five or ten years, depending on their current legal system.<sup>132</sup> Under TRIPS, member nations must make patents available for any invention that is new, useful, and nonobvious.<sup>133</sup> Countries must provide for the protection of plant varieties and microorganisms, but may otherwise exclude from patentability other plants and animals, biological processes for producing plants and animals, and methods for

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that the Coca Cola formulae are trade secrets that were necessary to resolve the issue of whether several products were covered by an agreement and thus were subject to discovery).

<sup>128</sup> See *K & G Oil Tool & Serv. Co. v. Gwaine and Galahad Fishing Tool Serv.*, 158 Tex. 594, 314 S.W.2d 782, 785-88, 790, *cert. denied*, 358 U.S. 898 (1958), *reh'g denied* 359 U.S. 921 (1959).

<sup>129</sup> See *Reddy Kilowatt, Inc. v. Mid-Carolina Elec. Corp.*, 240 F.2d 282, 287, 112 U.S.P.Q. (BNA) 194 (4th Cir. 1957).

<sup>130</sup> See 35 U.S.C. § 154 (1988).

<sup>131</sup> See 35 U.S.C. § 101 (1988).

<sup>132</sup> See TRIPS Agreement, *supra* note 57, art. 65.

<sup>133</sup> *Id.* art. 27(1) & n.5.

treating humans and animals.<sup>134</sup> At the time the TRIPS Agreement went into effect, there were about twenty countries that did not allow patents for pharmaceutical compounds, and about twenty that restricted patents for biotechnology products and processes.<sup>135</sup> This number should approach zero in the coming years. [51]

To obtain a patent, the inventor must submit an application describing the invention in a manner sufficiently clear and complete to enable a person skilled in the technology to carry out the invention.<sup>136</sup> If the patentee is successful, the term of a patent will last at least twenty years from the date the application is filed.<sup>137</sup> [52]

Patent laws usually require some inventive step.<sup>138</sup> Wild habitats, species, and raw biological materials cannot be patented, because they are not new, and they are "products of nature" falling outside most patent laws.<sup>139</sup> Indeed, some countries choose not to allow any plant and animal patents.<sup>140</sup> Other aspects of biodiversity from the above list can be protected by patents, however. For example, a purified compound, and methods of obtaining it and using it, might be new, nonobvious, and not products of nature, because compounds are not generally found in nature in their purified form.<sup>141</sup> Likewise, a microbe and genetic material will be subject to patent protection when the provisions of TRIPS are implemented.<sup>142</sup> [53]

From the perspective of providers of biological material, a key problem in patents related to biodiversity prospecting arises when a sample is obtained from a source country, and then extracted and studied elsewhere, leading to the discovery

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134 *Id.* art. 27(1).

135 Gerald J. Mossinghoff, *Research-Based Pharmaceutical Companies: The Need for Improvement of Patent Protection Worldwide*, 2 J.L. & TECH. 307, 323-24 (1987) (listing the twenty countries that restrict pharmaceutical patents: Bangladesh, Brazil, Chile, Colombia, Costa Rica, Ecuador, Egypt, Guatemala, India, Indonesia, Pakistan, Peru, Philippines, Portugal, Sri Lanka, Thailand, Turkey, Uruguay, Venezuela, and Yugoslavia); see also Gollin, *IPR Framework*, *supra* note 111, at 169.

136 See TRIPS Agreement, *supra* note 57, art. 29.

137 See *id.* art. 33.

138 See 35 U.S.C. § 103 (1988).

139 See Gollin, *IPR Framework*, *supra* note 111, at 168.

140 See Reid et al., *A New Lease on Life*, *supra* note 5, at 21-22.

141 See generally *In Re Bergy*, 565 F.2d 1031, 195 U.S.P.Q. (BNA) 344, (C.C.P.A. 1977) (finding that the fact that a biologically pure culture is alive does not remove it from categories of invention enumerated in section 101 of the Patent Act); see also Michael A. Gollin, *Patenting Recipes from Nature's Kitchen*, 12 BIO/TECHNOLOGY 406 (1994) [hereinafter Gollin, *Patenting Recipes*].

142 See TRIPS Agreement, *supra* note 57, art. 27(2).

of a new useful compound. Derivative products, analogs, and synthetics may be obtained, or new agricultural crops produced, and patents sought by the recipient of the materials to protect them.<sup>143</sup> Such patents, however, may be subject to the contractual obligations of a biodiversity prospecting agreement.<sup>144</sup> Patent disclosure rules may be interpreted to help ensure that the source or leads for these secondary products is identified. [54]

Although environmental impact assessments may be important at the points of collection and use of biological materials, it does not make administrative sense to include an environmental impact review in the process of obtaining a patent. Moreover, most patents are not used commercially, so it would be wasteful to routinely review their environmental impact as a condition of patentability.<sup>145</sup> Also, the expertise and public interest involved in determining patentability are far different from those relating to environmental impact. The two functions should, therefore, be kept separate in most cases. [55]

A patent on a purified compound, or a species of microbe or plant, or a new method, removes that new invention from the public domain.<sup>146</sup> Some people fear that as a result, farmers and local residents in developing countries will be precluded from using existing species or practicing traditional methods of agriculture.<sup>147</sup> To the contrary, while a properly issued patent covers the new innovative invention, the prior material remains available for use in the public domain.<sup>148</sup> The best way to prevent the creation of a monopoly over too broad an

<sup>143</sup> See, e.g., Tom Greaves, *IPR, A Current Survey*, in *INTELLECTUAL PROPERTY RIGHTS FOR INDIGENOUS PEOPLES: A SOURCEBOOK* 13 (Tom Greaves ed., 1994).

<sup>144</sup> *Id.* at 30.

<sup>145</sup> For instance, a series of germplasm preservation experiments was found not to constitute a federal program requiring an environmental impact statement. *Foundation on Economic Trends v. Lyons*, 943 F.2d 79, 86 (D.C. Cir. 1991). It probably will be even more difficult to argue that the granting of patents is a major federal action significantly affecting the environment.

<sup>146</sup> See 35 U.S.C. § 271 (1988). See also Gollin, *Patenting Recipes*, *supra* note 141, at 407.

<sup>146</sup> See TRIPS Agreement, *supra* note 57, art. 27.

<sup>147</sup> See Steven M. Rubin & Stanwood C. Fish, *Biodiversity Prospecting: Using Innovative Contractual Provisions to Foster Ethnobotanical Knowledge, Technology, and Conservation*, *COLO. J. INT'L ENVTL. L. & POL'Y* 23, 28 (1994).

