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# **Report on Trade, Environment, and Intellectual Property Rights**

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## Preface

The Concerted Action on Trade and Environment (CAT&E) is designed to provide an opportunity for the large and growing community of European researchers working on trade and environment issues to meet regularly, to discuss research hypotheses and methods, to review results, and to develop new lines of co-operative research. CAT&E will launch a dialogue with policy makers at all levels. It aims to create a process that can document the progress of research and generate new research impulses in this area. It seeks to advance the resolution of current conflicts between trade and environment.

The information obtained in the course of the Concerted Action is annually summarised in state of the art reports and bibliographies in a fashion that is useful to both researchers and policy makers. These reports serve as an input to CAT&E's annual members' meetings and open conferences. To structure the reporting and discussions, the following themes have been identified initially (in random order; the theme of the present paper is underlined):

- ✓ Subsidies
- ✓ Government Procurement
- ✓ Investment
- ✓ TBT, SPS, and Labelling
- ✓ Trade and Development
- ✓ Trade, Environment and Human Rights
- ✓ Trade in Commodities
- ✓ Implementation Procedures
- ✓ Trade in Services
- ✓ Intellectual Property Rights
- ✓ Trade and Multilateral Environmental Agreements
- ✓ Dispute Settlement
- ✓ Transparency and Participation
- ✓ Sustainability Assessment of Trade Agreements
- ✓ European Trade Policy Development
- ✓ Trade and Agriculture
- ✓ Trade, Environment and Labour
- ✓ Trade, Environment, and Public Health
- ✓ Science and Precaution
- ✓ Trade and Environment in the Architecture of International Governance.

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## 1 Introduction and the scope of the paper

Until the conclusion of the Uruguay Round, intellectual property rights (IPRs) were not considered to be part of the international trade policy agenda. However, the adoption of the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) has brought, albeit uneasily, IPRs into the centre of debates over international trade and globalisation. Also in the 1990s, the relationship between IPRs and sustainable development gained prominence in international environmental law and policy making, especially in the Convention on Biological Diversity (CBD).

The main issues at the intersection of IPRs and environmental policy are the following:

- ❑ Protection of traditional knowledge
- ❑ promotion of technology transfer
- ❑ prevention of bio piracy
- ❑ threats to agricultural biodiversity
- ❑ impacts on social equity

These issues are being debated and developed in various international fora, including the WTO, the World Intellectual Property Organization (WIPO), the FAO International Treaty on Plant Genetic Resources for Food and Agriculture, and UPOV. In addition, they are prominent in bilateral and regional negotiations on trade liberalisation, such as the Free Trade Agreement of the Americas (FTAA) and integrated into inter-regional agreements, such as the Cotonou Agreement. Finally, in part using policy space provided by applicable international instruments, and in part responding to domestic concerns, an increasing number of countries are taking the initiative to address the linkages between IPRs and sustainable development. They also appear in regional instruments, such as the Andean Pact,<sup>1</sup> and national legislation on biodiversity.<sup>2</sup>

## 2 Identification of relevant research hypotheses

The intersection between IPRs and sustainable development has several dimensions. One is the North-South dynamic, in that IPRs are not only rooted in Western cultures, but most IPRs are held by entities in the industrialised world. Another is the tension between individual and collective rights, where IPRs are more strongly tilted towards providing rigorous protection to the former. Another is the unequal relationship between different actors in the marketplace, especially as between large corporate entities and small-scale farmers or entrepreneurs. All these dimensions are present, to varying degrees, in the hypotheses set out below.

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<sup>1</sup> Decision 391 on the Common System for Access to Genetic Resources, adopted in 1996

<sup>2</sup> E.g. Costa Rica Biodiversity Law and the Danish Patent Act.

## 2.1 Incompatibility with the CBD

The assertion that the TRIPS Agreement is incompatible with the CBD, made by a number of advocacy NGOs and some developing countries, has several aspects:

The main argument is that the TRIPS Agreement is incompatible with Article 8(j) of the CBD, which seeks to protect traditional and local knowledge relating to the conservation of biological diversity. It is argued that the TRIPS Agreement not only does not create effective means to protect collective knowledge, but by creating strong individual rights over intellectual property, it encourages the undermining of collective knowledge systems and/or places traditional communities at a disadvantage in bargaining.

