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IPRs and Biodiversity: Stop the Theft of Indigenous Knowledge

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1. Introduction

Recent years have seen an increasing appreciation of the role and importance of indigenous knowledge (IK). The knowledge of farmers and indigenous people in using and conserving biological resources is now recognised as a treasure that is currently contributing enormous value to traditional and modern medicine and to agricultural productivity, and is critical for future development or even survival of humanity.

According to a study by the Rural Advancement Fund International (RAFI), the value of germplasm from developing countries to the pharmaceutical industry in the early 1990s was estimated at US$32 billion a year at least, and genes from developing countries' fields for 15 major crops contributed over US$50 billion in annual sales in the US alone. Yet developing countries are paid only a minute fraction of the value for the raw materials and knowledge they contribute.

Even worse, there is increasing public concern verging on outrage that the IK of local communities is being 'misappropriated' from them by corporations and research institutions, mainly of the developed countries, through the mechanism of intellectual property rights. This misappropriation (now commonly termed 'biopiracy') is itself eroding the basis of IK and thus adversely affecting the prospects of sustainable development.

2. Patenting of Life Forms

The patenting of life forms is a relatively new phenomenon, but its incidence has grown at a tremendous rate in recent years, especially since the establishment of the Trade Related Intellectual Property Rights (TRIPS) Agreement of the World Trade Organisation (WTO) in 1995.

Most countries had prohibited patenting of biological resources, but the TRIPS treaty makes it mandatory for WTO member states to allow patenting of at least certain life forms (microorganisms) and certain living processes (microbiological processes). It also mandates the intellectual property protection of plant varieties either by patents or an 'effective *sui generis* system'. The floodgates having been opened to patenting of biological resources has led to serious consequences.

Many critics of patenting of life forms have argued that it is inappropriate to use the patent system to reward scientific work in the field of biological resources and processes, as living organisms are qualitatively different from non-living materials,

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and knowledge relating to biological processes and materials are not 'inventions'. Thus the very foundations of the patent system are being undermined as what are as best discoveries of what exists in nature are being patented as inventions in order to pander to commercial interests.

Some countries have already established the patenting of genetically-modified organisms as well as some types of naturally occurring organisms and their parts, including genes of animals, plants and human beings. Many of these organisms originate in the developing world. As at November 2000, patents were pending or had been granted on more than 500,000 genes and partial gene sequences in living organisms, according to *The Guardian* (London). Of these, there were over 9,000 patents pending or granted involving 161,195 whole or partial human genes in early November 2000.

3. Injustice to Indigenous Communities

A related problem is the patenting, usually in developed countries, of ingredients and other substances of plants for functions and uses that have already been in the public domain and in practice for many years or generations. In many cases, these are plants or substances that have been in use in a developing country or some or many developing countries. Similarly, protection (including through patenting) in the developed countries is being granted for plant varieties, the origins of whose genetic materials are in developing countries.

This phenomenon raises several issues, such as the following:

(a) The appropriation by companies or institutions of local communities' knowledge on biodiversity use transfers away the rights of the communities (in most cases located in developing countries) to become the private and monopoly rights of these institutions (in most cases located in developed countries). The IPR holders can make monopoly profits through commercialising the patented products. The local communities (and the countries they are in) that either developed or used the knowledge (and are therefore the rightful owners) usually do not get any of the benefits.

(b) An even more ironic situation arises if the patented process or product leads to the sale of products at high prices to developing countries from where the patented process or product originated.

(c) The patent owners of the North in their home countries can apply for similar patents in developing countries from where the knowledge originated. The local communities (or the enterprises) in the developing countries concerned would thus be constrained from making use of the patented process or making or selling the patented products. Nor can they sell in other countries where the process and product have similarly been protected by IPRs.

(d) If the protected product is a seed, there could be situations whereby the farmers of the developing country (including countries from where the original seed or gene came from) may buy and use but not save and re-use the seed, and thus they would incur greater costs and dependence. For example, such a situation can arise if the developing country itself has enacted IPR laws that enable the company to patent or protect the seed variety with the stipulation that farmers buying the seed cannot save it.

(e) The phenomenon gives rise to an ironic situation of 'reverse transfer of technology' in which it is the poor developing countries that are transferring knowledge and thus technology to the rich developed world. The knowledge contributes enormously to the economies and social development of the developed countries; the developing countries get scant reward for their contribution; and instead it is likely that the developing countries are eventually required to pay the institutions of the developed countries a high price (made artificially high by monopolistic IPRs) for the use of the product or process. This can also result in a large drain on the foreign exchange of the developing countries, adding to the debt problem that many of them have. The foreign exchange drain can come from the high prices paid for the imported patented products; and from the royalties that enterprises would have to pay to make use of the patented process.

(f) The patenting of biological resources can restrict or prevent producers from using the processes and products relating to traditional knowledge. For example, a corporation that has successfully applied for a patent over the use of a plant for certain functions (for instance, to treat some

ailments) could attempt to prevent others from using the plant for the same functions. Those who have been keeping and using (or are potential users or keepers of) traditional knowledge could thus be restricted and discouraged. There will be an erosion of traditional knowledge and thus of the conservation and sustainable use of biodiversity.