<sup>148</sup> See *Mercoird Corp. v. Honeywell Co.*, 320 U.S. 680, 684 (1944). It is a common fallacy to believe that a patent removes prior technology from the public domain. See, e.g., Michael D. Lemonick et al., *Seeds of Conflict: Critics Say a U.S. Company's Patent on a Pesticide from an Indian Tree is "Genetic Colonialism,"* *TIME*, Sept. 25, 1995, at 50 (petition to revoke a patent on new insecticide extracted from neem trees was based on threat to farmers using crude extracts).

area is to ensure that each issued patent covers only the new aspects of an invention.<sup>149</sup> [56]

#### 4. Plant Breeders' Rights

New sexually reproduced plant varieties are subject to the 1961 International Union for the Protection of New Varieties of Plants ("UPOV").<sup>150</sup> A breeder may obtain exclusive rights to a novel plant variety if it is distinctive, uniform, and stable.<sup>151</sup> Plant breeders' rights are relevant to biodiversity prospecting in that a wild variety may be bred out for several generations and then protected.<sup>152</sup> In addition, TRIPS requires members to provide some form of plant variety protection.<sup>153</sup> Amendments to UPOV made in 1991 put plant breeders' rights at the discretion of contracting states. [57]

#### 5. Trademarks

Most countries provide some form of protection for trademarks. Under TRIPS, any mark distinguishing a person's goods or services from those of another is eligible for registration as a trademark.<sup>154</sup> The owner of a registered trademark may prevent others from using any mark that is identical or so similar as to cause a likelihood of confusion in the marketplace.<sup>155</sup> [58]

Certification marks and denominations of origin resemble trademarks in that they are affixed to goods and signify a certain quality.<sup>156</sup> Examples include the

<sup>149</sup> See 35 U.S.C. § 112 (1988).

<sup>150</sup> International Convention for the Protection of New Varieties of Plants, Dec. 2, 1961, as revised 33 U.S.T. 2703, 815 U.N.T.S. 89.

<sup>151</sup> See Michael A. Gollin, *The Convention on Biological Diversity and Intellectual Property Rights*, in BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 298, 301 (Walter V. Reid et al. eds., 1993) [hereinafter Gollin, CBD & IPR].

<sup>152</sup> See INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS, THE FIRST TWENTY-FIVE YEARS OF THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS, Dec. 6, 1961 - Dec. 6, 1986 (1987).

<sup>153</sup> For example, the United States provides protection of plant breeders' rights in 7 U.S.C. § 2402 (1988 & Supp. V. 1993).

<sup>154</sup> See TRIPS Agreement, *supra* note 57, art. 15.

<sup>155</sup> *Id.* art. 16.

<sup>156</sup> See J. THOMAS MCCARTHY, TRADEMARKS AND UNFAIR COMPETITION, § 19:32 (1984).

French system of Appellation Controllee,<sup>157</sup> the United States Good Housekeeping Seal,<sup>158</sup> the Rainforest Alliance Smart Wood Program,<sup>159</sup> and organic certifications.<sup>160</sup> These certifications differ from trademarks in that the certifying organization is independent from the entity marketing the product or service. Nations or regions should consider encouraging the establishment of certification standards that apply to sustainably harvested products, and to products from research conducted in a sustainable manner. This will include consideration of local economic and cultural concerns. [59]

## 6. Copyright

Copyright laws protect original works of authorship expressed in a tangible medium, but not the underlying ideas.<sup>161</sup> Copyright covers literary and artistic works and computer programs.<sup>162</sup> TRIPS articles 9-14 detail the minimum standards countries must apply. The term of a copyright is typically the life of an author plus fifty years.<sup>163</sup> [60]

Copyright protection applies to compilations of genetic data and biological information in various data banks, but will not apply to the data itself because it is not original to the author.<sup>164</sup> In other words, it would not be a copyright infringement to reorganize data from a number of sources in a new compilation, but it probably would be an infringement to copy a compilation outright. The protection of copyright law thus provides a means to commercialize information relevant to biodiversity prospecting by means of a private clearinghouse or the like. [61]

### C. Sui Generis Rights

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<sup>157</sup> See generally Ben Giliberti, *A Fresh, Fashionable Italian*, THE WASHINGTON POST, Aug. 26, 1992, at E1; Jim Quinn, *The State's Case*, THE PHILADELPHIA INQUIRER, June 24, 1990, at 34.

<sup>158</sup> *Id.*; see also Stephen Advokat, *Do You Believe in These Seals?*, DETROIT FREE PRESS, Oct. 17, 1991, at 3F.

<sup>159</sup> See Terri Shaw, *Rain Forest Reprieve; Designers Are Switching to Ecologically Correct Woods*, THE WASHINGTON POST, Nov. 14, 1991, at T16.

<sup>160</sup> *Id.*

<sup>161</sup> See TRIPS Agreement, *supra* note 57, art. 10; see also 17 U.S.C. § 102.

<sup>162</sup> See TRIPS Agreement, *supra* note 57, arts. 9-14.

<sup>163</sup> See *id.* art. 12; 17 U.S.C. § 301(a).

<sup>164</sup> See 17 U.S.C. § 103; *Feist Publications, Inc. v. Rural Tel. Serv. Co. Inc.*, 499 U.S. 340, 347 (1991).

The foregoing represent established doctrines of intellectual property law. Only intellectual effort can be protected as intellectual property. Wild species and products existing in nature cannot.<sup>165</sup> A number of other systems have been proposed or implemented in some countries to provide incentives for biodiversity conservation.<sup>166</sup> [62]

The United Nations Environment Programme is seeking to develop a workable benefit sharing regime that would provide incentives for indigenous and local communities to explore, discover, inventory, conserve, and sustainably use biological resources.<sup>167</sup> A recent report notes that conventional intellectual property rights are designed to protect "readily identifiable, differentiated contributions to existing general knowledge."<sup>168</sup> The contribution of indigenous and local communities, in contrast, is often collective, acquired over generations, and acquired across national boundaries.<sup>169</sup> Thus, some other form of protection in addition to intellectual property laws may be required to fulfill the directives of the Convention on Biological Diversity. [63]

Farmers' rights are intended as a mechanism to return benefits to communities that have cultivated plants and bred animals incrementally over many generations, providing the groundwork for the principal commercially pervasive species. The system may be viewed as one that in effect taxes the wealthy and subsidizes farming communities. Others, however, see this as fair payment and compensation for farmers' contributions. Farmers' rights have not been recognized in any legal regime, due to ambiguity about what would be subject to protection, who would pay, and how proceeds would be distributed. [64]

A system of discoverers' rights has been proposed.<sup>170</sup> Such a system would not apply to traditionally recognized species, because there are likely to be multiple

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<sup>165</sup> See 35 U.S.C. § 101; 17 U.S.C. § 102; TRIPS Agreement, *supra* note 57, art. 10; see generally McCarthy, *supra* note 156, § 19.32.

<sup>166</sup> See Gollin, *IPR Framework*, *supra* note 111, at 178.