It is asserted that traditional knowledge does not sit easily with convention IPR law.<sup>3</sup> It has been widely argued that inventions involving traditional knowledge face two fundamental problems in meeting IPR requirements. The first is that it can be unclear who the "inventor" is, i.e. who is entitled to apply for the patent. Much of traditional knowledge has been developed collectively and not always in discrete groupings with legal personality. A second problem is that traditional knowledge may be ancient, and may therefore not be "novel", which is a criteria for patentability. Furthermore, in some jurisdiction, such as the United States, oral evidence of prior art – which is all that may exist of some traditional knowledge – is not admissible in the patent process. In addition, even if IPRs are theoretically available for some types of traditional knowledge, in practice local and indigenous communities lack the resources to apply for and enforce these rights.<sup>4</sup> By contrast, the private commercial sector, with its greater technical and legal capacity, is more likely to be able to seek patent protection for inventions that involve some traditional knowledge, without indigenous peoples always being aware of this.<sup>5</sup> Thus, in some cases, IPRs not only protect traditional knowledge insufficiently, but also may also actually encourage its misappropriation.

However, one counterclaim is that one should not take an overly simplistic view of how indigenous communities develop and transmit their knowledge. These communities can have rather complex systems for rewarding innovators, individually, their families, as well as the community as a whole.<sup>6</sup> In addition, simply taking a collectivist view of traditional knowledge ignores the inevitable power differences within communities.

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<sup>3</sup> See, e.g. CBD Secretariat, (UNEP/CBD/COP/3/19). *Knowledge, Innovations and Practices of Indigenous and Local Communities: Implementation of Article 8(j)*. It was concluded that there were "no international legal instruments or standards which adequately recognize indigenous and local communities' rights over their knowledge, innovations or practices "It went on to observe that "...current systems of intellectual property rights alone are not sufficient to ensure that benefits flow back to indigenous and local communities."

<sup>4</sup> *Ibid.*

<sup>5</sup> There are indeed some celebrated cases of this: e.g. turmeric.

<sup>6</sup> Downes, D. Using Intellectual Property as a Tool to Protect Traditional Knowledge: Recommendations for Next Steps; CIEL Discussion Draft, 1997.

## 2.2 Non-support of the MEA objectives of transferring technology.

The debate over the role of IPRs in technology transfer, which is an important component of modern international environmental agreements, has been raging for many years. Actors that favour strong IPRs tend to argue that technology transfer is facilitated when the recipient country has a strong IPR regime, e.g. to ensure that the technology is not subsequently copied.<sup>7</sup> Although the full extent of this proposition is difficult to prove, i.e. how much IPRs really do encourage technology transfer, it does seem to make intuitive sense that private firms would be unwilling to transfer technologies to countries where IPRs are inadequate.<sup>8</sup> Others argue that IPRs, by virtue of mainly being privately held, hinder the transfer of needed and valuable technology.<sup>9</sup>

It is likely that the impacts of IPRs on technology depend on the particular policy and economic contexts. For example, it has been asserted that certain projects have not been cleared under the Montreal Protocol's financial mechanism because of the high licensing costs.<sup>10</sup> Others argue that IPRs may not play a decisive role in technology transfer relevant to the CBD. Often, the relevant hard technologies, such as aerial survey equipment, geographic information system and fencing equipment, are widely available, including in developing countries.<sup>11</sup> Indeed, the difficulties in using these technologies effectively relate to lack of adequate and reliable taxonomic information.<sup>12</sup> Much of the technology relating to *ex-situ* conservation is science or knowledge-based, rather than in a form of hardware or machinery. Some of these technologies, such as DNA hybridisation, do not appear widely available in developing countries, although others are. According to the CBD Secretariat, the largest challenges relating to applying the relevant technologies in developing countries are mainly associated with the development of human capital, rather than problems of acquisition from the international market.<sup>13</sup> There is, however, little empirical analysis of these assertions.

