

## **AGREEMENT ON TRIPS: LEGAL FRAMEWORK FOR PLANT VARIETY PROTECTION**

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The WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) requires all WTO members to provide for intellectual property protection for plant varieties. According to the TRIPS Article 27.3 (b), protection is to be provided "... either by patents or by an effective *sui generis* ('of its own kind' in Latin) system or by any combination thereof". Since *sui generis* itself can take many forms, the range of flexibility is wide for a WTO member to develop its own mechanism to protect plant varieties taking such country-specificities as level of economic development, resources, agricultural and industrial policies, the state of the public and private research capability, and special needs of small farmers and indigenous communities in to account.

A complete *sui generis* system of protection is typically comprehensive, and covers many aspects. Some of these elements are addressed in the TRIPS Agreement while others are found elsewhere, e.g. in the Convention on Biological Diversity (CBD). The purpose of this paper is to analyse two key building blocks of a *sui generis* system, namely *farmer's rights* and *breeder's rights*. All *sui generis* systems must include both these rights. The main question is striking an appropriate balance. That is the focus of the analysis in this chapter.

The chapter, organized in five sections: introduces Article 27.3 (b) of the TRIPS Agreement with interpretation of various terminologies used in this article; covers related international Agreements including review of the four models of *sui generis* systems; discusses the Nepalese context, covering both the rationale for an appropriate *sui generis* model and legal and institutional measures required to formulate and implement the law; and concludes with a summary of options for a *sui generis* system for Nepal.

### **PROVISIONS OF ARTICLE 27.3 (B) OF THE TRIPS AGREEMENT**

#### **The Context of the Article 27.3 (b)**

For the agricultural sector, the two most important provisions of the TRIPS Agreement are the protection of plant varieties (Article 27.3 (b)) and geographical indications (Article 22.1). This paper focuses on the former. The later are covered in Chapter 9 of this volume (Malla and Shakya 2004).

It is interesting to note in the TRIPS Agreement the provision for the protection of plant varieties appears as one of the three cases of exceptions from the general rule requiring patentability, i.e. the requirement for patents (the first paragraph of Article 27. See Box 1. In brief, the TRIPS requires that patents shall be available for any inventions, whether products or processes, in all fields of technol-

ogy, provided that they are new, involve an inventive step and are capable of industrial application, with the exception noted in the subsequent paragraphs.

Box - 1

### Legal text of Article 27 of Section 5 (Patents) of the TRIPS Agreement

#### Section 5: Patents

#### Article 27

##### *Patentable Subject Matter*

1. Subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.<sup>5/</sup> Subject to paragraph 4 of Article 65, paragraph 8 of Article 70 and paragraph 3 of this Article, patents shall be available and patent rights enjoyable without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.

2. Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.

3. Members may also exclude from patentability

(a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals;

(b) plants and animals other than microorganisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.

<sup>5/</sup> For the purposes of this Article, the terms "inventive step" and "capable of industrial application" may be deemed by a Member to be synonymous with the terms "non-obvious" and "useful" respectively.

There are three exceptions to the general rule of patentability. First, under Article 27.2, WTO Members can exclude patenting where inventions are contrary to *ordre public* (public order), or where inventions are dangerous to human, animal or plant life or health or to the integrity of the environment. Second, Members can also exclude from patentability diagnostic, therapeutic and surgical methods for the treatment of humans or animals (Article 27.3 a). Third, under Article 27.3 (b), members can exclude plants and animals other than microorganisms and essentially biological processes for the production of plants or animals (natural breeding methods). However, members are required to provide patent protection for non-biological and microbiological processes such as biotechnological gene manipulation and gene transfer. Countries that exclude plant varieties from patent protection are required to provide an effective *sui generis* system of protection.

