6. Intellectual Property Rights (IPRs) Trade Liberalisation

Introduction

Intellectual property rights (IPRs) are ownership rights and legal protection granted to ideas, inventions, artistic creations, technological innovations, etc. The Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement obligates all WTO members to apply uniform standards to such protective devices as patents, copyrights and trademarks as well as to other areas such as trade secrets (see box 6.1). This means that developing countries have to introduce IPR legislation similar to that in the advanced developed countries. While the TRIPS agreement is relatively new (since 1995), and developing countries are at different stages of the implementation process, the pressure to change IPR laws has been increasing since the early 1990s. This includes: (a) prodding by the US government (via bilateral agreements and the threat of being 'listed' under section 301 of US Trade Law); (b) countries' commitments to numerous international arrangements; and (c) the lobbying efforts of pharmaceutical companies. Many developing country governments are thus intensely involved in an on-going process of revising national legislation in this area.

Other IPR frameworks include the International Union for the Protection of New Varieties of Plants (UPOV), the Convention on Biological Diversity (CBD) and the Food and Agriculture Organization (FAO) International Undertaking on Plant Genetic Resources (FAO-IU) (see box 6.3). UPOV has been revised several times, with the latest version (1991) being the most restrictive and pro-breeders' rights. Under the TRIPS agreement, countries are required to enact IPR legislation for plant varieties by 2000 for developing countries and 2005 for LDCs. UPOV 1991 is increasingly being pushed by the major developed countries as the model for such legislation, although countries can adopt a *sui generis* (meaning 'of its

own kind' or 'unique') system. Most people speculate, however, that this novel option actually means a soft patent system for seeds (GRAIN, 1997).

Box 6.1 Intellectual Property Rights (IPRs) in the MTS

The areas covered by the TRIPS agreement are:

- copyright and related rights;
- trademarks, including service marks;
- geographical indications (i.e. preventing the misuse of place names for products such as Scotch or Roquefort cheese);
- industrial designs;
- layout-designs (topographies) of integrated circuits;
- undisclosed information, including trade secrets;
- patents – protection must be available for both products and processes, in almost all fields of technology, and must be available for inventions for at least 20 years.

Governments can refuse to issue a patent for an invention if its commercial exploitation is prohibited for reasons of public order or morality. They can also exclude diagnostic, therapeutic and surgical methods, plants and animals (other than micro-organisms) and biological processes for the production of plants or animals (other than microbiological processes). Plant varieties, however, must be protectable by either patents or a *sui generis* system such as the breeders' rights provided in the conventions of the International Union for the Protection of New Varieties of Plants (UPOV).

Source: World Trade Organization website: http://www.wto.org/english/tratop_e/trips_e/trips_e.htm

The TRIPS agreement is the only IPR mechanism in the multilateral trade and economic system that is part of a legally binding framework backed by a strong dispute settlement mechanism with the threat of trade sanctions. Thus it has the greatest impetus for generating re-thinking, re-evaluating and re-designing national legislation, policy and practice regarding instruments for protecting IPRs. Proposals to extend patent protection to plants, micro-organisms, biotechnological techniques, food and essential drugs raise numerous ethical, legal and developmental problems for many developing countries.

The TRIPS agreement is ... part of a legally binding framework backed by a strong dispute settlement mechanism with the threat of trade sanctions.

Gender Issues in the Protection of IPRs

There are serious gender and equity issues underlying the technical, apparently gender-neutral administrative decision-making issues regarding a *sui generis* system. These arise not only in terms of widely recognised structural inequalities between men and women in terms of access to resources such as land, credit and technical assistance but also in terms of the issues of food security and public health. There are fundamental questions over, for example: (a) the possible conflicting applications of international agreements; and (b) the rights of plant breeders and/or farmers *versus* the protection of the public interest. These are not issues that can be resolved later after all the presumed technical niceties have been worked out. Rather, in light of the abundance of literature that shows that trade policy and gender are inextricably bound in terms of outcome, they need to be addressed in the initial stages of trade policy formulation, especially in the rewriting of IPR laws.

