

## DEVELOPMENTAL PERSPECTIVES ON THE TRIPS AND TRADITIONAL KNOWLEDGE DEBATE

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### I INTRODUCTION

Traditional knowledge has been, and will continue to be, important for both humans and the environment. It enables people to remain self-sufficient; acts as a preserver of biodiversity, and can provide a source of income. Currently, more than 85% of the world's poor rely on biological resources and its related traditional knowledge as their basic source of livelihood.<sup>1</sup>

The appropriation of traditional knowledge by outsiders is not new. The exchange of traditional knowledge between various communities has been a significant driver underpinning technological development.<sup>2</sup> This practice has continued to the present day. It has been estimated that of the 35 plant-derived drugs in the top 150 best selling drugs, 94% contained at least one compound that has been used by indigenous and/or local communities.<sup>3</sup>

However, traditional knowledge holders are rarely compensated for allowing outsiders to study and reproduce their knowledge. This combined with the fact that at least 1.4 billion individuals rely on farm saved seeds and local breeding techniques demonstrate the developmental importance of traditional knowledge.<sup>4</sup>

The aim of this article is to examine the potential development-related implications of the World Trade Organisation Agreement on Trade Related Aspects of

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<sup>1</sup> The Crucible II Group. *Seedling Solutions. Volume 1: Policy Options for Genetic Resources. People, Plants and Patents Revisited* (2000) 1.

<sup>2</sup> T Goeschl, R Gatti, B Groom and T Swanson, 'The Law and Economics of Development and Environment: Incentivizing Ecological Destruction? The Global Joint Regulation of the Conservation and Use of Genetic Resources' (2005) 38 *Indiana Law Review* 619, 619-620.

<sup>3</sup> M Ruiz, 'The International Debate on Traditional Knowledge as Prior Art in the Patent System: Issues and Options for Developing Countries' (2002) Centre for International Environmental Law <[www.ciel.org/Publications/PriorArt\\_ManuelRuiz\\_Oct02.pdf](http://www.ciel.org/Publications/PriorArt_ManuelRuiz_Oct02.pdf)> at 24 August, 2006, 4

<sup>4</sup> Ibid.

Intellectual Property<sup>5</sup>. In essence, this article will provide a ‘developmental’ perspective on the debates surrounding the treatment of traditional knowledge by the TRIPs Agreement.

## II THE TRIPs AGREEMENT AND DEVELOPMENT

The first section of this part will outline the degree of protection offered to traditional knowledge holders by the TRIPs Agreement. It will argue on a number of grounds that the TRIPs Agreement does not provide adequate intellectual-property-based protection for traditional knowledge holders. The second section will examine the developmental implications of this lack of protection.

### A Patent Protection under TRIPs

Entering into force on 1 January 1995, the TRIPs Agreement provides the primary international legal basis for intellectual property protection among WTO members. The aim of the Agreement, according to the preamble, is to ‘reduce distortions and impediments to international trade [...] and to ensure that measures and procedures to enforce intellectual property rights do not themselves become barriers to trade’.

The TRIPs Agreement does not specifically mention traditional knowledge, and many commentators argue that the tests to gain intellectual property protection, particularly the test for patent protection, are unlikely to protect the rights of traditional knowledge holders.<sup>6</sup> This is because under article 27.1 of the TRIPs Agreement, in order for the subject matter to receive patent protection the invention must be ‘new, involve an inventive step and [be] capable of industrial application’.<sup>7</sup> An implication of this definition is that knowledge that has been passed down through generations, as much traditional knowledge is, will normally not be eligible for patentability, by virtue of the fact that it is not ‘new’.<sup>8</sup> Similarly, traditional knowledge that has been created by a community and not on an individual basis will also not fall within the definition of patentability.<sup>9</sup>

Given that it is difficult for traditional knowledge holders to gain the legal protections afforded by the TRIPs Agreement, their knowledge is quite vulnerable to being appropriated by outsiders. This article will examine the attempts by various companies to patent basmati rice from India, as well as the Enola bean from

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<sup>5</sup> Agreement on Trade-Related Aspects of Intellectual Property Rights (‘TRIPs Agreement’), GATT Doc. MTN/FA II-AIC (15 December 1993).

<sup>6</sup> For a summary of these arguments, see D Gervais, ‘Spiritual But Not Intellectual? The Protection of Sacred Intangible Traditional Knowledge’ (2003) 11 *Cardozo Journal of International and Comparative Law* 467, 485.

<sup>7</sup> TRIPs Agreement, above n 5, article 27.1.

<sup>8</sup> S Alam and R Islam, ‘The Trade-Environment Interface: Issues Lurking Behind the North-South Tensions’ (2005) 2 *Macquarie Journal of International and Comparative Environmental Law* 121, 140.

<sup>9</sup> D Gervais, ‘Traditional Knowledge & Intellectual Property: A TRIPs Compatible Approach’ (2005) *Michigan State Law Review* 137, 141.

Mexico. In such situations outsiders have asserted that the lack of intellectual property protection means that they can use the traditional knowledge for their own financial or other type of benefit. In these cases, companies reproduced these crops in the United States and filed patent applications with the United States Trademark and Patent Office (USTPO). The USTPO accepted all of these applications, despite the fact that these 'inventions' were in reality well-known products in their respective countries of origin.<sup>10</sup> This allowed the patent holding company to exclusively market the crop in question, and in some cases charge royalties to the traditional knowledge holders in order for them to be allowed to export their produce to the United States. In essence, the traditional knowledge holders were forced into compensating companies for making use of the knowledge that they themselves had developed.

The only legal recourse under these circumstances is to challenge the patent with the patent granting authorities. After much lobbying by Indian farmers, the Basmati rice patent was successfully challenged by the Indian government on the ground that it was a prior art – that is, the USTPO accepted that the companies did not actually develop the crop, but rather there was prior knowledge of the crop that the company simply appropriated.<sup>11</sup> Under US patent law, the fact that an 'invention' was the subject of this prior knowledge disentitles the patent applicant to patent protection.<sup>12</sup>

However, the Mexican farmers lacked the financial capacity to challenge the Enola Bean patent, and as a result it still stands.<sup>13</sup>

The rest of this article will focus on developmental implications in the circumstances where traditional knowledge holders lack the protection of intellectual property law. The article will specifically assume that the TRIPs Agreement in fact does not provide adequate legal protection to traditional knowledge holders, and that it enables this knowledge to be illegitimately appropriated. It should be noted however, that this assumption is not uncontested, and there remains substantial legal debate regarding this. However, the technical legal aspects of the debate are outside the scope of this article.