On the whole the provisions are fairly restrictive. Hence, it will be very difficult for members to argue against patenting for cases that are not explicitly covered by the three exclusions. For example, it is no longer possible to exclude patentability on the ground that it would harm economic development. Moreover, a reading of Article 27.3 (b) shows that even though plants are excluded, plant varieties have to

be protected. Also, microorganisms, such as bacteria, viruses, fungi, algae, protozoa and non-biological and microbiological processes for the production of plants and animals will be eligible for patent protection.

As per Article 29.1 of the TRIPS agreement, an applicant for a patent has to disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art and may require the applicant to indicate the best mode for carrying out the invention known to the inventor at the filing date or, where priority is claimed, at the priority date of application.

Article 31 allows compulsory licensing and government use without the authorization of the right holder. However, such licensing can be granted only if an unsuccessful attempt has been made to acquire a voluntary license on reasonable terms and conditions within a reasonable circumstance. In each case of such licensing, the patent holder needs to be adequately remunerated taking into account of economic value of the license. Finally, Article 33 requires Members to provide the patent protection for a minimum period of 20 years from the filing date.

### **Interpretation of the provisions and terminologies in Article 27.3 (b)**

As the article 27.3 (b) is one of the most controversial articles of TRIPS, the interpretation of the wordings in the article can have significant legal implication. The following interpretation of some of the terminologies in the Article is based on a FAO resource manual (FAO 2000).

**Plants:** Article 27.3 (b) excludes plants from patentability. Here, the term plant includes whole plant and parts of the plant as well (genetic material, tissues, leaves, etc). Article 27.3 (b) has kept open the number of botanical genera and species that can be included for protection. This means in principle all genera and species of plants can be included in the list of protected varieties. On a similar note, nothing in the Article precludes WTO Members from granting protection under *sui generis* system to subject matter that goes beyond plant varieties only. Therefore, even traditional or indigenous knowledge and farmers' rights can be subject to protection under a *sui generis* system.

**Microorganism:** Microorganisms have been defined as any microscopic organism, including bacteria, viruses, unicellular algae and protozoan, and microscopic fungi, and are considered to be a category different from the kingdoms of plant and animals. Article 27.3 (b) requires patenting for microorganisms.

**Essentially biological process:** According to Article 27.3 (b), essentially biological process may be excluded from patentability. Natural science defines 'biological process' as any biological activity carried out by any living organism at molecular, cellular or organism level. Extending this concept, 'essentially biological process' may be understood as a process which is performed without the application of any external technical skill by humans. However, this interpretation is under debate and leaves room for interpretation by members themselves.

**Microbiological and non-biological process:** These processes are mandatorily patentable under Article 27.3 (b). The former are those that apply microbi-

ological techniques using plant cells or microorganism. The provision of including microbiological process under patents has been controversial owing to the fact that microbiological process may be applicable at some stage of production of entire plant, which, in contrast, may be excluded from the patent provision. Moreover, the option of excluding 'essentially biological process' from patentability compared to the provision of compulsory patenting of microbiological process which can be argued to be a biological process has made Article 27.3 (b) a controversial one (Khor 2002). In case of non-biological process, it has been interpreted as the process, which will result in a product that cannot be created naturally. Generally, any method of genetic engineering may be regarded as being non-biological method.

**Plant varieties:** Article 27.3 (b) has provisioned that plant varieties can be protected either by patents or by effective *sui generis* system. However, the article hardly defines plant varieties. As a result, it has been noted that industrialized countries would like to broaden the term plant varieties to include biotechnological products also, in order to make them eligible for patent protection. On the other hand, countries with traditional agricultural economies prefer a narrow interpretation of the term to promote unrestricted availability of plant species. Therefore, to avoid misinterpretation, plant variety needs to be explicitly defined in the TRIPS.

## **RELATED PROVISIONS IN OTHER INTERNATIONAL AGREEMENTS**

### **Convention on Biological Diversity**

The Convention on Biological Diversity (CBD) was conceived during the UN Conference on Environment and Development (UNCED) in 1992. It came into force in December 1993 and: covers all fields of biodiversity encompassing all issues concerning genes, species and ecosystem (FAO 2000); takes a comprehensive approach to all issues concerning conservation and sustainable use of biodiversity; and addresses issues such as access to genetic resources, sharing of benefits from the use of genetic materials and access to technology. Article 1 of the Convention states its objective as "... The conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies,..".