<sup>167</sup> The United Nations Environment Programme recently issued a call for papers to examine effective means of protecting and using traditional forest-related knowledge of indigenous people and local communities in an equitable sharing of benefits. Available on the Web at <http://www.unep.ch>. See also UNITED NATIONS ENVIRONMENT PROGRAMME, FARMERS' RIGHTS AND RIGHTS OF SIMILAR GROUPS, UNEP/CBD/IC/2/14 (1994).

<sup>168</sup> UNITED NATIONS ENVIRONMENT PROGRAMME, *supra* note 167, at 9.

<sup>169</sup> See Michael J. Huft, *Indigenous Peoples and Drug Discovery Research: A Question of Intellectual Property Rights*, 89 N.W. U. L. REV. 1678, 1700 (1995).

<sup>170</sup> David R. Downes, *New Diplomacy for the Biodiversity Trade: Biodiversity, Biotechnology, and Intellectual Property in the Convention on Biological Diversity*, 4 TOURO J. TRANSNAT'L L. 1, 34 (1993); See generally Gollin, *IPR Framework*, *supra* note 111, (proposing a system of *sui generis* rights).

discoverers of a particular species in different countries, and such rights might expropriate far more from the public domain than would be socially desirable. A system of rewarding discovery of new species will frequently benefit an outsider, not an indigenous or local person.<sup>171</sup> Thus, discoverers' rights are not yet a useful approach for conservation of biodiversity and fair sharing of benefits from its development. One commentator has proposed instead a series of instruments for compensating innovation at the traditional and local level that includes systems of registration, trust funds, and educational reforms.<sup>172</sup> [65]

The strongest system is one of access control. This takes a tangible property or environmental law approach instead of an intellectual property approach. Under the CBD, nations may condition access to their genetic resources on informed consent and other terms.<sup>173</sup> Access control is therefore relatively easy to implement and administer, and has the potential of capturing most aspects of biodiversity prospecting within enforceable contracts. [66]

To be useful in providing local incentives, however, the rights must be pushed down to the local level, rather than remaining in the exclusive control of the national government. Moreover, access control only applies to wild species and habitats.<sup>174</sup> Those plants and animals that have been removed to *ex situ* gene bank collections are exempt from the CBD and therefore cannot be protected through access control.<sup>175</sup> [67]

Such samples were typically collected under the principle that the collections would be treated as the common heritage of mankind. The earlier approach of common heritage conflicts to some extent with current efforts by gene banks to require some sort of compensation in exchange for access. On the other hand, means for funding the continued existence of these gene banks must be found. [68]

There is bound to be a rapid push for reform of intellectual property laws in coming years, as both TRIPS and the CBD are implemented. When considering reform of national intellectual property laws, source countries should consider

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171 For a discussion of numerous situations where outsiders, rather than the indigenous culture, benefited from the exploitation of biological resources, see James O. Odek, *Bio-Piracy: Creating Proprietary Rights in Plant Genetic Resources*, 2 J. INTELL. PROP. L. 141, 148 (1994) (describing the similar impacts on the local communities in the "discovery" of African soapberry and the Indian neem tree, among others).

172 Anil Gupta, "Compensating local communities for conserving biodiversity," Centre for Management in Agriculture, Indian Institute of Management, Vastrapur, Ahmedabad, India (1994).

173 See Gollin, *IPR Framework*, *supra* note 111, at 189.

174 Convention on Biological Diversity, *supra* note 2, arts. 15-16.

175 *Id.*; see also Odek, *supra* note 171, at 158-63.

whether the reforms will provide the proper incentives,<sup>176</sup> fit in with community values,<sup>177</sup> and promote economic stability.<sup>178</sup> Further considerations to address in the implementation of an intellectual property rights system are:

- *Does it protect valuable local information about biological resources?*
- *Does it apply to innovations from biodiversity prospecting, including plants, microbes, animals, extracts, pharmaceuticals, and information?*
- *Are the rights readily obtainable and transferable by contract?*
- *Is it available to environmentally beneficial technologies?*
- *Does it provide incentives to conserve existing genetic and biological resources?*
- *What other legal, institutional, economic, and regulatory instruments might serve these goals?*

Focusing on such issues, reformers will hopefully be able to devise practical, productive, and beneficial methods to promote sustainable biodiversity prospecting.  
[69]

#### D. *Biodiversity Prospecting Contracts*

What is a fair bargain for biodiversity prospecting? If we apply general western legal principles as reflected in United States law to the establishment of relationships for biodiversity prospecting, then certain elements must be satisfied to create an enforceable contract. The subject matter of a contract may include products, services, or money, and it may be contingent on future occurrences. The contract may be offered as an outputs contract, where the number of samples to be collected by the collectors varies by what is available, or the contract may specifically prescribe the quality and quantity of samples required. As discussed in more detail in Part

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<sup>176</sup> The proper incentives are those that spur technologies that promote the diversity and stability of the biotic community rather than monocultures, and those that encourage conservation of existing biological resources.

<sup>177</sup> Community values include protecting valuable local information and the equitable sharing of benefits.

<sup>178</sup> Economic concerns include making rights obtainable and transferable by contract and applying intellectual property protections to a range of products from biodiversity prospecting, including plants, microbes, animals, extracts, pharmaceuticals, and information.

<sup>179</sup> See SAMUEL WILLISTON, WILLISTON ON CONTRACTS, § 6:2 (Richard A. Lord ed. 1990).

III.D.1 below, the basic standard for a contract requires mutual assent,<sup>179</sup> and either consideration<sup>180</sup> or detrimental reliance.<sup>181</sup> [70]

### 1. Mutual Assent

The freedom to contract is subject to certain restrictions to ensure that the mutual assent is truly voluntary. Unless the parties are clear as to the terms, mutual mistakes or misunderstandings as to material aspects of the contract will render the contract unenforceable.<sup>182</sup> Where one party holds excessive bargaining power, rules of interpretation will favor the other party, or even allow the contract to be voided.<sup>183</sup> Where one party fails to disclose material knowledge, the contract may be unenforceable for fraud or misrepresentation, and damages may be available.<sup>184</sup> A contract also may be unenforceable if it is against national law or contrary to public policy, but only if such laws and policies are well defined.<sup>185</sup> [71]

For a contract to be valid and enforceable, the parties must be competent to understand the subject matter and to make the commitments involved in the contract.<sup>186</sup> In the case of a legal entity such as a corporation or partnership, the

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<sup>180</sup> *Id.* § 7.2. See also *Feinberg v. Pfeiffer Co.*, 322 S.W.2d 163, 167 (Mo. Ct. App. 1959).

<sup>181</sup> See *WILLISTON*, *supra* note 179, § 8.5.

<sup>182</sup> See E. ALLEN FARNSWORTH, *CONTRACTS* §12.2 (2d ed. 1990); see, e.g., *Bituminous Coal Operator's Ass'n v. Connors*, 867 F.2d 625, 635 (D.C. Cir. 1989) (explaining that a contract may be rescinded if the contracting parties entertained a material mistake of fact that went to the heart of their bargain).