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<sup>10</sup> For the basmati rice patent, see US Patent Number 5,663,484. For the enola bean patent, see US Patent Number 5,894,079

<sup>11</sup> Research Foundation for Science, Technology and Ecology, 'Chronology of Events of Basmati Rice Battle' <[http://www.navdanya.org/articles/chronology\\_basmati\\_battle.htm](http://www.navdanya.org/articles/chronology_basmati_battle.htm)> 8 November 2005.

<sup>12</sup> Section 102(f) of the *United States Patent Act* (35 USC).

<sup>13</sup> D Goldbeg, 'Jack and the Enola Bean' (2003) Trade and Environment Database <<http://www.american.edu/TED/enola-bean>> 8 November 2005.

## B *The Development Implications of the Illegitimate Appropriation of Traditional Knowledge*

This part will analyse the development implications of the nexus between the TRIPs Agreement and traditional knowledge. It will argue that in many respects, the effect of the lacklustre protection of traditional knowledge is to potentially contravene the priority of economic development in the preamble to *The General Agreement on Tariffs and Trade 1947 (GATT)*<sup>14</sup>. This will be demonstrated by examining a range of areas where traditional knowledge and economic development interact, and note that lack of protection for traditional knowledge is generally commensurate with lower levels of economic development, particularly in developing countries.

### 1 *Financial Hardship*

In the short term, the effect of the illegitimate appropriation of traditional knowledge is that its holders and the states within which they reside lose a potentially important source of revenue should they wish to sell their knowledge. Furthermore, in situations where the owners of patents seek to enforce their rights, traditional knowledge holders may be forced to purchase the technology from the patent holder, or at least pay a royalty for its use as in the Enola bean example.<sup>15</sup> In the end, the community not only loses a potential source of revenue, but is also required to expend financial resources in order to make use of the knowledge that they themselves developed.

This point is well-illustrated in the controversy surrounding the patent of Basmati Rice.

Basmati is a variety of long grain rice known for its fine texture.<sup>16</sup> Grown in the foothills of the Himalayas for thousands of years, techniques have been developed by the growers to decrease the moisture content of the rice, and thus improving its taste and aroma. India and Pakistan are major producers of this variety of basmati rice, which often is charged at high prices both within India and Pakistan, as well as overseas.<sup>17</sup> This combined with the fact that India alone in 1997 exported more than half a million tonnes of Basmati<sup>18</sup> indicates that the rice grain can potentially be very important for the development prospects of both the growers of Basmati, as well as India and Pakistan.

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<sup>14</sup> *The General Agreement on Tariffs and Trade (GATT)*, Geneva, 30 October 1947, as amended, 61 Stat (pt 5), TIAS No 1700, 55-61 UNTS 188.

<sup>15</sup> See for example R Rattray, 'The Enola Bean Patent Controversy: Biopiracy, Novelty and Fish-and-Chips' (2002) *Duke Law and Technology Review* 8.

<sup>16</sup> Trade and Environment Database, 'Basmati: TED Case Study' < <http://www.american.edu/TED/basmati.htm> > 8 November 2005.

<sup>17</sup> M Woods 'Food for Thought: the Biopiracy of Jasmine and Basmati Rice' (2002) 13 *Albany Law Journal of Science and Technology* 123, 139.

<sup>18</sup> Trade and Environment Database, above n 16.

On 2 September 1997, the United States Patents and Trademarks Office (USPTO) granted Patent No 5,663,484 over Basmati rice to a Texas-based rice research company named RiceTec. The patent related to a 'superior' form of Basmati rice, certain breeding techniques, and a method of determining the quality of rice that had been produced.<sup>19</sup> This was despite the fact that Basmati rice was arguably based on the prior arts of Indian and Pakistani farmers, and therefore not new and inventive as required under the TRIPs Agreement. The effect of this patent was to grant virtually exclusive rights to RiceTec in regards to Basmati rice growing, cultivation and marketing in the United States.<sup>20</sup> This patent could potentially have had serious detrimental effects on Indian and Pakistani farmers, who would have been faced with the potential loss of their export markets.

These issues notwithstanding, the patent was initially ignored by the Indian and Pakistani Governments. It was only after lobbying by the Research Foundation for Science, Food and Technology (RFSFT), as well as a direction from the Indian Supreme Court that the Governments began to take action.<sup>21</sup>

Eventually, after a successful challenge to the USPTO by the Indian and Pakistani Governments, on 14 August 2001 many of the claims under the RiceTec patent were struck down. RiceTec only retains a much narrower right to sell and market particular varieties of Basmati Rice.<sup>22</sup>

Another example of illegitimate appropriation relates to the patenting of the Mexican Enola beans. After reproducing them in the United States and refining the breeding techniques, a United States based company received Patent No 5,894,079 for the bean.<sup>23</sup> After receiving the patent, the company was able to force Mexican exporters of the beans to pay royalties in the amount of fifteen cents per kilogram to the company for the right to sell the bean in the United States.<sup>24</sup> After this action, there was a 90% drop in demand for the Mexican Enola beans by importing companies in the United States, resulting in economic damage to the 22,000 Mexican farmers that relied on the beans as a source of income.<sup>25</sup>

Both the Enola bean and Basmati rice case studies demonstrate the serious financial and developmental implications that may flow from the illegitimate granting of a patent relating to traditional knowledge. These implications are particularly acute in light of the fact that the traditional knowledge holders typically reside in developing

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<sup>19</sup> Trade and Environment Database, above n 16.

<sup>20</sup> See US Patent No 5,663,484.

<sup>21</sup> Research Foundation for Science, Technology and Ecology, 'Chronology of Events of Basmati Rice Battle' <[http://www.navdanya.org/articles/chronology\\_basmati\\_battle.htm](http://www.navdanya.org/articles/chronology_basmati_battle.htm)> 8 November, 2005.

<sup>22</sup> Ibid.

<sup>23</sup> D Goldberg, 'Jack and the Enola Bean' (2003) Trade and Environment Database <<http://www.american.edu/TED/enola-bean>> 8 November 2005.