## 2.3 Impact on biodiversity, in particular agricultural biodiversity

There are several strands to the argument that the TRIPS Agreement and other IPRs impact adversely on biodiversity, in particular agricultural biodiversity:

- *IPRs promote harmful agri-chemical use.* The claim is made that IPRs encourage the development of seeds by industry based on hybrids and other modern varieties that

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<sup>7</sup> Ewing, K, and Tarasofsky, R., *The Trade and Environment Agenda: Survey of Major Issues and Proposals -- From Marrakech to Singapore*, IUCN, Gland, 1997, at p. 53

<sup>8</sup> Lesser, W. *The Role of Intellectual Property Rights in Biotechnology Transfer under the Convention on Biological Diversity*, ISAAA Briefs No. 3, ISAAA: Ithaca, NY, 1997, p. 22 et seq.

<sup>9</sup> Conway, W. 1988: "Can Technology Aid Species Preservation?," in: E.O. Wilson and F.M. Peter (eds.): *Biodiversity*, 263-268. Washington, D.C., USA: National Academy Press, p. 268.

<sup>10</sup> Ewing and Tarasofsky (1997)., page 53.

<sup>11</sup> CBD Secretariat, UNEP/CBD/COP/3/21. *Promoting and facilitating access to, and transfer and development of technology*, , 15 September 1996.

<sup>12</sup> *Ibid.*

<sup>13</sup> *Ibid.*

depend on the use of agrochemicals to achieve high yield. This claim is countered, however, by the experience with the Green Revolution that encouraged high yield varieties that were not IPR protected.

- *IPRs are an incentive to develop genetically modified crops, which may be harmful to biodiversity.* This can also lead to growth in an accompanying market for pesticides. A well-known example is Monsanto's Roundup Ready products (soybeans, canola, and cotton). Buyers of those products were contractually required to purchase a Roundup pesticide.<sup>14</sup> Although the counter-claim is made that genetically modified seeds can also lead to the development of varieties that require less pesticide use,<sup>15</sup> not all environmentalists are convinced. These concerns have been catalogued as follows: (a) encouraging excessive use of herbicides that may kill other plant varieties and species, (b) accelerating the development of resistance among pests, (c) creating the possibility of herbicide resistant genes crossing over to other plants, and (d) linkages between these products and other proprietary agriculture inputs represents a shift to more capital intensive agriculture, that increases the cost of farming.<sup>16</sup> In addition, there have been developments in technology that enable the creation of "terminator" seeds, which cannot be re-harvested. However, as a result of controversies, "terminator" technologies are not being applied at present.<sup>17</sup>
- *IPRs are an incentive for the development of monocultures.* It has been claimed that there is a connection between IPRs and centralised research and crop breeding which diminishes the diversity of available seed.<sup>18</sup> Further, it is argued that IPRs contribute to creating incentives for the private sector to create uniformity in seed varieties. This trend is the result of business strategies that seek to ensure maximum demand for their products. Decreased crop diversity could lead to erosion of genetic, insect, soil, and ecosystem diversity. It has been argued that IPRs can also encourage displacement of wild diversity of traditional local and landrace varieties.<sup>19</sup> However, the counter argument is that using high yield varieties reduces pressure to convert biodiverse ecosystems into agricultural land. In any event, the precise impact of IPRs in the decision-making of both breeders and farmers in this context has yet to be empirically measured.

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<sup>14</sup> Dutfield, G., "Protecting and Revitalising Traditional Ecological Knowledge: Intellectual Property Rights and Community Knowledge Databases in India" in Blakeney, M. (ed.), *Intellectual Property Aspects of Ethnobiology*, 1999, page 46-47.

<sup>15</sup> E.g. Monsanto's NewLeaf potato, which is claimed to provide protection against the Colorado Beetle or Bt corn, patented by Novartis, which resists the European corn borer pest.

<sup>16</sup> Dutfield (2000).