<sup>183</sup> See *In re Mako Inc.*, 127 B.R. 474, 476 (E.D. Okla. 1991) (interpreting the terms of a form agreement in light of the "cramdown" provision of the Bankruptcy Code pursuant to 11 U.S.C. § 1129(b)).

<sup>184</sup> See *Martin Pincus Marketing v. Sawyer of NAPA Inc.*, 774 F. Supp. 171, 175 (S.D.N.Y. 1991) (declaring that "[u]nder New York law, omissions of a material fact may rise to a level constituting fraud and serve as a basis for an action for money damages").

<sup>185</sup> See *Federal Deposit Ins. Corp. v. American Casualty Co.*, 998 F.2d 404, 409 (7th Cir. 1993) (finding that the power to deny enforcement of contract terms on public policy grounds is restricted to those situations in which the contract would violate "some explicit public policy that is well defined and dominant, and it is to be ascertained by reference to the laws and legal precedents and not from the general considerations of supposed public interest").

<sup>186</sup> See *Ingrattia v. NME Hospitals Inc.*, 943 F.2d 561, 565 (8th Cir. 1991) (holding that contracting parties need to have the proper capacity to contract and must freely give their mutual assent to the contract).

person who signs a written contract or rushes to agreement in a non-written contractual situation must have authority to bind the party.<sup>187</sup> [72]

The freedom to contract may be curtailed by the need for one or both of the parties to obtain government permission to contract.<sup>188</sup> This would be viewed as a material condition of the contract, and the contract would not be enforceable if such a condition were not fulfilled. Thus, both the company and the collectors likely would need to obtain specific consent to negotiate and sign a contract for the collection or delivery of biological samples. [73]

The requirement of governmental oversight and consent in relation to biodiversity prospecting is analogous to the "permitting process" for environmental regulation of development. To have maximum effect on contract formation, biodiversity prospecting permit requirements should be written into access legislation designed to implement the terms of the CBD.<sup>189</sup> [74]

In addition, a company would likely have to abide by government regulations concerning customs, tariffs, import restrictions, and restrictions on currency exchange, trade and competition. In such cases, each party must obtain government approval as a precondition to the enforcement of the other party's rights. The contract also must be consistent with national and international laws governing biodiversity and contract formation.<sup>190</sup> Since illegal contracts are unenforceable, a contract made in violation of one of the existing external laws or regulations would be void. The parties must therefore look to all relevant governing areas of law before concluding their contract. It is foreseeable that laws implementing the Convention on Biological Diversity will require companies and collectors to obtain the informed consent of the local governments and people (or their representatives), and to provide benefit sharing, before they can enter into biodiversity contracts.<sup>191</sup> [75]

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<sup>187</sup> See *In re Westec Corp.*, 434 F.2d 195, 200 (5th Cir. 1970) (explaining that the law generally states that the president or any other corporate officer has "no authority to bind the company by a contract for the issuance of its capital stock").

<sup>188</sup> See, e.g., *East N.Y. Sav. Bank v. Hahn*, 326 U.S. 230, 232 (1945).

<sup>189</sup> In this context, permitting would require prior informed consent (ideally of affected communities and institutions, as well as government), based on the provision of complete information from the users or collectors and the requirement that benefit-sharing take place. Such a permit could include information on the specific material to be collected, the researchers involved, where, when and how the research will take place, the research budget and funding, and the duration of the access agreement. S. A. LAIRD, *ACCESS CONTROLS FOR GENETIC RESOURCES* 24 (World Wildlife Fund Int'l, 1995) [hereinafter LAIRD, *ACCESS CONTROLS*].

<sup>190</sup> *Royall v. Yudelevit*, 268 F.2d 577, 579 (D.C. Cir. 1959).

<sup>191</sup> See Downes, *supra* note 170, at 30-31 (1993); see generally Edgar J. Aseby & Jill D. Kempenaar, *Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention*, 28 VAND. J. TRANSNAT'L L. 703, 742 (1995).

## 2. Consideration and Detrimental Reliance

Consideration is some exchange of value or obligations between the parties.<sup>192</sup> In the context of bioprospecting, examples of consideration could include money, advance payments, royalty payments, local and overseas training, annual reports, equipment, supplies, or services performed. In the case of a bioprospecting contract, a court might question the adequacy of consideration between a sophisticated prospector and an unsophisticated sample provider.<sup>193</sup> [76]

Even if there is no consideration for a contract, courts will enforce a contract if there has been detrimental reliance.<sup>194</sup> Hence, if a local source community relied on a pharmaceutical company's promises of compensation during the company's prospecting activities, and the community acted on that reliance, the company could have a binding contractual obligation even if the source community provided no consideration for the contract. [77]

## 3. Breach, Damages and Enforcement

If an enforceable contract is breached, a court will enforce the contract by ordering damages or specific performance. Damages may include specific performance of the contractual obligation (for example, requiring a party to turn over a particular piece of land or an object that is supposed to be delivered), or money damages for the lost value of the bargain, or both.<sup>195</sup> In addition, when a

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<sup>192</sup> WILLISTON, *supra* note 179, §§ 7:3-7:6. Consideration for a contractual obligation can be money, goods, action, or a forbearance from action. *Kerrigan's Estate v. Joseph E. Segram & Sons Inc.*, 199 F.2d 694, 698 (3d Cir. 1952) (using money as consideration); *Roth v. Isamed Inc.*, 746 F. Supp. 316, 319 (S.D.N.Y. 1990) (using action and forbearance as consideration); *In re Dynamic Enterprises Inc.*, 32 B.R. 509, 518 (M.D. Tenn. 1983) (using goods as consideration).

<sup>193</sup> Courts usually do not examine the adequacy of consideration. WILLISTON, *supra* note 179, §§ 7:3, 7:21. If there is a great disparity in bargaining power and knowledge, however, courts are more likely to examine the adequacy of consideration to protect the weaker party. *See, e.g., Cleveland-Cliffs Iron v. Chicago & N.W. Transp. Co.*, 581 F.Supp. 1144, 1150 (1984) (explaining that inadequacy of consideration can warrant cancellation of a contract when it is so grossly inadequate as to shock the conscience).

<sup>194</sup> WILLISTON, *supra* note 179, § 8:5. *See, e.g., Goodman v. Dicker*, 169 F.2d 684 (D.C. Cir. 1948) (holding that where radio distributors promised to grant a franchise to sell radios and then broke that promise, the radio distributors were liable for the expenses incurred in reliance on the promise in preparation to do business); *see also Hessler, Inc. v. Farrell*, 226 A.2d 708, 711 (Del. 1967) (finding that employee reliance on a past performance of retirement benefits furnishes a basis for enforcement against the employer).