It is therefore critical that developing country governments take into account the existence of structural and inequality issues in their economies – including class and gender constraints in terms of access to existing resources – and how the proposed changes to patent laws will impact on these. This is especially important with regard to the availability, safeguarding and enhancement of biodiversity. The TRIPS agreement has significant gender implications in at least four broad areas: agriculture and biodiversity, public health, traditional knowledge and technology transfer.

Agriculture and biodiversity

In many developing countries women work as farmers and natural resource managers. They contribute to national agricultural production, maintain the environment, uphold biodiversity and ensure family food security. Women account for 70–80 per cent of food grown and eaten in sub-Saharan Africa, 65 per cent in Asia and 45 per cent in Latin America and the Caribbean (World Bank, 1996). Women are also active in improving seed varieties in many countries.

However, women often lack the necessary cash and credit to purchase fertiliser and seed. Men as a group tend to have greater access to finance and also tend to plant hybrids such as maize as cash crops. Women rely intensively on the use of natural and genetic resources. It has been noted that when women have access to fertiliser and training they often achieve much higher yields than men do. For example, the World Bank noted that yields among women farmers in Kenya could increase by 9–24 per cent if they had the same experience, input and education as men. In addition, women face other fundamental constraints such as weak or non-existent ownership of land and insecurity of tenure. Even where women have access to land, they may lack access to technology and inputs such as seeds.

Biodiversity is an area of critical importance to women, thus the vital need for gender-sensitive farmers' rights and plant breeders' rights (PBR) instruments. More expansive PBR provisions, which impose restrictions on the purchase, sale, exchange or use of seeds, are likely to have a significant adverse impact on the survival of small farmers, many of whom are women. At stake in the patent discussion are rural development and the income and sustainable livelihood-generating activities of farmers. Patents in agriculture also have implications for food security, nutrition, traditional (or indigenous) knowledge and technological transfer in terms of future growth and productivity and the competitiveness of the agricultural sector.

Geographic indications in the TRIPS agreement currently offer protection to wines and spirits in terms of kind, type and style associated with a particular geographic location. However, many developing countries would like to expand this

Women such as these working in their home garden in Sri Lanka play a crucial role in biodiversity

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to include agricultural commodities such as teas and rice. Such protection would require collective certificates and collaborative arrangements on research and cross-licensing. While it would safeguard against the adverse impact of competition, attention must be paid to how the collective certificate would be made within a country or region and who would be the licensee. Questions need to be asked about, for example: (a) the impacts this would have on existing farmer groupings (poor, rich, men, women or different ethnic groups); and (b) which groups are likely to be covered under the certification and which groups are likely to be disadvantaged because of historic gender, social and other cultural biases.

Public health

The public health dimension of the TRIPS agreement boils down to at least four critical areas of concern:

1. The TRIPS agreement and countries' latitude in creating measures that will reduce or restrict the effective monopoly of patent holders over medicines. This means the extent to which governments can over-ride the agreement's provisions in order to secure cheaper medicines.
2. The scope and rights of countries in determining the grounds for safeguards such as compulsory licensing (i.e. when governments can authorise the production of a patented product without the permission of the patent holder). This is justifiable:
   a) when the patented medicine is essential but unavailable due to lack of supply or an unreasonably high price;
   b) for public non-commercial use;
   c) to remedy anti-competitive practices such as high prices due to domination of the market and parallel imports (also know as 'grey market' imports, i.e. cross-border trade in a product without the permission of the manufacturer or publisher because of a significant price difference for the same good in different markets).
3. The proper balance in the TRIPS agreement between the protection of property rights and obligations of the right holder and the protection of the public interest.
4. The scope provided by a patent for 'exclusivity' (the period for which the patent holder can exclusively market the innovated product and process). What are its implications for price competition and hence a wide choice of effective treatments for patients in developing countries?

The public health concern is currently mainly focused on HIV/AIDS, although the Africa Group (about 41 countries) has been trying to broaden this to include other types of present and future pandemics such as Ebola. Anti-retroviral treatments for controlling HIV, such as triple, double or combination anti-retroviral therapy, can be prohibitively expensive in developing countries and, where available, reduce families' abilities to pay for education and other services. Moreover, there are other diseases and illnesses such as cancer for which people are unable to obtain safe affordable medicines and pharmaceuticals.