<sup>24</sup> Woods, above n 17, 136.

<sup>25</sup> Goldberg, above n 23.

countries, and have limited options in regard to how they can adapt to the illegitimately granted patents.

## 2 Resource Substitution Effects

The granting of patents on traditional knowledge may also result in an over-reliance on physical resources in the long term, which in turn can lead to negative development implications. This section will outline this potential 'resource substitution' effect.

As the process of globalisation and development accelerates, knowledge is fast becoming as equally important a resource as traditional physical resources.<sup>26</sup> Unique knowledge in this context is extremely valuable, because it allows individuals to exploit their knowledge in a manner that does not harm the physical environment. This is different from the traditional physical resources, where over-exploitation often leads to environmental deterioration and long-term economic decline.<sup>27</sup>

Intellectual property law usually serves to protect for a period of time the knowledge capital built up by those who put in the required effort in order to create it. The granting of a monopoly on this knowledge in turn encourages others to engage in effort in order to produce their own unique knowledge capital.

Traditional knowledge is an important source of knowledge capital.<sup>28</sup> The effort to create it often requires many people to work on it over several generations.

Nevertheless, as noted above, traditional knowledge can easily be illegitimately appropriated under the TRIPs Agreement. The loss of traditional knowledge capital may, in the long run, lead those that held the knowledge, and potentially the entire state, becoming disengaged from the global trade in the knowledge described above. In order to continue economic development, these states may increase their reliance on physical resources in order to facilitate the development process. However, such reliance can potentially have deleterious environmental consequences if over-exploitation occurs. The long term development implication of environmental deterioration is that developing countries may lose the resource base upon which the early stages of economic development are dependent. Without such a physical resource base, primary industries may be unable to develop or may require larger levels of investment in order to extract value. In either case, the situation of developing countries may be potentially worsened where the TRIPs

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<sup>26</sup> K Jarobe and A Alliance, 'Knowledge Management as an Economic Development Strategy' (2001) United States Economic Development Administration [1-2] <[www.eda.gov/PDF/1G3LR\\_6\\_jarboe.pdf](http://www.eda.gov/PDF/1G3LR_6_jarboe.pdf)> 8 November 2005.

<sup>27</sup> For details, see G Brundtland, *Our Common Future: The World Commission on Environment and Development* (1987).

<sup>28</sup> Ibid [7-8].

Agreement effectively encourages over-reliance on physical as opposed to knowledge resources.

### *3 Cost of Challenging Illegitimate Patents*

The fact that the granting of illegitimate patents of the types described above are not isolated events has led some commentators to conclude that the problem is 'deep and systemic'<sup>29</sup>. In this sense, because there is such a lack of protection for traditional knowledge under TRIPS, it may as well be sanctioning such unacceptable behaviour.

While the validity of this assertion is contestable, it cannot be disputed that the patenting of traditional knowledge is indeed a widespread practice. Other examples include attempted patents on Neem trees, haldi, pepper, harar, bahera, amla, mustard, ginger, castor, jaramla, amaltas, Karela, Jamun, and Jasmine rice.<sup>30</sup> While not all of these are successfully patented, the cost of challenging them may prove to be prohibitive, particularly for traditional knowledge holders residing in developing countries. These costs, even if the patent is successfully challenged, may in turn restrict their future economic development.

In the Enola Bean example, Mexican farmers did not challenge the US Patent on the ground that it was their traditional knowledge that was appropriated by the US Company because they simply could not afford it.<sup>31</sup> In these instances, the traditional knowledge holders must rely on their national governments to challenge the patent. However, in the case of least-developed countries in particular, this option may also be unrealistic, given the limited financial resources and capability of the national governments to challenge a patent in an overseas jurisdiction. The legal costs of challenging an illegitimate patent on the Indian plant Tumeric was estimated to be US\$10,000, not including costs relating to travel, wasted time, and general opportunity costs.<sup>32</sup> While this cost may not be hugely problematic for the Indian government as a whole, for least-developed countries, it may prove to be more burdensome, particularly if patents are constantly being granted illegitimately over their traditional knowledge.

Furthermore, costs may even be incurred by traditional knowledge holders lobbying their government to take action. As noted above, the government of India did not take action until it was directed to do so by the Indian Supreme Court.<sup>33</sup> If it was not for the intervention by the RFSFT and the highly controversial nature of the patent, it is likely that the farmers would have had to lobby the Indian government

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<sup>29</sup> V Shiva, 'Biopiracy: Need to Change Western IPR Systems' (1999) <<http://www.sedos.org/english/shiva.htm>> 7 November 2005.

<sup>30</sup> Sourced from a combination of Shiva, above n 29 and Woods, above n 17.

<sup>31</sup> M Woods, 'Food for Thought: the Biopiracy of Jasmine and Basmati Rice' (2002) 13 *Albany Law Journal of Science and Technology* 123, 136.

<sup>32</sup> Commission on Intellectual Property, 'Integrating Intellectual Property Rights and Development Policy' (2002) [76] <[http://www.iprcommission.org/graphic/documents/final\\_report.htm](http://www.iprcommission.org/graphic/documents/final_report.htm)> 8 November 2005.

<sup>33</sup> Research Foundation for Science, Technology and Ecology, above n 21.

themselves, and at their own expense. Given the Enola bean plant example, relying on the ability of traditional knowledge holders to challenge illegitimately granted patents as a check on such illegitimate appropriation is unrealistic, especially for those residing in developing countries.

Thus, it would seem that the costs of challenging illegitimate patents may have deleterious financial and developmental consequences for traditional knowledge holders. Farmers, particularly those in developing countries, often lack the financial resources to legally challenge a patent in a foreign jurisdiction, and may also not have the time to do so.

#### 4 *Technology Transfer*

In a similar vein to many other GATT Agreements, Article 66.2 of the TRIPs Agreement obliges developed members to

provide incentives [...] for the purpose of promoting and encouraging technology transfer to least-developed country members in order for them to be able to create a sound and viable technological base.

This section will argue that the TRIPs Agreement in fact does the exact opposite to its purported goal in Article 66.2.