<sup>195</sup> FARNSWORTH, *supra* note 182, § 12.2.

contract affects a third party who is not actually a party to the agreement, and makes specific promises that would be to the benefit of the third party, that person may have rights to enforce the agreement as a third party beneficiary.<sup>196</sup> [78]

Defenses to contract enforcement might prevent enforcement of inequitable contracts.<sup>197</sup> Unconscionability is likely to be of particular concern to courts enforcing biodiversity contracts.<sup>198</sup> In such situations, a court will be reluctant to enforce a contract against a provider community, even if the contract was signed by two competent parties. [79]

Contracts may be enforced by litigation, arbitration or mediation.<sup>199</sup> Litigation is resolution through the established judicial system of a country, while mediation and arbitration use extrajudicial sources to resolve disputes.<sup>200</sup> Litigation is the most common form of contract resolution, yet it contains several significant problems for large international contracts such as the typical biodiversity contract.<sup>201</sup> For example, such contracts might be plagued by jurisdictional problems,<sup>202</sup> which could be resolved in part by including a choice of law provision in the contract.<sup>203</sup> Additionally, there is no guarantee that a source country court decision will be enforced in a judgment issued by a foreign court.<sup>204</sup> Consequently, the parties must

196 See *United States v. United Services Automobile Ass'n*, 968 F.2d 100, 1001-02 (10th Cir. 1992) (holding that a third party can enforce a contract only when the intent to benefit the third party is clearly expressed in the contract).

197 WILLISTON, *supra* note 179, § 12:5.

198 U.C.C. § 2-302 (1978). Unconscionability stems from a gross disparity of bargaining power, knowledge, or financial resources, or from undue influence on one of the signing parties. See *Martin v. Joseph Harris Co., Inc.*, 767 F.2d 296, 301 (6th Cir. 1985) (considering relative bargaining power appropriate in determining unconscionability). See also *Williams v. Walker-Thomas Furniture Co.*, 350 F.2d 445, 449 (D.C. Cir. 1965) (recognizing that unconscionability includes "an absence of meaningful choice on the part of the parties together with terms which are unreasonably favorable to the other party").

199 See Lynn A. Kerbeshian, *ADR: To Be Or . . .*, 70 N.D. L. REV. 381 (1994); see also *Howard Fields & Associates v. Grand Wailea Co.*, 848 F. Supp. 890, 895 (D. Hawaii 1993).

200 Kerbeshian, *supra* note 199, at 382.

201 William F. Fox, Jr., *Dispute Resolution Techniques in International Contracts Involving the Sale of Goods*, C395 ALI-ABA 669, 671 (1989).

202 See *id.*

203 *Hoes of America, Inc. v. Hoes*, 493 F. Supp. 1205, 1207-1208 (1979) (interpreting a contract that included a provision that the law of the Federal Republic of Germany was the choice of law); see also *id.*

204 See, e.g., *Bank Melli Iran v. Pahlavi*, 58 F.3d 1406, 1413 (9th Cir. 1995) (refusing to recognize that Iran's system of jurisprudence would render an impartial judgment); *De La Mata v. American Life*

decide if they wish to resolve their disputes through litigation, or if they would prefer to stipulate in the contract to resolve any dispute through mediation or arbitration. [80]

Alternative dispute resolution ("ADR") avoids the delay and expense of litigation.<sup>205</sup> For the use of ADR, the contract would specifically state the method of resolution, the place of resolution, the laws to govern resolution, and whether the resolution would be binding.<sup>206</sup> The parties must then follow such a stipulation in resolving contract disputes.<sup>207</sup> [81]

Considerations of fairness and equality provide a good basis for regulation of the formation of biodiversity contracts. By establishing standards and procedures for government approval, such requirements can encourage the conservation of biologically diverse ecosystems and local cultural resources, particularly when applied in conjunction with laws regulating conservation, environmental assessment, working conditions, cultural property, human rights, and intellectual property rights.<sup>208</sup> [82]

#### 4. Limitations of Applying Western Standards

The general contract principles set forth above are intimately entwined with the basic model of a free market economy, in which goods and services are treated as commodities, or property belonging to individuals who should be free to enter into arms-length agreements for supply and demand of the commodities and services.<sup>209</sup> It is important to note that other trading paradigms exist, and that various

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Ins. Co., 771 F. Supp. 1375, 1390 (D. Del. 1991) (refusing to recognize that a Bolivian judgment comported with United States notion of constitutional due process); Matthew Adler, *If We Build It, Will They Come?---The Need for a Multilateral Convention on the Recognition and Enforcement of Civil Monetary Judgments*, 26 LAW & POLICY INT'L BUS 79, 96 (1994).

<sup>205</sup> See *Brown v. Dean Witter Reynolds, Inc.*, 601 F. Supp. 641, 644 (S.D. Florida 1985) (resolving dispute in favor of arbitration).

<sup>206</sup> See *Hoes of America, Inc.*, 493 F. Supp. at 1207-08.

<sup>207</sup> See *id.*; *Scherk v. Alberto-Culvar*, 417 U.S. 506, 519-520 (1974) (holding that an agreement to arbitrate any dispute must be respected and enforced by the federal courts).

<sup>208</sup> See *Rubin & Fish*, *supra* note 147, at 34; see generally *Aseby & Kempenaar*, *supra* note 191.

<sup>209</sup> See generally ADAM SMITH, *AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS* (Random House ed. 1991).

communities around the world have common property approaches.<sup>210</sup> In many cultures certain things, places, and actions are considered sacred, and are thus not considered commodities subject to transfer.<sup>211</sup> As discussed above, indigenous peoples may have long-standing practices that are inconsistent with a Western approach. Therefore, in some cases, the western paradigm of contracts will not apply to a community's cultural, legal, and economic structure, and alternative approaches will be necessary. [83]

#### E. Conservation Laws

Intellectual property laws encourage the development of biological and cultural resources, define assets, and generate benefits that may be transferred from one party to another by contract.<sup>212</sup> Intellectual property and contract laws have a very limited ability, however, to promote conservation or equitable sharing.<sup>213</sup> [84]

International environmental protection and natural resource laws, such as the Convention on International Trade in Endangered Species ("CITES")<sup>214</sup> and domestic law counterparts,<sup>215</sup> may protect habitats and species absolutely.<sup>216</sup> Other laws may restrict the development of sensitive areas to practices that are non-destructive.<sup>217</sup> Some environmental laws, such as the United States National Environmental Policy Act,<sup>218</sup> require an environmental impact review, require that

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<sup>210</sup> Dean Lueck, *Property Rights and the Economic Logic of Wildlife Institutions*, 35 NAT. RESOURCES J. 625, 627 (1995); see generally ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* 58-102 (1990) (analyzing several successful common property regimes).

<sup>211</sup> See Yano, *supra* note 99, at 480.

<sup>212</sup> See Gollin, *IPR Framework*, *supra* note 111, at 186.