<sup>17</sup> E.g. CGIAR decision in 1998 not to incorporate such technologies into their breeding materials, the 1999 statement by Zeneca not to develop such technologies, and the October 1999 announcement by Monsanto that it would not be commercialising the "terminator" technology.

<sup>18</sup> Reid, W. V, et al. (1993), *Biodiversity Prospecting: Using genetic Resources for Sustainable Development*, World Resources Institute, National Biodiversity Institute of Costa Rica, Rainforest Alliance, and African Centre for Technology Studies, p. 150.

<sup>19</sup> Kothari, A. and R.V. Anuradha 1997: "Biodiversity, intellectual property rights, and the GATT agreement: how to address the conflicts?" *Biopolicy*, Vol. 2, No. 4.

- *Strong plant variety protection creates disincentives for farmers in developing countries to conserve biological diversity.* This is said to occur because of the reduced cultivation of traditional varieties, arising from the economic pressures to use industrialised seed. In addition, it is claimed that plant variety protection provides reduced opportunities to exchange certain seeds between developed and developing countries, which leads to a narrower spectrum of seeds on offer to farmers. However, the counter argument is that if the conditions for the supply of industrial seed become too unbearable for developing country farmers, their needs will push them to return to more traditional methods of cultivation. A related claim is that the wide breeder's exception in UPOV 1991 encourages the use of genes already in circulation, rather than bringing in new ones. There may indeed be credible evidence that breeders are now adopting built-in obsolescence strategies, by maintaining broad portfolios of constantly changing variety with significantly reduced life spans, combined with a lax approach to breeding versatile disease resistance.<sup>20</sup> At the very least, the result of both of these factors is that IPR-related processes do not operate to maximise genetic diversity.<sup>21</sup>
- *The low threshold for "novelty" under UPOV 1991 causes the displacement of local varieties and land races.* The argument is made that the inequitable differences in strength and capacity between large companies and local farmers will allow these companies to appropriate traditional varieties with minimal modification. This situation is further exacerbated, it is argued, by the reality that many landraces are acquired from *ex-situ* collections, rather than from the farmers, thereby avoiding benefit-sharing arrangements with the farmers themselves. However, for this claim to be substantiated, a detailed examination would have to take place of the characteristics of the particular landraces involved, the interest of local communities in acquiring plant variety protection for them, and the amount of actual work needed to modify them to be applied in more than just local conditions. A further claim, similar to that described above, is that the criterion of homogeneity reinforces the trend towards genetic uniformity – however, loosening this criterion risks leading to broader property claims, that might potentially "lock up" the system.<sup>22</sup>

## 2.4 Non-Support of Article 15 of the CBD.

The claim that the TRIPS Agreement does not fully support the effective implementation of the access and benefit sharing regime provided for under Article 15 of the CBD is advocated by those who are urging two instruments to be incorporated into the process of acquiring IPRs over inventions involving genetic resources: a certification of the origin of the genetic resources, which shows that they were acquired in accordance with the CBD, and proof of the prior informed consent of the local community with stewardship over these resources. These claims are currently the subject of negotiation in several international *fora*. The CBD

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<sup>20</sup> Rangnekar, D. *Planned Obsolescence and Plant Breeding: Empirical Evidence from Wheat Breeding in the UK (1965-1995)*, draft on file with the authors.

<sup>21</sup> G. Dutfield, personal communication, 4 September 2002.

<sup>22</sup> Bragdon, S and Downes, D. Recent policy trends and developments related to the Conservation, Use and development of genetic resources; Issues in Genetic Resources No. 7, IPGRI, 1998.



COP has recommended consideration of these instruments,<sup>23</sup> but it has yet to be determined whether this constitutes a reason for adding further conditions on patenting to the exhaustive list set out in the TRIPS Agreement.<sup>24</sup>

## 2.5 Incentives for sustainable development

As against the aforementioned negative hypotheses, there are several potential claims that can be made in support of the hypothesis that IPRs and the TRIPS Agreement provide incentives for sustainable development. The first is that IPRs on inventions involving biological materials provides an incentive to conserve such material.<sup>25</sup> A further claim is that the TRIPS Agreement provides sufficient space for countries to shape IPRs so as to achieve environment and development objectives. This space is provided not only through allowing *sui generis* systems for plant variety protection in Article 27.3(b), but also through the availability of instruments such as trade secrets. Geographic indications may also become useful instruments in promoting conservation of biological diversity, depending on the outcomes of negotiations currently underway in the WTO.