(g) Patenting is leading to an even greater concentration of control over the world's food crops such as maize, potato, soybean and wheat in a few global corporations. The top five corporations involved in agricultural biotechnology account for 60 per cent of the global pesticide market, 23 per cent of the commercial seed market and virtually 100 per cent of the transgenic seed market, according to an Action Aid study in 1999.

The study also reveals that since 1985, about 11,000 patents on plants have been registered in the US. In the European Union, patent law has been extended to microorganisms and genes of plants, animals and humans. Thus, if a company has a patent on a gene from a rice variety, it can obtain a patent on new rice plants engineered with that gene. Techniques to decode and identify the best plant genes are accelerating and the biotechnology industry is racing to map the genomes of the world's staple food crops with a view to patenting the vital and most interesting genes. The farmers of developing countries that developed the world's food crops would have no effective rights over the varieties that are patented by the transnational companies.

The study lists patents that have been claimed for naturally occurring compounds, genes or gene sequences with a variety of functions. They include 62 patents on genes or natural compounds from plants (including rice, cocoa, cassava, millet, sweet potato, rubber) which are traditionally grown in developing countries and 132 patents on genes in staple food crops which originated in developing countries but which are now grown globally, including maize, potato, soybean and wheat.

There are also patents and patent applications relating to plants that are traditionally used for medicinal and other purposes. Among the cases are a US patent on the use of tumeric for healing wounds (this was successfully challenged by the Indian government), a Japanese patent on the anti-diabetic properties of banana (traditionally used as herbal medicine in the Philippines), and the US patenting of a protein from a native strain of Thai bitter gourd (after Thai scientists found its compounds could be used against the AIDS virus).

4. Countering Biopiracy

What can be done to counter biopiracy? Firstly, there has to be a rethinking and review of IPR regimes that cover living organisms, biological resources and the knowledge of their use. In the WTO, the process of reviewing Article 27.3b of the TRIPS Agreement (dealing with IPR and biological resources) is going on. Many developing countries, including those in the Africa Group, have proposed that the review clarify that living organisms and biological or living processes cannot be patented. This proposal should be supported by all countries.

Until such an amendment is made, countries can take other damage-limiting measures. For example, they can exclude plants, animals and naturally occurring microorganisms from patentability. They can choose a *sui generis* system of plant variety protection that affirms the role and value of traditional knowledge and the rights of farmers, indigenous people and local communities. It can be argued that such a system enables the country to protect plant varieties in a way that is 'effective' in protecting the knowledge and innovations of local communities.

Several developing countries are also proposing in the WTO that a measure be introduced to require that prior informed consent of countries of origin be obtained before patent applications involving a biological resource or traditional knowledge of its use can be approved. If this proposal is accepted, it will enable countries of origin the right to reject the applications, or to enter into benefit-sharing arrangements with the applicants as a condition for permission. As part of the implementation of the Convention on Biological Diversity (CBD), developing countries can also establish national mechanisms and arrangements for regulations and benefit-sharing with persons or institutions that want to collect or use biological resources and knowledge associated with them.

Governments agreed in Paragraph 42(j) of the World Summit on Sustainable Development (WSSD) Plan of Implementation to: "Subject to national legislation, recognize the rights of local

and indigenous communities who are holders of traditional knowledge, innovations and practices, and, with the approval and involvement of the holders of such knowledge, innovations and practices, develop and implement benefit-sharing mechanisms on mutually agreed terms for the use of such knowledge, innovations and practices; ..." (emphasis added). Sub-paragraph (l) goes on to require the promotion of "the effective participation of indigenous and local communities in decision and policy-making concerning the use of their traditional knowledge". These agreements fall short of prior informed consent by local communities and indigenous peoples, but are still a step in that direction.

Countries are now reviewing their national laws on intellectual property to try to bring them in line with their obligations under the TRIPS Agreement. This national process is likely to accelerate the biopiracy phenomenon. With careful and intelligent legal and policy choices, developing countries can try to avoid some of the worse aspects on implementing their TRIPS obligations. But a fundamental rethink and amendment of the multilateral rules is essential if the injustice done to local communities and to indigenous knowledge by biopiracy is to be corrected.

In that respect, the WSSD Plan of Implementation offers some support. Paragraph 42(o) was contentious but perseverance by the developing countries led to an agreement to "Negotiate within the framework of the Convention on Biological Diversity, bearing in mind the Bonn Guidelines (on access and benefit sharing adopted under the CBD in April 2002), an international regime to promote and safeguard the fair and equitable sharing of benefits arising out of the utilization of genetic resources".

The Africa Group in the CBD process has asked for a legally binding protocol and this proposal was brought to the WSSD negotiations. Major developed countries opposed this, preferring non-legally binding guidelines and contractual arrangements for access and benefit-sharing. These countries in particular want the WTO/ TRIPS provisions to apply rather than alternative regimes under the CBD. As a compromise the term "international regime" was accepted. It would be very important for developing countries, in cooperation with like-minded developed countries, to work on two fronts: reforming the TRIPS agreement while creating a new set of international rules in accordance with the objectives of the CBD.

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