<sup>213</sup> See *id.* at 187.

<sup>214</sup> Convention on International Trade in Endangered Species of Wild Fauna and Flora, T.I.A.S. No. 8249, 27 U.S.T. 1087 (1975).

<sup>215</sup> See generally Endangered Species Act, 16 U.S.C. §§ 1531-1544 (1994).

<sup>216</sup> See *id.*; see also SARAH FITZGERALD, *INTERNATIONAL WILDLIFE TRADE: WHOSE BUSINESS IS IT?* 321-23 (1989) (discussing CITES's appendices and national legislation implementing CITES).

<sup>217</sup> See Gollin, *IPR Framework*, *supra* note 111, at 187.

<sup>218</sup> 42 U.S.C. § 4332 (1994).

<sup>219</sup> *Id.* § 4332(c).

alternatives to an action be considered,<sup>219</sup> and require that mitigation measures be undertaken.<sup>220</sup> [85]

Natural resources extraction laws, such as those governing mining, cattle grazing, forestry, and fisheries, provide restricted access to a particular resource, with exploitation limited by principles of resource management.<sup>221</sup> They typically designate specific regions for these activities and require the payment of fees to the state. Such laws may provide a model for genetic resources management;<sup>222</sup> under such a model, a genetic prospector would need to obtain an extraction (or collection) permit, and would receive a quota or limit on the amount and manner of extraction.<sup>223</sup> The recent collapse of world fisheries evidences the difficulty in restricting the level of activity to a sustainable, not exploitive, level. It is better to manage biological and genetic resources in a comprehensive rather than a patchwork manner.<sup>224</sup> Natural resource extraction laws provide such a system.<sup>225</sup> [86]

## F. *Special Laws Implementing the CBD*

### 1. General Considerations

National legislation is generally a creature of the policies and politics of each country. Bioprospecting legislation is one aspect of the national role in promoting effective local action. Other aspects include creating a national biodiversity strategy; coordinating the activities of various actors; and integrating biodiversity policy with other areas such as land tenure, technology development, education, health, trade and foreign investment.<sup>226</sup> [87]

<sup>220</sup> *Id.*

<sup>221</sup> See Gollin, *IPR Framework*, *supra* note 111, at 188.

<sup>222</sup> See *id.*

<sup>223</sup> See *id.* (stating that “extraction licenses . . . would allow governments to limit the rate of sampling and destruction of wild habitats . . . and generate revenue through license fees”).

<sup>224</sup> See Magnuson Fishing Conservation and Management Act, 16 U.S.C. §§ 1801-1882 (1988 & Supp. V. 1993); see generally COMMITTEE ON FISHERIES, OCEAN STUDIES BOARD, COMMISSION ON GEOSCIENCES, ENVIRONMENT, AND RESOURCES, NATIONAL RESEARCH COUNCIL, IMPROVING THE MANAGEMENT OF UNITED STATES MARINE FISHERIES 18, 32-33 (1994).

<sup>225</sup> Gollin, *IPR Framework*, *supra* note 11, at 188 (stating that extraction licenses such as fishing “would serve the goals of conservation, development, and equity”).

<sup>226</sup> KERRY TEN KATE, BIOPIRACY OR GREEN PETROLEUM? EXPECTATIONS AND BEST PRACTICE IN BIOPROSPECTING 23 (Overseas Development Administration 1995).

It is premature to suggest a specific model for national legislation implementing the CBD, and the interplay between the various relevant fields of law is still being explored. Some countries are exploring a regional approach. Each country will likely emphasize different local policies and concerns in its laws, and no one model law will be universally acceptable. Nonetheless, there are certain issues that each law should address in some fashion. [88]

At a minimum, it can be expected that a source country law implementing the CBD will assert national sovereignty over biological resources;<sup>227</sup> require prior informed consent via some kind of permit process;<sup>228</sup> require an equitable sharing of benefits as a permit condition;<sup>229</sup> establish a national biodiversity board or administering agency;<sup>230</sup> provide protections for innovations derived from biodiversity and indigenous knowledge; and encourage the transfer of technology.<sup>231</sup> [89]

In addition to laws implementing the CBD, source countries may decide that new legal rights for traditional indigenous knowledge should also be enacted.<sup>232</sup> Source countries should also support the establishment and growth of relevant industrial capacity, particularly in biotechnology sample collection, fractionation, purification, and assay.<sup>233</sup> Measures should be taken on behalf of disadvantaged groups to offset the high transaction costs of entering into a collection agreement, obtaining a patent or other intellectual property right, and enforcing agreements.<sup>234</sup> [90]

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227 See Laird, *Access Controls*, *supra* note 189, at 8-9.

228 See *id.*

229 See *id.*

230 Reid et al., *A New Lease on Life*, *supra* note 5, at 27-30. Such public or private institutions, organizations, or agencies are needed to identify and locate biodiversity, to protect representative wildlands, and to use the resources non-destructively. These activities could include (1) coordinating the policy process surrounding biodiversity prospecting; (2) developing a strategic approach to promoting local research and development capacity; (3) encouraging the development of professional societal codes of conduct; (4) participating in regional and international policy development; (5) developing and implementing an efficient, simple and transparent permitting process; (6) providing basic legal and business expertise or advice to local groups wishing to collaborate with overseas partners; (7) monitoring the research relationships granted permits including publications and patenting; and (8) receiving and disbursing a portion of eventual financial revenues.

231 Hanne Svarstad, *National Sovereignty and Genetic Resources*, in *BIODIPLOMACY: GENETIC RESOURCES AND INTERNATIONAL RELATIONS* 45 (Vincente Sanchez & Calestous Juma eds. 1994).

232 Gollin, *IPR Framework*, *supra* note 111, at 178. See discussion of the Rights of Indigenous Peoples, *supra* Part II.F.

233 Reid et al., *A New Lease on Life*, *supra* note 5, at 33-34.

234 *Id.* at 34-38; see also TEN KATE, *supra* note 226, at 44.

Finally, the laws and regulations of a given country have been, and can be, extended to private land, and to academic, as well as commercially-oriented, research.<sup>235</sup> User fees may be in money or otherwise.<sup>236</sup> For example, an academic researcher may give credit for assistance and provide reprints in a local language.<sup>237</sup> Short-term and long-term consequences should be considered.<sup>238</sup> [91]

A key policy and practical issue revolves around the sharing of benefits resulting from biodiversity prospecting. To maximize the impact of biodiversity prospecting on conservation and sustainable development, a wide spectrum of individuals and groups must benefit, often in distinctly different ways, and this must occur in the short term, intermediate term, and long term. In some cases, an agency or group will handle allocation of benefits on a national level.<sup>239</sup> Ideally, however, benefits will be distributed through a variety of institutions and mechanisms, and will be shared by local communities, scientific research institutions, protected area management programs, and government agencies.<sup>240</sup> [92]

In addition to laws, the implementation of the CBD and the establishment of a sustainable biodiversity prospecting trade involves self-regulation. Industries and organizations typically adhere to certain codes of conduct and guidelines that are mutually acceptable or are recommended by an oversight group, and may carry some legal weight.<sup>241</sup> The reasons for such self-regulation include a sense of community responsibility, a desire to avoid problems that would induce the

<sup>235</sup> Daniel H. Janzen et al., *Research Management Policies: Permits for Collecting and Research in the Tropics*, in BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 131, 149 (Walter V. Reid ed., 1993).