Sovereign rights of States: This is addressed in Article 15.1 of the CBD as follows: "Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation".

Recognition of the contribution of local population: Article 8 (j) of the CBD has recognized the role of indigenous and local communities in conserving biodiversity. It has stressed the maintenance of local knowledge and practices of conservation and sustainable use and need to encourage equitable sharing of benefits derived from the use of the local knowledge.

Access to genetic resources: Article 15 of the CBD has recognized the authority of national governments in determining access to genetic resources within their national territory. However, the Convention also stresses the need to facilitate

access to genetic resources and opposes imposition of restriction that run counter to the objectives of the CBD. It has made provision of access on mutually agreed terms and prior informed consent for providing such access.

Access to and transfer of technology: Article 16.3 has stressed the adoption of legislative, administrative and policy measures so as to provide access to and transfer of technology to developing countries on mutually agreed terms, including technology protected by patents and other IPR.

Sharing of results and benefits: Under Article 15.7, the contracting parties to the CBD are obliged to take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way the results of research and development and benefits arising from the commercial and other utilization of genetic resources with the contracting party providing such resources.

### **International Undertaking on Plant Genetic Resources and International Treaty on Plant Genetic Resources for Food and Agriculture**

The FAO International Undertaking on Plant Genetic Resources (IUPGR) was adopted in 1983 by the FAO Conference and was the first comprehensive international agreement governing the conservation and sustainable utilization of agricultural biodiversity. The objective of the IUPGR is to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes (FAO 2000).

The first resolution (4/89) of the undertaking has recognized the enormous contribution that farmers of all regions have made to the conservation and development of plant genetic resources, which constitute the basis of plant production throughout the world, and which form the basis for the concept of Farmers' Rights. The second resolution (5/89) has defined Farmers' Rights as rights arising from the past, present and future contribution of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity. The third resolution (3/91) reaffirmed the concept that the "plant genetic resources are heritage of mankind" and are subject to the sovereign rights of nations over their genetic resources. The third resolution also established "that breeder's lines and farmers' breeding material should only be available at the discretion of their developers during the period of development". The resolution redefined the principle of unrestricted access to genetic resources as access granted conditional to the adequate compensation for the access and subject to the sovereign rights of countries over their plant genetic resources.

The most recent negotiating draft of IUPGR, revised in December 1997, calls for the establishment of *sui generis* systems for the protection of farmers' innovations and for sharing of the benefits, at both national and international levels. It also spells out the need to establish a collective rights regime to protect the knowledge of farmers.

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) was adopted in 2001. It encourages contracting parties to protect and promote Farmers' Rights through national legislation for:

- Protection of traditional knowledge;
- Right to equitably participate in sharing benefits arising from the utilization of genetic resources;
- Right to participate in decision making at national level; and
- Rights to save, use, exchange and sell farm- saved seed/propagating materials.

### **Conflict between TRIPS and CBD**

Difference in overall framework: The principle of sustainable utilization and conservation of biodiversity is central to CBD, while the TRIPS is more focused on assuring rights and benefits of IPR holder, and the principles of environmental protection and conservation are not adequately addressed (Khor 2002).

Access to natural resources and national sovereignty: CBD recognizes the sovereign rights of the states over their natural resources and the authority to determine access to genetic resources rests with the national governments. CBD has made provision of prior informed consent from the national governments for the access and benefit sharing for providing such access.

In contrast, the TRIPS enables persons or institutions to patent a country's biological resources or knowledge relating to the resources in countries outside the country of origin of the resources or knowledge. The principle of national treatment under TRIPS necessitates providing equal status to the foreigner as the citizens for granting patents and other IPRs.