Firstly, as noted above, the TRIPs Agreement effectively encourages the illegitimate appropriation of traditional knowledge by outsiders. Once this occurs, the knowledge and the technologies created with this knowledge become the property of the patent holders. Given that many traditional knowledge holders reside in developing countries, and many patent holders reside in developed countries, this effectively constitutes a transfer of technology from developing countries to developed countries, in contravention of Article 66.2. In effect, the incentive structure that the TRIPs Agreement as a whole creates is diametrically opposed to the aim of Article 66.2.

This is not to suggest that developed members are not engaging in technology transfer at all,<sup>34</sup> but rather that the overriding incentives created in the TRIPs Agreement are contrary to Article 66.2. The technology transfer programs that developed members are engaging in do not address these underlying issues.<sup>35</sup>

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<sup>34</sup> For examples of the types of technology transfer programs engaged in under article 66.2, see *Implementation of Article 66.2 of the TRIPs Agreement: Communication from the United States* WTO Doc. IP/C/W/431/Add.5 (2005).

<sup>35</sup> Developing countries have argued that little assistance is being provided article 66.2, see *Mechanisms for Ensuring the Monitoring and Full Implementation of the Obligations under Article 66.2 of the TRIPs Agreement in Accordance with Paragraph 11.2 of the Doha Declaration on Implementation-Related Concerns: Communication from Least-Developed Countries* WTO Doc. IP/C/W/357 (2002).

Without either a change in the incentives that the TRIPs Agreement creates, or substantial transfers under Article 66.2, developing countries will lack the technological and knowledge bases from which they can engage in economic development. The decreased prosperity of developing countries in turn will lead to long term declines in the export markets of developed countries, and potentially undermine global economic development.

### *5 Biodiversity, Traditional Knowledge and Development*

This section will examine the interactions between biological diversity, the protection of traditional knowledge and economic development. It will argue that the developmental possibilities of developing countries may be reduced due to the harmful effects a lack of protection for traditional knowledge will have on biological diversity in those countries.

Biological diversity can be defined as the genetic variability of all living organisms, as well as variability across ecosystems.<sup>36</sup> The maintenance of biodiversity is potentially important for long-term economic development, because it is a source of information and ideas for new products, and in particular for plant-based pharmaceuticals. Furthermore, the maintenance of a diverse range of agricultural crops and the preservation of the natural gene pool from which they are derived greatly reduces the likelihood of a single disease being able to destroy an entire crop.<sup>37</sup>

Despite its developmental importance, biodiversity is being lost at an increasing rate.<sup>38</sup> There have been numerous studies documenting the long-term decline in the biodiversity present in flora and fauna.<sup>39</sup>

It is often argued that protecting traditional knowledge can be a key to maintaining biological diversity.<sup>40</sup> This is because traditional knowledge holders often have extensive experience and familiarity with the types of uses that can be made for the plant or animal.<sup>41</sup> Furthermore, the knowledge of farming practices can be used to inform resource management systems, and therefore reduce the likelihood of an extinction of a particular variety or species.<sup>42</sup> Sometimes, traditional communities

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<sup>36</sup> Centre for International Environmental Law, 'What is Biodiversity and Why is it Important?' <<http://www.ciel.org/Biodiversity/WhatIsBiodiversity.html>> 8 November 2005.

<sup>37</sup> Ibid.

<sup>38</sup> D Warren, 'Indigenous Knowledge, Biodiversity Conservation and Development' (speech delivered at the International Conference on Conservation of Biodiversity in Africa: Local Initiatives and Institutional Roles, Nairobi, Kenya, 30 August-3 September 1992) <<http://www.ciesin.org/docs/004-173/004-173.html>> 8 November, 2005.

<sup>39</sup> For a list of these studies, see D Warren, *ibid*.

<sup>40</sup> Centre for International Environmental Law, *above n 36*.

<sup>41</sup> Centre for International Environmental Law, *above n 36*.

<sup>42</sup> Centre for International Environmental Law, *above n 36*.

may actually create their own plant varieties that are particularly suited to the area and therefore actively contribute towards increasing biodiversity.<sup>43</sup>

Nevertheless, it is very difficult for traditional knowledge holders to gain protection under the TRIPs Agreement, even those undertaking activities which could maintain and enhance biodiversity and therefore contribute towards the goal of economic development.

The granting of a patent on a plant variety may also result in an overall regression towards the sole, or at least dominant use of that plant variety by farmers. This is due to the market-distorting effects that the granting of a patent tends to create. This market phenomenon is discussed below.

If the particular variety has been patented due to its quality or cost-effectiveness etc, other farmers may be encouraged to purchase the seed of the plant from the patent holder to grow it themselves. This is because if they use their existing variety, they may lose their market share to the patented variety owing to its superior characteristics. In this way, farmers cease making use of their own unique plant variety, and instead make increasing use of the 'superior' plant variety. The potential result is a regression towards a certain variety within a species, and a loss of traditional knowledge about these varieties as has happened with the Bangladeshi rice example. The loss of variety exposes farmers to many risks, such as the chance that a single disease will wipe out an entire crop and a reduction in the gene pool from which future improvements may otherwise have come. In this manner, the TRIPs Agreement may serve to undermine potential development prospects through the effects that it has on traditional knowledge of biodiversity.

In contrast to this assertion, advocates of TRIPs have argued that allowing patents on plants and animals may actually encourage the innovative use of biodiversity by creating competition between farmers. In this sense, the patenting of plants and animals may actually contribute to biodiversity in developing countries, and in turn lead to higher levels of economic development.<sup>44</sup>

However, under the TRIPs regime, such an outcome is unrealistic. As noted above, much traditional knowledge is not generally eligible for patentability, and in any case, traditional users may face financial difficulties in applying for patents, given that many traditional communities reside in developing countries. Thus, while patents over plants and animals may have the potential to contribute to biodiversity, much wider issues surrounding the criteria for patentability as well the asymmetrical levels of economic development between members of the WTO, would need to be resolved before such a potential is realised.

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<sup>43</sup> Warren, above n 38.

<sup>44</sup> Commission on Intellectual Property 'TRIPs and the Biodiversity Convention: What Conflict?' (1999) International Chamber of Commerce < [http://www.iccwbo.org/home/statements\\_rules/statements/1999/trips\\_and\\_bio\\_convention.asp](http://www.iccwbo.org/home/statements_rules/statements/1999/trips_and_bio_convention.asp)> 8 November 2005.