## 3 Methodological Approaches

The central challenge facing researchers and policymakers is isolating the linkages between IPRs and the environment. These linkages are virtually never direct; indeed IPRs form part of an overall context of incentives and disincentives vis-à-vis the environment. Accordingly, there is a great need for more empirical data collection to better understand the linkages.

Economic methodologies, assessing the impacts of IPRs on human welfare and development, need to be further developed. This needs to be done on the international level, e.g. to better understand the relationship between IPRs and foreign investment, as well as at the national level, so as to clarify the impacts of IPRs, as part of a context of particular economic and social incentives, on the environment.

Anthropological approaches are also necessary in order to understand better the amount and nature of traditional knowledge, existing mechanisms for its protection (formal and informal), and its relationship with wider issues, such as environmental protection and local development. A related challenge is to assess the impact of the award of IPRs on commercialised traditional knowledge on the affected communities, and consequently, on their natural environments. A considerable amount of data collection has taken place, in the

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<sup>23</sup> Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization. Decision VI/24, UNEP/CBD/COP/6, para. IV (C and D).

<sup>24</sup> See, e.g. R. Wolfrum/ G. Klepper/ P.-T. Stoll/ S. Franck, Implementing the Convention on Biological Diversity: Analysis of the Links to Intellectual Property and the International System for the Protection of Intellectual Property, available on <http://www.biodiv.org/doc/meetings/abs/abswg-01/information/abswg-01-inf-03-en.pdf>, 2001.

<sup>25</sup> C. Stone, "What to do about Biodiversity: Property Rights, Public Goods, and the Earth's Biological Riches", 68 Southern California Law Review, 577.

context of research and support for intergovernmental efforts.<sup>26</sup> In addition, some collection has been done in the context of establishing databases, but as with much of the activity in this field, the establishment and access to such databases is highly sensitive.

A second order of inquiry is then needed to assess the policy and legal responses to the causal relationships. A key issue is whether, and how, should many of these issues should be dealt with in the IPR process, as opposed to using other instruments and approaches?

Legal methodologies are needed to develop mechanisms of accommodation between the applicable international legal obligations, as well as with national and contractual instruments. Here too, there is a need for further data collection, especially in relation to national and contractual instruments. As noted above, a number of countries have enacted important pieces of legislation in recent years, which have, or may have the effect, of establishing *sui generis* intellectual property rights. An important research objective will be to monitor the implementation and further development of such instruments, with a view to better understanding their impacts and evaluating comparable experiences.

Political analysis is needed in relation to identifying and better understanding coalitions of actors at international and national level. Groupings such as the "Like-Minded Megadiverse Countries" are recent phenomena, and may play key roles and future negotiations within the WTO, WIPO, and CBD. At the national level, the interplay between the interests of industry, local communities, environmental activists, and government on the IPRs/environment interface needs further assessment.

## 4 Conclusions

IPRs have become highly politicised in recent years, particularly within the context of the WTO. Many claims and counterclaims have been levelled without sufficient empirical grounding. The challenge for the researcher is to parse out the actual impacts of IPRs as incentives or disincentives for environmental protection, within a wider socio-economic context. This will entail pursuing a variety of legal, political, economic and anthropological methodologies relating to both national and global policy settings. Methodologies for researching the appropriate responses should flow and develop on the basis of the increased knowledge base.

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<sup>26</sup> See, e.g. *Intellectual Property Needs and Expectations of Traditional Knowledge Holders*. WIPO Report on Fact-finding Missions on Intellectual Property and Traditional Knowledge (1998-1999), Geneva, April 2001 and *Intellectual Property Rights*. Decision III/17, UNEP/CBD/COP/3.

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