Private rights versus community rights: The TRIPS has provisioned the exclusive intellectual property right (IPR) to its owner, who can prevent others from making, using, marketing and importing patented products. IPRs under TRIPS are thus private rights. In developing countries the local communities have established traditional systems in such a manner that they collectively contribute to the conservation and development of their local genetic resources. Such local systems comprise free exchange of knowledge as well as materials for conservation and development of resources. The CBD recognise contribution of local communities and has made provisions to protect community rights. In contrast, the TRIPS does not recognise the contributions of local communities. Instead it endorses the private rights over the products and knowledge that are the result of contributions from local communities over several generations.

Traditional knowledge versus modern technology: Under TRIPS, patent protection can be granted only to those inventions which have identifiable inventor. As traditional knowledge is the product of collective contribution of many individuals/communities, the possibility of recognizing the contribution of traditional knowledge is highly diminished. Moreover, TRIPS requires that the invention must have a prospect of industrial application to be considered for patent protection whereas the innovations through traditional knowledge are more implicit in nature and rarely have direct industrial application. While the CBD adequately recognizes traditional

knowledge and practices the TRIPS rewards addition to knowledge made through modern technology.

Prior informed consent: As CBD recognizes the sovereign rights of states over its biological resources prior informed consent of the states providing access to such resources has to be taken. The consent seeking party has to provide sufficient information regarding their work, how it is intended to be used, and obtain consent, before starting the work. Under TRIPS there is no such provision of prior informed consent and hence no recognition of the sovereign rights of the countries over its biological resources.

This may facilitate and accelerate 'bio-piracy'. There is a growing evidence of bio-piracy and misappropriation of traditional knowledge of local communities by researchers and institutions in developed countries (Timsina 2000). The provision of patenting and IPR in TRIPS will increase the number of countries that have to legalize such piracy by enacting Acts to implement patents or other forms of IPR protection.

Benefit-sharing arrangement: The provision of sovereign rights of states over its bio-diversity and prior informed consent in CBD has enabled the states to enforce arrangements to share benefits accruing through the commercial and other utilization of its biological resources. However, under CBD such sharing needs to be on mutually agreed terms.

Under TRIPS, there is no obligation of patent or other IPR holder to share benefits arising from the utilization of biological resources with the state or communities in the country of origin of such resources.

#### **FOUR *SUI GENERIS* MODELS FOR PLANT VARIETY PROTECTION**

Article 27.3 (b) of TRIPS provides for the option of "an effective *Sui Generis* System" of plant variety protection. This section discusses features of some of the models of the *sui generis* systems that are either in operation or are in the process of being operational. Table 1 presents a comparison of the key features of three models – the International Union for the Protection of New Varieties of Plants (UPOV), 1991, Indian *sui generis* legislation and the Convention of Farmers and Breeders (CoFaB).

##### **UPOV' 1991**

The UPOV is an international convention established in 1961 by five European countries to coordinate the implementation of Plant Breeder's Rights (PBR) at the international level. It claims itself to be the only internationally recognized *sui generis* system for the protection of plant varieties. In 1968 there were 50 members of the UPOV, including the US but only 14 developing countries. The UPOV was amended thrice - in 1972, 1978 and 1991. In the 1972 and 1978 amendments the basic structure remained almost unchanged. However, in 1991 major changes were made to the structure of protection, significantly strengthening PBRs. Restriction was put on the re-use of seeds, which has implications for farming communities using protected varieties. A provision on Essential Derived Varieties (EDVs)

Table 1: A Comparison of the main features of UPOV 1991 with Indian *sui generis* and CoFaB models