## 6 *The Vulnerability of Least Developed Countries to Pressures to Adopt Certain Sui Generis Systems*

Under Article 27.3(b) of TRIPs, members are given the discretion as to whether they will implement a patent system for the protection of plant varieties, or whether they can adopt their own *sui generis* system. A *sui generis* system in this context would essentially allow WTO members to adopt their own system of protection for plant varieties, as opposed to strictly adhering to the provisions of TRIPs.

The development implications for traditional knowledge holders of this provision are not uniform. For a large part, the implications will depend on the type of *sui generis* regime that an individual state chooses to adopt. As noted above, a system which protects traditional knowledge of biodiversity may lead to higher levels of economic development. By extension, a *sui generis* system that protects such biodiversity may also improve the prospects of economic development. However such a choice is not always independent, but rather must be viewed within the wider North-South context. Where a choice exists as to what type of a system will be adopted, some countries, particularly least-developed countries, may be more susceptible to outside influences than others. To illustrate this point, this section will compare and contrast the *sui generis* plant variety protection regimes in India and Bangladesh.

### *(a) Sui Generis Plant Variety Protection in India*

India has enacted the *Protection of Plant Varieties and Farmer's Rights Act 2001 (Plant Varieties Act)*, which creates a *sui generis* system for the legal protection of plant varieties. The Act allows individuals or communities to register a plant variety with the National Register of Plant Varieties. The effect of registration is to allow holders of a certificate of registration to prevent others from selling, importing or exporting that particular plant variety: s 64 of the *Plant Varieties Act*. It also enables the registered holders of the traditional knowledge under s 28 of the *Plant Varieties Act* to produce, sell, market, distribute, import and export their plant variety.

The combined effect of these provisions is to allow traditional knowledge holders to take affirmative steps to protect their traditional knowledge about plant varieties from appropriation by outsiders. This could have potentially positive development implications, by providing traditional knowledge holders with the right to control access to their knowledge, while at the same time allowing them to sell their knowledge and gain financial resources. This, combined with the right to improve upon their own varieties without infringing on intellectual property rights of others, may allow them to participate more actively in the development process.

### *(b) Sui Generis Plant Variety Protection in Bangladesh*

The situation in Bangladesh, however, is very different. Article 27.3(b) of the TRIPs Agreement notwithstanding, a bilateral agreement signed by Bangladesh and the European Community<sup>45</sup> essentially operates to reinstate TRIPs in regard to plant variety protection.

Article 4.5(I) of the bilateral agreement requires that the government of Bangladesh 'shall endeavour to accede to the relevant international conventions on intellectual property'. Paragraph 2 of Annex 2 states that this includes accession to the International Convention for the Protection of New Plant Varieties ('the UPOV Convention'<sup>46</sup>). In return for this and other concessions, the European Community is supposed to enhance its development and environmental cooperation with Bangladesh.

However, the effect of the adoption of the UPOV Convention is essentially to impose the same kind of intellectual property rights to plant breeders as the TRIPs Agreement does. Instead of the requirements of inventiveness under Article 27.1 of TRIPs, Article 5.1 of the 1991 Act of the UPOV Convention requires that the plant variety for which the patent is being granted is 'new, distinct, uniform and stable'. The effect of this is that a farmer who happens to produce a plant that is protected by UPOV on their own will contravene the terms of the UPOV Convention. The fact that very similar requirements of inventiveness are used indicates that traditional knowledge holders will encounter similar difficulties in gaining any form of protection under UPOV as they do with TRIPs.

The developmental issues currently experienced by Bangladesh are seemingly being used by the European Community to coerce Bangladesh into acceding to UPOV. Thus, the European Community is effectively circumventing the ability of Bangladesh under Article 27.3(b) to create a *sui generis* system in relation to plant varieties. This would negate most of the advantages traditional knowledge holders may have enjoyed under a *sui generis* system that recognised their special needs.

This is not an isolated practice. The European Community has signed, or is in the process of negotiating, many bilateral agreements with developing countries requiring either accession to the UPOV, or adherence to the 'highest level' of intellectual property protection.<sup>47</sup> These include *inter alia* African and Caribbean countries, Algeria, Morocco, Sri Lanka and Tunisia.<sup>48</sup>

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<sup>45</sup> *Cooperation Agreement between the European Community and the People's Republic of Bangladesh on Partnership and Development* Official Journal of the European Communities n°L118/48 dated 27.4.2001 (entered into force 1 March 2001).

<sup>46</sup> *International Convention for the Protection of New Varieties of Plants*, (entered into force 10 August 1968) 33 UST 2704, 815 UNTS 89 (as amended on 19 March 1991).

<sup>47</sup> GRAIN 'TRIPS-PLUS Must Stop: The European Union Caught in Blatant Contradictions' (2003) <<www.grain.org/briefings\_files/trips-plus-eu-2003-en.pdf> 8 November 2005.

<sup>48</sup> Ibid.

Thus, India (with its larger economy and higher per capita GDP) has been able to adopt an effective *sui generis* regime which protects the rights of traditional knowledge holders. However, smaller developing countries and least-developed countries such as Bangladesh, are being forced to accept an intellectual property regime that will further undermine the position of traditional knowledge holders in exchange for so-called developmental and environmental co-operation.

### *7 Loss of Developmental Prospects due to 'Copying' Traditional Knowledge*

One final developmental implication of the illegitimate appropriation of traditional knowledge will not generally be limited to developing countries. It relates to the loss of knowledge capital relating to the ability to create new patentable subject matter. Arguably, lack of protection of traditional knowledge may result in the loss of inventive abilities, and a corresponding decline in the technological and economic development prospects of both developing and developed countries.

As noted in the introduction, there is nothing unusual about the appropriation of traditional knowledge. Indeed, it is through the combining of traditional knowledge and more modern research techniques that further technological advancement can occur.

However, allowing for the complete appropriation of traditional knowledge with little or no compensation to the originators may create a disincentive for individuals to undertake legitimate inventive activities in the future. In economic parlance, the costs associated with normal research techniques may be far outweighed by the small cost of appropriating traditional knowledge without providing compensation. Where the output is the same (that is, the company or individual has a patentable product), it would make sense for them to choose the option that has less associated financial and opportunity costs. In turn, this may lead to a decline in the overall research activity within a country, and a decrease in its technological and economic development.