There are considerable gender differences in access to treatment and the impacts of epidemic and pandemic diseases such as HIV/AIDS, malaria and tuberculosis on the lives of girls and boys and women and men. Women in sub-Saharan Africa account for roughly 55 per cent of the 28 million adults and children living with HIV/AIDS in the region. Research in Uganda found that "women are severely disadvantaged in gaining access to life-saving treatment" (Oxfam, 2002a). Gender-based discrimination limits women's access to and ability to participate in safe sex education, practice safe sex and get tested for the virus, even when they are known to be at high risk. Oxfam and Ugandan researchers found that women with HIV-infected partners are often not tested if they are not ill (partly because the family cannot afford the medicines). Women and girls are also the first and last resources for shouldering the burden of care for families and communities. Pandemic diseases impose additional burdens and stresses on the time of girls and women, with long-term implications for their education, training and livelihoods. Girls are often taken out of school to care for sick relatives or to provide other help in the household.

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There are also gender implications in terms of women's health, morbidity and mortality outside of the context of epidemic diseases. Women in particular need access to affordable pharmaceuticals over their lifecycle in relation to reproductive health and maternal and child care. Thus the public health concern ought to be broadened to include at a minimum reproductive health and nutrition.

The UN Human Rights Commission's resolution (April 2001) called on "all states to ensure that application of international agreements is supportive of public health policies which promote broad access to safe, effective and affordable preventive, curative or palliative pharmaceutical and mechanical technologies". This challenge to state actors was addressed by the Doha Declaration on TRIPS and Public Health (November 2001), which affirmed that "the TRIPS agreement does not and should not prevent governments from taking measures to protect public health". In addition, the Declaration extended the time period for LDCs to implement pharmaceutical patents from 2006 to 2016. According to Oxfam (2002b), it also clarified key public health safeguards in

The Doha Declaration on TRIPS and Public Health ... affirmed that "the TRIPS agreement does not and should not prevent governments from taking measures to protect public health".

TRIPS that had been contested by the US and the pharmaceuticals industry, by reaffirming the rights of governments to:

- authorise the use of a patent without the consent of the patent holder (compulsory licensing) and determine the grounds on which such licenses are granted, including public health objectives;
- determine what constitutes a national emergency – including but not limited to the HIV/AIDS pandemic.

The TRIPS agreement limits the use of compulsory licenses to be granted "predominantly to supply the domestic market". The Doha Declaration left open the question of how nations that do not have the production capacity to produce pharmaceuticals can exploit their rights to issue compulsory licences. After 2005 the main developing countries such as Argentina, India and Mexico that now have the capacity to produce affordable generic pharmaceuticals for export to other developing countries will have to cease doing so for 'on patent' new medicines.

The current state of the debate finds the US and pharmaceutical companies seeking to: (a) narrow the scope of the coverage of disease to an exhaustive list of 23 diseases (other countries propose an indicative list of 15); (b) limit the number of countries that could qualify; and (c) impose a temporary solution in the form of a moratorium on cases where governments grant compulsory licensing for exports, as opposed to the permanent solution indicated in the Doha Declaration. This proposal is opposed by most developing countries, especially the Africa Group, which reject any narrowed interpretation of the Declaration. Instead they counter that article 8.1 of the TRIPS should be amended and strengthened with an unqualified statement that "nothing in the agreement shall prevent the adoption of measures to protect public health" (Oxfam, 2002b).

Traditional knowledge

Traditional (or indigenous) knowledge, whether local methods of food processing or the use of plants to control pests or treat infections, makes important contributions to food security and

health care. Much of this knowledge is possessed by women. Since it is usually passed orally from generation to generation, it is rarely patented or protected by IPRs and it is not developed for commercial purposes or export. When it is seen to be valuable by MNCs, the community it comes from rarely benefits. This use of local knowledge has been described as 'biopiracy'.