Particulars	UPOV 1991	Indian Legislation	CoFaB
Breeders' rights	Strong provisions for securing breeders right	Recognizes plant breeders and farmers rights	Strong provisions for farmers rights; however, recognizes plant breeders' rights and includes termination of plant breeders' rights.
Scope of protection	(a) Production or reproduction, (b) conditioning for the purposes of propagation, (c) offering for sale, (d) selling or other marketing, (e) exporting, (f) importing, and (g) stocking for any of the purposes referred to above	The breeder's right extends to production, selling, marketing, distribution, export and import of seed and/or propagating material of the protected variety. However, if the breeders' variety is an essentially derived variety from a farmer's variety, the breeder has to take consent from the farmers or communities from whose varieties the protected variety is derived.	Includes prior authorization of the breeder of a new plant variety for the production, sale or commercial and branded marketing of the reproductive or vegetative propagating materials
Farmers' Rights	Farmers' Privilege that was allowed in UPOV'78 is no longer the general rule but an exception in UPOV'91.	Farmers are entitled to save, use, re-sow, exchange, share or sell their farm produce including seed of a variety protected. The farmers, however, are prohibited from branded sale of protected varieties.	Same as Indian legislation, rights granted for unlimited rights.
Researchers' Right	Excluded "breeders' exemption" which was provided under UPOV'78 – this had allowed breeders to freely use protected varieties for research purposes and for breeding new varieties.	Grants researchers right to free and complete access to protected materials for research use in developing new varieties of plants. However, authorization of breeders is required where repeated use of such variety as parental line is necessary for commercial production of such other newly developed variety.	Same as in Indian Legislation
Possibility of double protection	Possible	Not possible	Not possible
Benefit sharing	Not Possible	In case of essentially derived varieties, NGOs or individuals on behalf of local community can claim a share of benefits that may arise from commercialization of the local varieties.	Same as Indian Legislation
Duration of protection	25 years for vines and fruit trees 18 years for all other plants	18 years for vines and trees 15 years for all other plants	18 years for vines and trees 15 years for all other plants



was included that potentially affects the ability of breeders to freely use protected varieties for research. As a result of these changes, the developing countries have been forced to think of alternative models for the protection of plant varieties. This led to negotiating the *sui generis* option in the TRIPS, so that the contribution made by both traditional farmers and commercial plant breeders are taken into consideration in the development of the agricultural sector (Dhar 2002).

The UPOV Secretariat claims that the UPOV model of *sui generis* system is an 'effective *sui generis* system' as indicated in the TRIPS Agreement. However, the UPOV model has come under severe criticism, especially some key provisions of the UPOV'91 that strengthens breeders' right almost at par as under the patents model, and at the expense of the farmers' rights.

The UPOV's 1978 convention was farmers' rights-friendly to some extent. It is not so now. Countries willing to join UPOV can accede only to UPOV'1991 and have to agree to adopt stricter protection standards in favour of plant breeders' rights. The key issues of concern to developing countries with UPOV'1991 are as follows:

- The UPOV system is not suitable for developing countries as it spells out rights for breeders only. It does not address farmers' rights (Sahai 2002).
- The provisions of the UPOV'91 do not consider farmers' traditional rights and customary practices of saving, using, exchanging seeds and sharing or selling, his/her farm produce also.
- Varieties developed by farmers over time in developing countries do not stand a chance to be recognized as "novel" under UPOV. This effectively excludes the recognition of farmers as breeders of new varieties and thus their right as plant breeders.
- In UPOV' 91 an *exclusive* inventor is required to secure the right to a plant variety. But this is not possible in the context of farmers' traditional knowledge and contribution to informal breeding system, which is a collective process.

Considering the above it is clear that the UPOV model is more suitable for developed countries. The curtailed farmers' rights and consolidation of breeders' rights in the UPOV 1991 makes it much more favourable for economies with commercialised agricultural, not for subsistence-oriented economy like Nepal's.

### **Indian legislation on protection of plant variety and farmers' rights**

The *Protection of Plant Varieties and Farmers Rights* (PPVFR) Act was approved by the Indian Parliament in August 2001 (Dhar 2002). The Act aims to establish "an effective system for the protection of plant varieties, the rights of farmers and plant breeders to encourage the development of new varieties of plants" in line with Article 27.3 (b) of the TRIPS. The three key aims of the Act are as follows:

- Protection of the rights of farmers for their contribution made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties;
- Protection of PBRs to stimulate investment for research and development, both in the public and private sector, for the development of new plant varieties; and

- Giving effect to Article 27.3(b) of the TRIPS on plant variety protection.