This is not to imply that traditional knowledge should not be used to inform modern research, nor that traditional knowledge holders should never divulge their knowledge to outsiders. Rather, the absence of financial compensation to traditional knowledge holders skews incentives towards 'copying' existing knowledge, rather than the creation of new knowledge. The provision of protection for traditional knowledge holders would enable them to seek financial compensation, and therefore the incentives would not be so far weighed in favour of copying knowledge as opposed to creating it. It would encourage innovation where the costs of obtaining traditional knowledge would outweigh the benefits of using it.

## III THE CONVENTION ON BIOLOGICAL DIVERSITY

Having examined the developmental issues related to TRIPs, this Part will examine the main alternative to TRIPs in regards to traditional knowledge, which is the

*Convention on Biological Diversity (CBD)*.<sup>49</sup> Article 1 of the CBD states the objectives of the Convention are ‘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’. In this sense, the overall aims of the CBD are different to TRIPs, which is more concerned with reducing any trade-distorting effects of intellectual property law.

Currently, there is much legal debate as to the degree of conflict between CBD and TRIPs. However, the focus of this article is the TRIPs Agreement, and hence such ‘conflict’ is viewed as more of a reform opportunity. In order to do this, Part III of this article will provide a brief outline of the main CBD provisions relating to traditional knowledge. Part IV will then examine whether, and to what extent, the provisions of the CBD should be included in the TRIPs regime in order to enhance developmental prospects.

One major point of difference between TRIPs and the CBD is that the CBD appears to provide a much wider scope for countries to adopt a *sui generis* system for the purposes of protecting traditional knowledge within their jurisdiction.

Under Article 8(j) of the CBD, contracting parties should ‘respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biological diversity’. Arguably, this article supports prohibiting the patenting of genetic material in certain circumstances where the effect of granting a patent will be to reduce diversity in traditional agricultural practices by replacing the traditional varieties with a small group of patented varieties.<sup>50</sup> This aspect of Article 8(j) appears to be inconsistent with Article 27.3(b) of TRIPs, which specifically allows for the patenting of genetic material. The effect that the granting of such a patent may have on traditional agricultural practices and diversity is not relevant under TRIPs. The legal status of this apparent conflict between the CBD and TRIPs is at best unclear, and has not been the subject of a decision by the WTO dispute settlement body or the International Court of Justice.

Also, under Article 15(1) of the CBD, sovereignty over natural resources, including traditional knowledge of genetic resources is assigned to national governments. It has been argued by some commentators that this is in direct conflict with TRIPs, because sovereignty over genetic resources implies a right to prohibit intellectual property rights over them.<sup>51</sup>

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<sup>49</sup> United Nations Convention on Biological Diversity (‘CBD’), Rio de Janeiro, 5 June 1992, Reprinted in (1992) 31 *ILM*, 818.

<sup>50</sup> G Nijar, C Ling, ‘Implications of GATT on Biodiversity: From Common to Private Ownership’ (1993) <<http://forests.org/archive/general/gattbiod.htm>> 8 November 2005.

<sup>51</sup> Third World Network, ‘Intellectual Property Rights, TRIPs Agreement and the CBD: TWN Statement to the 2<sup>nd</sup> meeting of the Panel of Experts on Access and Benefit Sharing’ (2001) <<http://www.twinside.org.sg/title/benefit.htm>> at 24 August 2006

Several articles of the CBD require member states to create legislative regimes which would require holders of patents on genetic resources to share the benefits of the patent with the people and/or state that they derived the genetic resources from. This differs from TRIPs in that it can potentially provide traditional knowledge holders with financial compensation if outsiders seek to appropriate their knowledge.

One final area of difference relates to article 15(5) of the CBD, which requires that access to genetic resources (including those of traditional knowledge holders) will be subject to the 'prior informed consent of the Contracting Party providing such resources'. Essentially, this would require individuals seeking patents on traditional knowledge of genetic resources to both give notice, and obtain the consent of both the state, and potentially the community from which the resources are derived.

#### IV REFORM OPTIONS FROM A DEVELOPMENT PERSPECTIVE

Having examined the developmental issues that relate to the TRIPs Agreement and traditional knowledge, this part will outline some reform options from a developmental perspective. In particular, it will focus on the developmental benefits that may accrue as a result of incorporating the provisions of the CBD into the TRIPs Agreement.

##### *A Recognising Traditional Knowledge Rights*

As discussed above, both TRIPs and the CBD create *sui generis* systems of varying scope and applicability. This section will argue in favour of an expansion of the current *sui generis* regime under TRIPs, and also that certain provisions of the CBD *sui generis* regime should be incorporated directly into TRIPs.

What precisely constitutes an intellectual property right varies enormously both across cultures and across time. Consequently, to incorporate all of these conceptions of property under a single intellectual property agreement would be enormously difficult, if not impossible. Furthermore, certain forms of communal intellectual property rights seem to be entirely inconsistent with the TRIPs Agreement insofar as they do not seek to exclude others from using their property.<sup>52</sup>

Thus, in order to protect the rights of traditional knowledge holders, TRIPs should allow individual members to determine the type of property rights that would be capable of protection by intellectual property law, and not limit the right to individualistic property rights.<sup>53</sup>

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<sup>52</sup> E De Carvalho, 'Protection of Traditional Biodiversity-Related Knowledge: Analysis of Proposals for the Adoption of a Sui Generis System' (2003) 11 *Missouri Environmental Law and Policy Review* 38, 63.

<sup>53</sup> Ibid 68-69.

Also, as noted above, the requirement of inventiveness will not always protect traditional knowledge holders because the knowledge is often passed down through generations, and sometimes exists in the public domain. Thus, there seems to be a need to provide TRIPs members with discretion as to the criteria that will be applied in order for traditional knowledge to be eligible for patentability.

Some have argued that such a reform option would undermine the purpose of intellectual property law, which is to promote innovation.<sup>54</sup> It is assumed that by providing protection to knowledge that is not new or inventive, individuals would lose any incentive to undertake innovative activities.