Box 6.2 Protecting Indigenous Knowledge and Ensuring Benefit Sharing

Explicit gender-sensitive provisions and simple administrative processes for protecting traditional knowledge and ensuring benefit-sharing between men and women in communities must include:

- **recognition of the role, contribution and specific gender-based constraints of women farmers in the identification, maintenance and refinement of germ plasm, and creating farmers' and traditional varieties;**
- **provisions and mechanisms for the protection of unwritten knowledge;**
- **a legal basis for government departments to intervene on behalf of women and the disadvantaged;**
- **provisions for improving and ensuring women's access to seed, credit, technology and the results of research and development;**
- **provisions for expanding the scope of the public's role in research and development, including programmes for women's greater involvement;**
- **provisions for compulsory licensing for essential food inputs and food security;**
- **rejection of the patenting of plant varieties, animal breeds or essentially biological processes;**
- **rejection of UPOV 1991 as the model for *sui generis* systems.**

The issues of biopiracy and bioprospecting . . . are important for men and women with different degrees of loss, entitlement and severity.

The issues of biopiracy and bioprospecting (the search by multinational drug companies for genetic resources to use in new pharmaceutical products and medicines) are important for men and women with different degrees of loss, entitlement and severity. At the heart of the discussion are the ticklish issues of benefit sharing, prior informed consent and processes for enhancing traditional knowledge (see box 6.2). This is a particularly difficult area since the wider issues of who gives consent and who gains or loses from collective knowledge must also touch on the role and contribution of women in the creation and preservation of plant varieties and germ plasm.

Technology transfer

Women have tended to be almost entirely overlooked in science and technology development and transfer (Gender Working Group, 1995). TRIPS is likely to reinforce the inequitable access to and control of technological knowledge unless trade liberalisation and investment policies recognise that both women and men, especially those living in poverty, need improved access to appropriate technologies, and to information and knowledge about technical options. Technology transfer does not just mean making more productive technologies available. It also means providing a supportive environment for "addressing people's organisational, management and marketing skills; opening new channels of information and knowledge; and making credit and markets more accessible" (ITDG, 2002). Technical information also needs to be made available in a form appropriate to women (see box 2.5).

Towards a Gender-sensitive Framework for IPRs

To date there is no significant gender-sensitive framework underpinning the process of developing and revising IPR systems in the global trading system. Pointers of what to avoid, however, can be gathered from looking at case studies of the implementation of IPR legislation and models currently underway in a number of developing countries.

In general, unfavourable gender outcomes can be expected when governments and policy-makers do not take into account the impact of IPRs on all sectors in the economy. Special attention must be focused on the nature of their impact on

specific forms of agriculture since IPRs (especially the development of plant variety laws) have long-term implications for present and future capabilities in plant biotechnology. Particular areas of concern include:

- the export of cut flowers/ornamental plants, which facilitates access to new plant varieties (e.g. Chile and Kenya);
- genetically modified organisms (GMOs) – or transgenic crops – that are herbicide tolerant and insect resistance. They account for 69.5 million acres globally (a 15-fold increase since 1996). Soybean and corn/maize together account for about 82 per cent of the global areas under transgenic crops (74 per cent in the US, 15 per cent in Argentina, 10 per cent in Canada, with the remainder supplied by Australia, France, Mexico, South Africa and Spain).

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In the context of agriculture and related areas, most revisions of national legislation around IPRs are based on one or a combination of the major IPR instruments mentioned above (and described in more detail in box 6.3).

It is widely acknowledged that patents lead to higher prices for hybrids as they are developed in the private rather than the public sector. In addition, new seeds are increasingly being controlled via IPRs (and by the top ten TNCs, which currently control about 30 per cent of global seed sales). This trend has important implications for women and other small farmers who are poor. As noted above, most women farmers do not have easy access to cash or crop insurance and often borrow at high interest rates. They also face limited access to germ plasm and scientific knowledge.

The TRIPS agreement allows for patenting on micro-organisms, which could and may be interpreted to include algae, bacteria, fungi and viruses. These are critical for self-reliant agriculture since they affect the ability to develop biofertilisers and biopesticides that are both based on micro-organisms. Bacterial strains that act on soil phosphates help agriculture because they break them down into a form that plants can utilise as nutrients. Without these, farmers will need to import more phosphate fertilisers. Strains of nitrogen-fixing bacteria can improve nitrogen uptake of plants and the protein content of foods.