The other salient feature of the Act is that breeders' rights are protected in terms of production, selling, marketing, distribution, export and import of the seeds for the protected varieties. These rights are in line with the provisions of UPOV 1991. The duration of the protection is 18 years for vines and fruit trees and 15 years for all other plants. Similarly, farmers' rights are protected in terms of safeguarding the interest of farmers and village and local communities engaged in plant breeding in two ways: i) by protecting their own on-farm activities; and ii) by providing incentives in the form of rewards for their contribution to farming.

The Act has made a provision for granting compulsory license to ensure availability of protected plant variety. However, the granting of license should ensure reasonable compensation to the breeder and provide farmers the seeds or other propagating materials of the variety in a timely and reasonable manner.

### **Convention of Farmers and Breeders (CoFaB)**

The Gene Campaign, along with Centre for Environment and Agriculture Development, drafted an alternative treaty to the UPOV to provide a forum for developing countries to implement their farmers' and breeders' rights. Called *Convention of Farmers and Breeders* (CoFaB), it is designed as a covenant between farmers and breeders belonging to the germplasm-owning countries of the south (CoFaB 1998). It aims to ensure that farmers have their rights arising from the contribution they have made in identification, maintenance and refinement of germplasm while at the same time providing protection to breeders of new plant varieties. It illustrates a contrasting way of balancing the right of the farming communities and breeders. The CoFaB has provisioned that breeder will forfeit her/ his rights if s/he: i) is unable able to meet the demand of farmers leading to a scarcity of planting material, increased market price and monopolies; and ii) fails to disclose information about the new variety or does not provide the authority with the reproductive or propagating material.

### **The African Model Legislation**

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 aims to ensure the conservation, evaluation and sustainable use of biological resources, including agricultural genetic resources, and knowledge and technologies in order to maintain and improve their diversity as means of sustaining all life support system (OAU Model Law, Algeria 2000). The specific objectives of the legislation are to: i) recognize, protect and support the inalienable rights of local communities including farming communities over their biological resources, knowledge and technologies; and ii) recognize and protect the rights of breeders.

The legislation recognizes the *rights of communities*: i) over their biological resources; ii) to collectively benefit from the use of their biological resources; iii) their innovations, practices, knowledge and technologies acquired through generations; iv) to collectively benefit from the utilization of their innovations, practices, knowledge and technologies; v) to use their innovations, practices, knowledge and

technologies in the conservation and sustainable use of biological diversity; and vi) the exercise of collective rights as legitimate custodian and users of their biological resources. The state will ensure that at least 50% of the benefits accrued are channeled to the concerned local community or communities in a manner which treats men and women equitably.

*Farmers' rights* are recognized as stemming from the enormous contribution that local farming communities, especially their women members, of all religions of the world, particularly those in the centres of origin or diversity of crops and their ago-biodiversity, have made in the conservation, development and sustainable use of plant and animal genetic resources that constitute the basis of breeding for food and agricultural production. Farmers have rights to: i) protect their traditional knowledge relevant to plant and animal genetic resources; ii) obtain an equitable share of benefits arising from the use of plant and animal genetic resources; iii) save, use, exchange and sell farm-saved seed/propagating materials of farmers' varieties; iv) use a new breeders' variety protected under this law to develop farmers' varieties, including material obtained from gene banks or plant genetic resources centres; and v) to collectively save, use, multiply and process farm-saved seeds of protected varieties.

*Plant breeders' rights* stem from the efforts and investment made by persons/institutions for the development of new varieties of plants, as defined in the legislation (a variety will be considered new if it is distinguishable from all varieties, stable in its essential characteristics). Breeders will have the rights to sell, including the rights to license other persons to sell plants or propagating materials of that variety, and can produce, including the right to license other persons to produce propagating materials of that variety for sale.