However, the discretion of states to adopt their own practices regarding traditional knowledge would not replace the requirements of inventiveness in relation to inventions not arising from traditional knowledge. In this sense, there would be two systems that would operate parallel to each other, much like under the Indian *Protection of Plant Varieties and Farmer's Rights Act 2001*. Thus, any incentive to undertake innovation that exists under the TRIPs Agreement is unlikely to be undermined, given that the normal requirements of inventiveness would apply to non-traditional knowledge based inventions.

Furthermore, providing protection for traditional knowledge via a *sui generis* system may actually increase the incentive to innovate. This is because individuals could no longer rely on copying traditional knowledge in order to receive patents. Thus, in order to effectively compete with traditional knowledge holders who would enjoy an advantage in a market that protects their rights, innovators may need to invest more time and financial resources into creating new inventions. Thus, protecting traditional knowledge through a *sui generis* system may actually accelerate and enhance the process of technological development.

#### B Provisions for Genetic Resources and Biodiversity Protection

There is an obvious need to clarify the interaction between Article 8(j) of the CBD and Article 27.3(b) of TRIPs in regards to the extent that traditional knowledge of biodiversity can be protected via a *sui generis* regime. This need was recognised in paragraph 19 of the Doha Declaration, which directed the TRIPs Council to consider this interaction in its general review of Article 27.3(b). After six years of negotiations, the TRIPs council is still in disagreement, and is yet to make formal recommendations. Some positions appear to be difficult to reconcile. For example,

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<sup>54</sup> V Tejera, 'Tripping Over Property Rights: Is it Possible to Reconcile the Convention on Biological Diversity with Article 27 of the TRIPs Agreement?' (1999) 33 *New England Law Review* 967, 978-980.

the United States appears to be in favour of allowing patents on genetic resources<sup>55</sup> to continue, whereas the African Group is avowedly opposed to it.<sup>56</sup>

Whether or not patents on genetic resources are appropriate in both moral and developmental contexts is beyond the scope of this paper. However, given the stark disagreements between members, which are often couched in moralistic language, there seems to be a case for allowing members to decide for themselves as to whether their own patent laws will allow for the patenting of genetic material.

That said, adopting a *sui generis* regime in regard to genetic resources may actually disadvantage traditional knowledge holders if they reside within the jurisdiction of a member that has decided to disqualify genetic resources from patentability. This is because they would lack the ability in such a context to obtain a holistic protection of their knowledge down to the genetic level. Thus, an outsider could effectively appropriate their knowledge, and reproduce it within the jurisdiction of a member that does allow for patents on genetic resources.

There will also be strong pressures, particularly for the least developed countries, to adopt *sui generis* regimes similar to that of the United States or the European Union, as has been the case in Bangladesh. It is for this reason that any *sui generis* regime should only be narrowly construed, and adds weight to arguments in favour of creating a uniform system that protects the rights of traditional knowledge holders through the enforcement mechanisms of the WTO.

### *C Beyond Sui Generis Regimes: Overhauling TRIPs to Ensure it Recognises Traditional Knowledge*

This final section will outline the reforms that should be incorporated directly into TRIPs, and therefore apply to all members.

#### *1 Need to Emphasise Protection of Traditional Knowledge Holders*

As noted above, while the adoption of a *sui generis* regime may be attractive, it may also be susceptible to north-south pressures. Thus, if the TRIPs Agreement was to create a *sui generis* regime regarding types of property rights, the criteria for patentability, and protection of genetic resources, the aims of such a system would have to be clearly defined. If this did not occur, then developed countries could apply financial and political pressure to developing countries in order to force them to adopt systems that favour developed countries.

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<sup>55</sup> *Article 27.3(b) Relationship between TRIPs Agreement and the CBD, and the Protection of Traditional Knowledge and Folklore: Communication from the United States* WTO Doc. IP/C/W/449 (2005).

<sup>56</sup> *Taking Forward the Review of Article 27.3(b) of the TRIPs Agreement: Communication from the African Group* WTO Doc IP/C/W/404 (2003) 2.

Therefore, it would need to be emphasised that the *sui generis* regime must be effective in promoting and protecting the rights of traditional knowledge holders. The use of the term 'effective' would not be unprecedented in the TRIPs Agreement, which already requires an effective *sui generis* regime in regard to the protection of plant varieties be implemented under article 27.3(b).

## 2 *Traditional Knowledge Databases*

A major cause of the illegitimate appropriation of traditional knowledge is that patent offices are often unaware of the existence of traditional knowledge in the field for which they are granting a patent. Also, as with the USTPO example, patent offices often do not conduct investigations into traditional knowledge unless the legitimacy of a particular patent has been challenged.

The creation of a traditional knowledge database may serve to partially mitigate this problem. By recording traditional knowledge in a database, patent offices could easily conduct searches to determine whether the invention to be patented was or was not derived from traditional knowledge sources. This system has already been adopted to an extent by the India-based Society for Research and Initiatives for Sustainable Technologies and Institutions, which is in the process of creating a traditional knowledge database by working closely with the communities concerned.

However, many developing countries have expressed concern about such a system. The African Group has argued that relying solely on a database to protect traditional knowledge is dangerous, because full documentation of this knowledge will take a very long time. India and Brazil, expressing a similar concern, also pointed out that the process of documentation may never be complete. This is because traditional knowledge is constantly changing, and knowledge based on oral traditions may be incredibly difficult to document in a database. India and Brazil have also expressed concern about the loss of confidentiality that may result in the registration of traditional knowledge not already in the public domain.

Furthermore, divorcing traditional knowledge from its cultural context may not only be counter-productive, but also unethical. These and other concerns have actually led to the Workshop on Traditional Knowledge and Biological Diversity calling for an immediate moratorium on the creation of such traditional knowledge databases.<sup>57</sup>

Considering these concerns, any traditional knowledge database created under the auspices of TRIPs will need to operate only narrowly, and give traditional knowledge holders the option as to whether their knowledge will form part of it. At least in the short term, however, there should be an effort to register the types of traditional knowledge existing in the public domain. This type of a system could

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<sup>57</sup> Second International Indigenous Forum on Biodiversity 'Working Document on the Implementation of Article 8j) and related articles' < <http://saic.nativeweb.org/biodiv2.html> > 1 May 2006.

potentially have prevented the initial patenting of Basmati rice, by providing USTPO officers with an easily accessible database on which to conduct a search.