Box 6.3 Major Frameworks with Provisions Relating to IPRs

The UPOV 1991 framework: the International Union for the Protection of New Varieties of Plants (UPOV) in general, but more specifically the 1991 version, is unconditionally pro-plant breeders' rights and the patenting of plant varieties. It also imposes legal and economic restrictions on farmers. The known consequence of a pure UPOV-based system is that there will be a tendency toward genetic uniformity and a movement away from genetic diversity. There is also likely to be decreased access to genetic resources. This will have tremendously negative consequences for women farmers. In general, countries that have signed on to UPOV 1991 are likely to have the least gender-friendly framework.

The UPOV 1978 framework: UPOV 1978 allows countries to have exclusions for certain plant varieties as well as for food, medicines and crops for planting. There are also exemptions for researchers. In addition, there is scope for farmers' privileges and the recognition of farmers' varieties. On the whole there is wide scope for ensuring food security. Those countries that signed on to UPOV 1978 – which includes most developing countries – are likely to have an IPR framework that is somewhat more amenable to gender concerns than UPOV 1991.

The CBD/FAO-IU framework: The key points of departure of both the Convention on Biological Diversity (CBD) and the FAO's International Undertaking on Plant Genetic Resources (FAO-IU) from UPOV and the TRIPS agreement are the emphasis on farmers' equity, prior informed consent and benefit sharing. Farmers' rights are somewhat underplayed in the CBD but are explicitly treated in the IU. This puts genetic resources in the public domain, emphasises food security and allows small farmers to save, use and sell seeds. The IU is also premised on the recognition of the farmer as the custodian of biodiversity. There are provisions in it that could be expanded to take

Box 6.3 **(continued)**

into account some of the concerns women face. While it does not have an explicit gender perspective, this framework's implicit attention to social justice and equity provides promising ground for integrating gender into its further elaboration.

Gender has not been taken into consideration in the designing, planning or implementation of IPRs, and different countries are at different stages of implementation, including the construction of *sui generis* systems. This makes it difficult to assess whether or not a particular system is likely to generate gender-sensitive outcomes. However, in the context of the set of international IPR regimes, a spectrum ranging from the least gender-sensitive to the most gender-friendly can be derived.

A woman in Bangladesh saves seeds for the following year's crop
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Because national laws establish the framework for implementing the TRIPS and related IPR agreements, they must be ethically based and premised on gender-sensitive and equity outcomes.

The key elements in defining such a spectrum are the extent to which a system:

- has a pronounced equity bias;
- is balanced between breeders' and farmers' rights;
- protects indigenous and traditional knowledge;
- is balanced in terms of public interest (i.e. protects and ensures food security and transfer of technology);
- protects genetic resources;
- has provisions for prior consent and benefit sharing;
- pays attention to and makes particular provisions for ensuring gender equality.

A number of researchers correctly argue that because national laws establish the framework for implementing the TRIPS and related IPR agreements, they must be ethically based and premised on gender-sensitive and equity outcomes (social justice). These are key cornerstones for sustainable development. A gender-sensitive approach requires recognition of and actions to combat the structural gender disadvantages that women farmers, entrepreneurs, researchers and consumers face in society and which would be negatively affected by the patent system or PBR or ignored by farmers' right provisions. A favourable system – whether for individual IPR provisions or for constructing a *sui generis* system – must consider: (a) protecting public interest above the rights of IPR holders; (b) ensuring food security and public health; and (c) preventing the abuse of rights by right holders.

In the general area of agriculture, governments must make sure that IPR frameworks are centred on promoting rural development, protecting farmers' access to genetic resources and ensuring equitable benefit-sharing agreements. Such frameworks must also be complemented by a set of measures designed to promote and ensure support for disadvantaged groups' access to technology and for their property rights. In terms of public investment, governments must increase commitment and funding for research. They must also establish provisions for research and development to enter the public

domain and be publicly disclosed or meet other public conditions. Governments can also seek to retain the right of invention as a condition for funding. Alternatively, the approach could be to mandate or otherwise encourage strong linkages to promote public research and development objectives through training programmes and trust funds.