<sup>236</sup> *Id.* at 150-51.

<sup>237</sup> *Id.*

<sup>238</sup> S. A. Laird, *Contracts for Biodiversity Prospecting*, in BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT 99, 108-17 (Walter V. Reid ed., 1993) (discussing immediate monetary compensation as well as non-monetary long-term benefits, including the provision of health care and education, training, and research exchange).

<sup>239</sup> MAURICE M. IWU & SARAH A. LAIRD, HEALTH, CONSERVATION, AND ECONOMIC DEVELOPMENT: THE INTERNATIONAL COOPERATIVE BIODIVERSITY GROUP DRUG DEVELOPMENT AND BIODIVERSITY CONSERVATION IN AFRICA, A BENEFIT-SHARING PLAN 2 (Rainforest Alliance, Natural Resources & Rights Program 1996) (on file with the authors).

<sup>240</sup> S. A. LAIRD, FAIR DEALS IN THE SEARCH FOR NATURAL PRODUCTS 9 (World Wildlife Fund Int'l 1995) (on file with the author).

<sup>241</sup> See, e.g., CODE OF MEDICAL ETHICS (1994) (physicians); MODEL RULES OF PROFESSIONAL CONDUCT (1983) (lawyers).

legislature to pass restrictive laws, and stabilization of an industry to the benefit of all involved.<sup>242</sup> [93]

A plethora of codes of conduct have been proposed and discussed by commentators and organizations in recent years. A series of examples is reviewed in "Ethics, Ethnobiological Research, and Biodiversity."<sup>243</sup> These codes and guidelines articulate understandings that should form the basis of any collection and research program in biodiversity-rich regions, and are an important step in the evolution of these issues.<sup>244</sup> They may fill a void where there is no relevant national legislation in place. [94]

These codes can provide some guidance in the drafting of national legislation. Nevertheless, self-regulation by voluntary guidelines is intended to be more flexible than statutory law. It would therefore be a mistake to simply adopt such codes in their entirety into legislation. [95]

## 2. Examples of Biodiversity Prospecting Laws

The Andean Pact<sup>245</sup> sought to implement a model law implementing the CBD.<sup>246</sup> This effort is stalled, however, and has resulted only in a series of suggestions in an April 29, 1994 model law titled "Access to Genetic Resources of the Andean Pact."<sup>247</sup> This document recognizes the benefits of "access agreements" that would cover both *in situ* and *ex situ* genetic resources subject to the CBD.<sup>248</sup> The

<sup>242</sup> See MODEL RULES OF PROFESSIONAL CONDUCT preamble.

<sup>243</sup> A. B. Cunningham, *Ethics, Ethnobiological Research, and Biodiversity* (World Wildlife Fund Int'l, Apr. 1993).

<sup>244</sup> *Id.* at 11. Examples of such codes include the Declaration of Belem (the International Society of Ethnobiology, 1988); the Chiang Mai Declaration (Professional Ethics in Economic Botany 1988); the Code of Conduct for Plant Germplasm Collection and Transfer (FAO, 1989); Guidelines for Equitable Partnerships in New Natural Products Development (World Wildlife Fund Int'l 1993); and the Bellagio Declaration (1993). For further information on the breadth and content of these codes, see LAIRD, ACCESS CONTROLS, *supra* note 189, at 21.

<sup>245</sup> The Andean Pact (Acuerdo de Cartagena) is a regional economic unit comprised of Bolivia, Columbia, Ecuador, Peru and Venezuela.

<sup>246</sup> Venezuela, Columbia Launch Andean Biodiversity Plan, ENV'T WATCH LATIN AM., Dec. 1, 1994, available in WESTLAW, 1994 WL 2510563.

<sup>247</sup> INTERNATIONAL CONSERVATION UNION NETWORKS, TOWARD A LEGAL FRAMEWORK TO REGULATE ACCESS TO GENETIC RESOURCES IN THE ANDEAN PACT (Oct. 1994) [hereinafter GENETIC RESOURCES IN THE ANDEAN PACT].

<sup>248</sup> *In situ* means "conditions where genetic resources exist within ecosystems, and natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed

report also suggests a "public interest review" that would require the responsible agency to consider the national interest and views of potentially affected parties.<sup>249</sup> [96]

The scope of the proposed law would apply to biological resources only insofar as they are used as genetic resources.<sup>250</sup> This would appear to exclude agricultural produce and the like. The proposal says member states may subject access to conditions such as benefit sharing, restrictions on transfer to third parties, reporting obligations, obligations related to intellectual property, exclusivity, and confidentiality, recognition of the provider of the resource in publications, and conservation measures.<sup>251</sup> In addition, various provisions are contemplated to ensure consideration of indigenous peoples' rights.<sup>252</sup> The process of providing access permission would maintain the confidentiality of commercially sensitive matters, allow for consideration of the interests of affected parties, provide for publication of decisions granting or denying access, and for appeal, allow for monitoring for purposes of compliance, and give automatic approval after a predetermined period for domestic use of biodiversity or for access to an *ex situ* collection.<sup>253</sup> [97]

Other provisions of the agreement appear to be intended as a regional convention on biodiversity. The members are directed to strengthen capacity for conservation and sustainable use of biodiversity, and for inventory and management.<sup>254</sup> Finally, the proposal calls for a regional fund to be fed by a share of royalties, and to be disbursed to members as they would agree.<sup>255</sup> [98]

Members of the Andean Pact may have an easier time implementing national legislation, because it has been considered, and versions of it drafted and discussed, by the multilateral regional group. The benefits of a regional approach are unavailable without a regional compact, however. These include economies of scale, lower administrative burden, improved ability to market biological resources, and more consistent patterns of technology development. In addition, the members

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their distinctive properties." Convention on Biological Diversity, *supra* note 2, art. 3. By contrast, *ex situ* resources exist outside of ecosystems and their natural habitats. *Id.*, art. 2.

249 GENETIC RESOURCES IN THE ANDEAN PACT, *supra* note 247, § VIII(3)(2)(b).

250 *Id.* § IV(1).

251 *Id.* § VI(1).

252 *Id.* §§ VII(3), VIII(3.2)(1).

253 *Id.* § VI.

254 *Id.* § XI(4).