### *3 Incorrectly Granted Patents, Prior Informed Consent and Benefit Sharing: Can an Obligation of Disclosure Assist?*

There is general agreement among TRIPs members as to the desirability of eliminating the illegitimate appropriation of traditional knowledge.<sup>58</sup> There is also agreement that the benefits of traditional knowledge based patents should be shared with the holders from which the knowledge was obtained. Therefore, there appears to be agreement that many of the elements of the CBD relating to access to genetic resources and benefit sharing should be more broadly adopted by TRIPs members.<sup>59</sup>

Promoting prior informed consent is also seen by many members as a key avenue for ensuring that benefit sharing does take place, and that illegitimate appropriations are minimised.<sup>60</sup> This is because ensuring that the prior informed consent of traditional knowledge holders is obtained before an application for a patent is made would enable them to either engage in negotiations, or refuse access to the knowledge. In turn this may provide them with financial benefits either through granting the patent and receiving compensation through a benefit sharing arrangement, or by allowing them to establish their own patent by refusing access to others. These could combine to allow communities to engage more effectively in the global trade in knowledge, and therefore addressing some of the developmental issues outlined in Part II.

While there is broad agreement as to the goals of promoting prior informed consent, benefit sharing and reducing illegitimate appropriations of traditional knowledge, there have been substantial difficulties with the TRIPs Council deciding how such goals may be achieved. The primary issue relates to whether the TRIPs Agreement should impose a positive duty of disclosure on the part of patent applicants, requiring them to outline whether, and to what extent they have relied on traditional knowledge sources, and whether they engaged in benefit sharing with and obtained the prior informed consent of the community and the state within which they reside.

India and Brazil in particular have argued strongly that without such disclosure obligations, there would be no way to effectively monitor whether applicants are actually obtaining prior informed consent and engaging in benefit sharing.<sup>61</sup> In this

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<sup>58</sup> See Communication from the African Group, above n 54, Communication from the United States, above n 53, Article 27.3(b), *Relationship between TRIPs Agreement and the CBD, and the Protection of Traditional Knowledge and Folklore: Communication from Peru* WTO Doc. IP.C.W.441/Rev.1 (2005) and *The Relationship between the TRIPs Agreement and the Convention on Biological Diversity and the Protection of Traditional Knowledge: Submission from Brazil and India* WTO Doc IP/C/W/443 (2005).

<sup>59</sup> Ibid.

<sup>60</sup> See in Particular *Communication from United States*, above n 58 and *Communication from Brazil and India*, above n 58.

<sup>61</sup> *Communication from Brazil and India*, above n 58.

sense, the effect of the lack of a requirement of disclosure is to enable individuals to appropriate traditional knowledge without the knowledge or consent of, or providing any benefit to, traditional knowledge holders.<sup>62</sup>

The United States on the other hand has rejected this proposal, arguing that a requirement of disclosure would still rely heavily on an assumption of good faith on the part of a patent applicant,<sup>63</sup> an assumption which has proved problematic as the Basmati example shows. Instead, the United States advocates rely on a private contract based system, whereby traditional knowledge holders could negotiate terms, including how their knowledge may be used, as well as benefit sharing arrangements and the like.

One issue with the United States proposal is that relying on a contract-based system will not necessarily protect traditional knowledge holders from issues surrounding inequality of bargaining power. A potential result of the United States proposal is that traditional knowledge holders residing in developing countries will accept minimal compensation for the appropriation of their traditional knowledge. This would be despite the fact that the arrangement may not be in the best interests of the community in the long term.

Furthermore, the proposal assumes that traditional knowledge holders have adequate resources and knowledge to properly assess the costs, benefits and risks associated with granting such a patent. This will not always necessarily be the case, particularly where the traditional knowledge holders are subsistence farmers such as in the Mexican Enola Bean example.

A better reform may encompass aspects of both the United States and the Indian and Brazilian suggestions. A system of compulsory prior informed consent, disclosure, and minimum benefit sharing could be implemented alongside a contractually based system. Minimum benefit sharing would essentially operate as a floor protecting the most vulnerable traditional knowledge holders, while still providing others with the opportunity to negotiate better outcomes for themselves.

The Convention on Biological Diversity ad hoc expert workshop on Access to Genetic Resources and Benefit Sharing has taken a slightly different approach to the WTO members. It has stated that the capacity of traditional knowledge holders should be increased to 'assess, inventory and monitor genetic resources and related traditional knowledge'.<sup>64</sup> Such a reform could potentially be very beneficial in enabling traditional knowledge holders to prevent outsiders from illegitimately appropriating their knowledge.

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<sup>62</sup> *Communication from Brazil and India*, above n 58.

<sup>63</sup> *Communication from United States*, above n 58.

<sup>64</sup> *Report of the open-ended expert workshop on capacity-building for access to genetic resources and benefit-sharing* UNEP Doc No UNEP/CBD/ABS/EW-CB/1/3, 10.

A combination of disclosure requirements, contractual-based obligations and capacity building to enable traditional knowledge holders to ensure compliance will provide a holistic reform that will reduce illegitimate appropriation of traditional knowledge. In essence, it addresses both sides of the equation: it will reduce the incentive on the side of patent companies to illegitimately appropriate traditional knowledge while simultaneously providing the traditional knowledge holders with the means to ensure that the proper incentive structures are maintained.

#### *4 Conclusions*

The aim of the reforms overall is to give enhanced protection for the rights of traditional knowledge holders, while at the same time not undermining the incentive to undertake innovation.

It is important that the system of patents for traditional knowledge recognises the unequal bargaining position that traditional knowledge holders face when negotiating with large multi-national corporations. While the United States' scepticism about the effectiveness of disclosure requirements is understandable, it does not itself constitute an argument to abandon such a legal obligation. Instead, it shows that there is a need to provide more effective enforcement mechanisms under the TRIPs Agreement, and also to provide financial and technological assistance to traditional knowledge holders seeking to challenge a patent on the grounds of non-fulfilment of the disclosure obligation.

This ultimately comes back to the wider issues surrounding the North-South divide.

As was recognised in many paragraphs of the Doha Declaration, there is a need for financial and technological transfer provisions to be complied with more fully, especially by developed countries. Until this happens, it will be difficult for traditional knowledge holders to enforce and assert their rights, and the exploitation of their traditional knowledge will continue unabated.