## **TOWARDS FORMULATING A *SUI GENERIS* SYSTEM FOR NEPAL**

A model for the protection of plant varieties obviously depends on country-specific situation. The review of the four models in the previous section, together with the assessment that a patent system is irrelevant for subsistence oriented agricultural economies makes the *sui generis* model an obvious choice for Nepal. While this is clear, the main challenge is to formulate specific provisions in the system that strikes an appropriate balance between farmers' and breeders' rights. For this the following paragraphs discuss some relevant features of the Nepalese agriculture, and legal and institutional context for the formulation and implementation of the model.

### **Farmers' and breeders' rights – the Nepalese context**

Nepalese agriculture is subsistence oriented and highly dependent on the use of traditional inputs. In the context of the TRIPS, the main relevant input is seeds. And the most important rationale for a *sui generis*, as against a patent or UPOV 1991, model is that the share of total seeds supplied by the formal, commercial sector is very small for most crops. For example, about 95% of the seeds of the three most important cereal crops of Nepal - rice, wheat and maize, is retained by farmers and exchanged with fellow farmers (Timsina 2000). At the other ex-

treme is perhaps the case of vegetable seeds where commercial seed supply accounts for more than 90% of the total use for several crops.

Closely associated with the issue of “seed security” is the concern on conservation of indigenous varieties. For example, in the case of vegetable seeds, as farmers cultivate more exotic hybrid seeds, the locally adapted and resilient indigenous varieties are being sidelined and risk being extinct. Some studies have shown that many varieties of vegetables like cucumbers, pumpkin and gourds are already lost (Timsina 2000). This genetic erosion makes poor farmers of Nepal more vulnerable in the event of physical and economic difficulties to access. There is also a risk of monopoly in seeds supply, raising prices.

The eventual *sui generis* system should also contribute to preserving indigenous knowledge and practices in *inter alia* varietal selection, which is an essential process in the development of new varieties. This is the third aspect.

There is also the cultural aspect to seeds. Different seeds have been used from ancient times in religious ceremonies, such as Balachaturdashi (Satbeej), Gatasthapana (Jamara), Dipawali etc. The exchange of seeds among farmers also involves exchange of ideas and knowledge of culture and heritage, which helps to build cohesion within communities. With the erosion of indigenous seeds, the possibility of erosion of cultural and social capital also increases in countries like Nepal. In other words, conserving seeds is more than merely conserving germplasm - it is also conserving bio-diversity, conserving knowledge of the seed and its utilization, conserving culture and conserving sustainability. For biodiversity conservation also, ‘farmers’ rights’ to use, reproduce, multiply, share, exchange, sell and modify seeds needs to be granted.

While the above arguments provide a strong rationale for a *sui generis* model that safeguards traditional farmers’ rights, the model also needs to have adequate provisions to encourage technological innovations in plant varieties and commercial activities to cater to the needs of the increasingly commercializing agriculture. There is a need for encouraging private sector research and development not only in the vegetable seeds sector but also in other crops. In India, for example, the government has been encouraging the private seeds sector in many different ways, and the outcome has been positive. The Indian *sui generis* law attaches importance to farmers’ rights without ignoring or undermining the breeders’ rights.

In Nepal, there is ample room for improving the quality aspects of seeds. In case of vegetable seeds, this applies to upgrading the quality of foundation seeds produced in public farms as well as in the area of post-production activities of the private seed traders. The legal mechanism to ensure proper development of seed industry is inadequate in Nepal. The prevalent legal mechanisms do not provision a sound basis to develop seed industry in Nepal including incentives to promote export. For this, the government has to work closely with all stakeholders in the seed sector. The major stakeholders include the following:

- *Government/semi-Governmental* - Department of Agriculture (mainly Vegetable Development Directorate and different farms stations; Seed Quality Control Centre, Central/Regional Seed Testing Laboratories), Nepal Agricultural Re-

search Council (NARC), National Seed Board (NSB) and National Seed Company (NSC)