Aspects of best practices can be drawn from the existing or proposed changes to IPRs and the TRIPS agreement in those developing countries where these discussions have gone on longer. There is already national legislation that draws on one or more of the frameworks in box 6.3 and that lends itself to a gendered approach. Many of these move beyond the CBD/FAO-IU, either by utilising a broader interpretation of the concepts and language found in these international agreements or by adding particular national or regional concerns. For example, countries such as Bangladesh, Jamaica, Sri Lanka, Tanzania and Uganda support some form of recognition of community rights. Specifically, they oppose the patenting of plants without the prior consent of the community. India has opted for a *sui generis* model that includes the farmers' right to sell seed. Canada and Malaysia are generally recognised as having 'good' laws regarding the patenting of plants. However, while Malaysian patent law does not allow patents on plants, the government is currently reviewing a bill that would implement a *sui generis* model of protection for plant varieties, including those cultivated by local and farming communities. Among many LDCs there is an emerging consensus that naturally occurring plants and essentially biological processes should not be patented.

The best of such possible models are those that explicitly build in protection of traditional knowledge and genetic resources and have detailed and well worked out administrative processes for prior consent and benefit sharing. Good examples in this grouping are in Latin America, especially Argentina and Brazil. Although no country's IPR legislation or model is constructed in a gender-sensitive context, some developing countries' policy-makers have given in-depth consideration to the social justice aspects of the revision of patent and IPR laws (see box 6.4).

The best ... models are those that explicitly build in protection of traditional knowledge and genetic resources and have detailed and well worked out administrative processes for prior consent and benefit sharing.

Box 6.4 IPRs and Social Justice: Country Examples

The following are some examples of countries and regional models that have considered social justice aspects in their patent and IPR laws:

- Argentina excludes from patenting all biological and genetic material existing in nature or its replica and the biological processes implicit in animal, plant and human reproduction. This includes the genetic processes relating to materials capable of conducting their own duplication under normal and free conditions such as occur in nature. This model is supported by the Andean group law of 1993.
- Australia and Canada's IPR systems explicitly recognise indigenous communities' knowledge. Australian Federal court also recognises the relevance of customary aboriginal laws.
- Brazil excludes from patenting all or part of living beings and biological material found in nature or isolated from it, including the genome or the germ plasm of any natural living being, and any material biological processes.
- India's model legislation protects farmers' access to seeds, etc.
- The Philippines has developed *sui generis* protection of traditional knowledge, which gives indigenous communities rights over their knowledge.
- The African Model Legislation for the protection of the rights of local communities, farmers and breeders and for the regulation of access to biological resources acknowledges women in the generation, conservation and sustainable use of biological diversity and associated technology (OAU Model Law, Algeria 2000).

Box 6.4 **(continued)**

- **The Pacific Regional Draft Model Law on the Protection of Traditional Knowledge and Cultural Expression establishes "a new range of statutory rights for traditional owners of traditional knowledge and expressions of culture". Key provisions include: traditional cultural rights, moral rights, obtaining prior and informed consent from traditional owners, enforcement, transitional arrangements and cultural authority.**

Elements of best practice in *sui generis* systems generally include one or more of the following:

- a balance between farmers' and breeders' rights. Farmers' rights are pre-existing and ever present but the protection of commercial plant breeders' rights could undermine them so these rights need to be recognised and protected;
- flexibility and sensitivity to farmers' use and re-use of patented livestock or the animal reproductive material for pursuing agricultural activity both for sale and non-sale;
- the exclusion of substances found in nature, even if these are isolated or transformed via technical processes;
- more public sector research on the impact of transgenic crops in the South due to concerns about safety as well as control and ownership. Research on such crops is currently dependent on the Consultative Group on International Agricultural Research (CGIAR) or other National Agricultural Research Organisations (NAROs) for free exchange of germ plasm and scientific knowledge;
- not going beyond the TRIPS agreement to grant patents for plants and animals;
- developing a framework for the patenting not only of genetically engineered micro-organisms but also for naturally occurring organisms;

Developing country governments need to eliminate constitutional, legal, administrative, cultural, behavioural, social and economic obstacles to women's full participation in sustainable development and in public life.