255 *Id.* § XIII.

of the Andean Pact could take comfort that their neighboring countries would not obtain a competitive advantage by enacting substantially different laws. [99]

The Philippines has implemented an Executive Order that prescribes guidelines and regulations for biodiversity prospecting.<sup>256</sup> Citing Article 16 of the CBD, the Executive Order provides a framework for legislative, administrative and policy measures for biodiversity prospecting activities. It requires prior informed consent of indigenous cultural communities,<sup>257</sup> and details the terms for research and commercial agreements.<sup>258</sup> Applications for a Research Agreement must include the purpose and duration of the project, the source of funds, a list of biological and genetic material, and the amounts to be taken.<sup>259</sup> The proposal must be submitted to the recognized head of the local or indigenous cultural community affected.<sup>260</sup> Requirements for commercial research agreements are more stringent than the requirements imposed on academic research agreements.<sup>261</sup> [100]

Some countries, such as the United States and Costa Rica, already had laws that are consistent with the bulk of the provisions of the CBD.<sup>262</sup> In 1992 Costa Rica enacted a wildlife protection law that declares all wild plants and animals to be national patrimony, and precludes collection without a permit.<sup>263</sup> The permit applicant must detail collection plans, agree to deposit voucher specimens with the national collection, and send copies of publications to the national library.<sup>264</sup> [101]

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<sup>256</sup> Executive Order No. 247, Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-Products and Derivatives for Scientific and Commercial Purposes; and for Other Purposes. Malacanang, Manila, the Philippines. The Executive Order does not preclude more comprehensive Congressional legislation, but provides for the immediately addressing biodiversity prospecting issues and provides a necessary regulatory framework.

<sup>257</sup> *Id.* § 2.

<sup>258</sup> *Id.* §§ 3-5.

<sup>259</sup> *Id.* § 3.

<sup>260</sup> *Id.*

<sup>261</sup> *Id.*

<sup>262</sup> See, e.g., R. Gamez et al., *Costa Rica's Conservation Program and National Biodiversity Institute (INBio)*, in *BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT* 53 (Walter V. Reid ed., 1993) (discussing Costa Rica's conservation program and National Biodiversity Institute (INBio)); Gollin, *The CBD & IPR*, *supra* note 151, at 298 (interpreting the CBD as consistent with United States intellectual property policy goals). See also the Endangered Species Act, 16 U.S.C. §§ 1531-1544 (1994) (requiring the preservation of endangered species and providing for the implementation of various conventions).

<sup>263</sup> See Reid et al., *A New Lease on Life*, *supra* note 5, at 39.

<sup>264</sup> See *id.*

Cameroon included issues drawn from the CBD in a process already under way to draft a new forestry law.<sup>265</sup> South Africa has begun a process of consultation with affected stakeholders that will lead to an assessment of existing laws and most likely the drafting of new national legislation. The legislature of Fiji is completing action on the Comprehensive Sustainable Development Bill, which includes provisions relating to biodiversity prospecting. Other countries, however, have only the rudiments of laws needed to implement the CBD. One can hope that many countries will pass effective implementing legislation, but this is far from assured. [102]

#### IV. CONCLUSION

The assertion of national sovereignty over biological resources under the CBD raises several issues that need to be resolved. First, there is already a history of collected genetic resources that may be considered to be (a) an international common heritage, (b) the result of biopiracy, or (c) something in between. Samples that have been deposited in gene banks or private collections without restriction are generally available for access by the public.<sup>266</sup> Intellectual property ownership and the right to control access to these *ex situ* resources must be resolved. [103]

Second, the scope of national sovereignty is likely to be limited in several ways. Countries with a federalist political system give control over many resources to the states or smaller political subdivisions.<sup>267</sup> A federal government may leave some control to the states or to local governments.<sup>268</sup> Provincial and national

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<sup>265</sup> In January 1994, the National Assembly of Cameroon passed Law No. 94/012 on Forestry, Wildlife, and Fishery, and in August 1994 the Implementing Decree No. 94/436//PM was promulgated. This law and implementing decree encompass a range of issues, including the granting of timber concessions, but also address a number of issues central to the CBD, such as the implementation of an inventory of and management planning process; the establishment of national sovereignty over biological resources; the requirement of prior informed consent; and equitable sharing of benefits deriving from the commercial use of biodiversity. Ghislaine Bouillet-Cordonnier & Sarah Laird, *Case Study from Cameroon: National Legislation and the Conservation of Biodiversity*, at 9-22 (World Wildlife Fund Int'l Fund Sept. 1995).

<sup>266</sup> The free use of genetic materials from national parks, such as an enzyme from *T. aquaticus* used in the polymerize chain reaction, has raised concerns in the United States. Ron Wolf, *Yellowstone Discovery: Should U.S. Get Profits?* SANJOSE MERCURY NEWS, July 25, 1994, at 8F.

<sup>267</sup> See, e.g., Sally Fairfax, *Old Recipes For New Federalism*, 12 ENVTL. L. 945 (1982) (using the example of public lands to illustrate the emergence of the localities as a challenge to federal authority in the United States federalist political system).

<sup>268</sup> See, e.g., Wild Scenic Rivers Act, Pub. L. No. 90-542, 82 Stat. 906, 968 (codified at 16 U.S.C. §§ 1271-1287 (1982)). Congress passed the act to enhance federal control in preserving the nation's rivers,

governments may share responsibilities for natural resources, making the implementation of international treaties such as CITES confusing. Finally, in many countries, including the United States, national sovereign rights may be subject to the rights of private ownership. Biodiversity found on private property may not be subject to the same kind of regulation as biodiversity found on governmentally owned land. [104]

Nonetheless, there is a current window of opportunity for countries to reform their laws to bring about the goals of conservation, sustainable use, and equitable sharing of the benefits of biodiversity. Implementation of the CBD calls for new laws to further these ends. Currently, implementation of TRIPS also requires many countries to amend their intellectual property laws.<sup>269</sup> They may choose to do so in a way that is in harmony with implementation of the CBD. For example, countries may want to extend patent protection for biotechnology, and to establish some kind of traditional resource right or indigenous knowledge right. The development of sustainable practices for a biodiversity prospecting trade requires further work, and standards and guidelines are still in the formative stage. Accordingly, laws implemented now should reflect that there is still much experience to be gained, and that further reform may be necessary as we learn more. [105]

Efforts to interpret and develop the CBD continue at the international level, and will continue to influence what activities are considered acceptable as sustainable development of biodiversity. Likewise, communities, researchers, and entrepreneurs can be expected to enter into further local projects where it suits their interest. Effective linkage of the international policies and local projects will require support and encouragement in national laws, however, and widespread reform at that level will be necessary to fully realize the potential of the CBD. [106]

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yet the Act's scheme is one of cooperation with the states by providing them with the means to exert significant control in water resource management.

<sup>269</sup> See TRIPS Agreement, *supra* note 57, art. 65.