- recognition of farmers' rights to: save, sell and exchange seed; have access to the latest technology; and be given public credit for their contribution to conservation and the development of plant genetic resources;
- protection for traditional knowledge via benefit-sharing agreements and a system of compensation for providing germ plasm and rural innovations, including explicit gender-sensitive provisions (see box 6.2).

To paraphrase Agenda 21, chap. 14 – in constructing national practices and policies for IPRs, such as a *sui generis* system, developing country governments need to eliminate constitutional, legal, administrative, cultural, behavioural, social and economic obstacles to women's full participation in sustainable development and in public life. Not only is this critical for governments but it should also be a priority concern for intergovernmental organisations concerned with promoting sustainable agricultural development and the gender equality outcomes of economic and social policies.

Pointers for Further Discussion

IPR experts, trade negotiators and gender equality advocates should be aware of the emerging gender issues underlying the IPR debate so that they are able to design gender-sensitive policies in the implementation of the TRIPS agreement. This chapter has attempted to sketch out some of the critical issues but it is not an exhaustive study. There is therefore much scope for re-thinking, deepening and developing gender-sensitive policy analysis in this area. The questions in box 6.5 and table 6.1 and the recommendations on IPRs in Chapter 7 are meant to stimulate further thinking in this direction.

Box 6.5 Key Questions for Gender and the TRIPS Agreement

1. What are the implications of policy changes regarding IPRs and breeders' and farmers' rights on women in terms of production of food crops (which are critical for food security) *versus* export-oriented production? This is especially important in the production of GMOs such as soybean and corn/maize, which will affect women's access to land, etc.
2. What are the existing practices among women and male farmers in regard to exchange, re-use, sale and purchase of seed?
3. What are new or additional constraints for women and male farmers in terms of restrictive plant breeders' rights and the patenting of seed technology?
4. What are the impacts on the diversity of seed available?
5. What is the nature of performance of women smallholders?

Table 6.1 **IPRs: Existing Areas of Concern, Potential Problems and Key Questions**

Broad areas	Existing areas of concern	Potential problems from changes in IPRs	Key questions
Food security/nutrition	Quantity/quality of food intake (particularly relevant for Bangladesh, India and Pakistan) Patenting of micro-organisms such as algae, bacteria, fungi and viruses impacts on self-reliant agriculture Biofertilisers and biopesticides: bacterial strains help to break down inert soil phosphates to a form that plants can use as nutrients	Patents lead to higher prices of seeds and hybrids (new seeds are increasingly being controlled by TNCS: the top ten TNCs control about 30 per cent of global seeds sales) Patents on micro-organisms Access to fertilisers High import of phosphate fertilisers More need for nitrogen-fixing bacteria to improve nitrogen uptake of plants and improve protein content of food Insecurity of essential food and seed varieties critical for nutrition andl local diet	What is the nature of pro-male and pro-adult bias in terms of food intake? How will changes in IPR laws and policies change this? What are the specific implications for women's and girls' health and nutritional status?
Resource management		Heightened dependence on market for water, fertiliser, land and seed	
Dissemination of technology/technical information	Low education levels of women Women have less access to training, extension programmes and research in public institutions for research and development (UNEP noted that less than 1 per cent of government-employed agricultural advisers in Asia and 3 per cent in Africa were women)	Women's lower participation in world of patents Limited ability to make patent applications for their own inventions and local knowledge in relation to genetic resources, medicine and conservation practices	How can women's ability to obtain patents be improved? How can women's education re. the nature of patents and seed contracts be enhanced?

Table 6.1 (continued)

Biodiversity/ access to genetic resources	Access to seed Ability to participate in informed consent and benefit-sharing	Access to fertilisers High import of phosphate fertilisers More need for nitrogen-fixing bacteria to improve nitrogen uptake of plants and improve protein content of food	What are the effects of plant breeders' rights and patents on the availability, cost, productivity, and return to women and men farmers?
	Credit Women more than men are dependent on rural financing such as micro-credit Time burden	Restricted access to credit Increased debt load (in purchasing seed, etc.)	