- *Private* - Agro-Enterprise Centre (FNCCI), Seed Entrepreneurs' Association of Nepal (SEAN), SEAN Seed Service Centre (SSSC)
- *NGO/INGOs/donor projects*- German Technical Cooperation (GTZ), CARE/Nepal, Canadian International Development Agency (CIDA/CBED), Danish International Development Agency (DANIDA/CEAPRED), Department for International Development of the UK (DFID/SSSP)
- Farmers' groups and cooperatives

### Formulation of a *Sui Generis* System in Nepal: Legal and Institutional Context

**Legal context:** There is not any legal mechanism in Nepal that can be directly translated as *sui generis* system for Nepal. Moreover, there are no laws directly stipulating the issue of farmers' rights. However, some of the legal provisions are concerned with collective rights on common property resources. These legal provisions are to be considered for designing the eventual *sui generis* system for Nepal (Pant 2002). The provisions concerning protection of indigenous knowledge and or natural resources and environment in the following legal documents are relevant for designing a *sui generis* system for Nepal.

- Constitution of the Kingdom of Nepal, 1990.
- Local Self- Governance Act, 1999.
- Lands Act, 1964.
- Water Resources Act, 1992.
- Aquatic life Protection Act, 1961
- Forest Act, 1993.
- Environment Protection Act, 1996
- Pesticides Act, 1991
- Food Act, 1967.
- Plant Protection Act 1972.
- Animal Health and Services Act. 1998.
- Nepal Agricultural Research Council Act 1991.
- Industrial Enterprises Act 1992.
- Cooperatives Act, 1991.
- Seed Act, 1988

**Institutional context:** There is no institution as yet which could be called as being responsible for the protection of the farmers' rights and implementation of eventual *sui generis* system in Nepal. However, the mandates of several institutions and agencies are at times related to the protection of farmers' rights. Thus, for example, the Natural Resources and Environment Committee of the House of Representatives evaluates the policies and programmes of the sectoral ministries more closely concerned with farmers' rights. The Ministry of Water Resources, the MoAC, Ministry of Land Reform and Management, Ministry of Forest and Soil Conservation (MoFSC) and Ministry of Population and Environment are ministries related to the protection of farmers' rights with respect to water rights, agricultural

technology, land rights, conservation of genetic resources and protection of environment, respectively.

Affiliated to the MoAC, the NARC is responsible for the development of agricultural technology and maintenance of gene pool of different varieties of cultivated species and their wild relatives. National Seed Board, under MoAC, is responsible for policy aspects related to seeds in Nepal. On the other hand, Seed Quality Control Centre and Central/Regional Seed Testing Laboratories are involved in quality control aspects of seed.

The Department of Plant Genetic Resources under MoFSC is responsible for maintaining herbarium, records of ethno-botanical knowledge, in-situ and ex-situ conservation of plant genetic resources and exploration of potentials of the plants for economic exploitation. National Biodiversity Unit, under the ministry acts as the focal point for guiding CBD implementation and monitoring.

Similarly, several NGOs such as Action Aid and South Asia Watch on Trade, Economics and Environment (SAWTEE) are acting as pressure groups for the protection of farmers' rights and for a *sui generis* system for Nepal. Seed Entrepreneurs' Association of Nepal is involved in provisioning of seeds to the Nepalese farmers through seed business.

Although though there are several institutions involved in the protection of farmers' rights there is no entity designated to specifically deal with the issues of farmers' rights and *sui generis* system. As soon as the *sui generis* system of plant variety protection becomes functional in Nepal, an independent institution dealing with the administration of provisions of the *sui generis* system would be necessary.

## CONCLUDING REMARKS

The WTO commitment requires Nepal to apply the provisions of the TRIPS Agreement by 1 January 2006. In this context, this chapter discussed alternative models for the protection plant variety. The main conclusions are summarized as follows.

**Sui generis as a choice model:** It is concluded that the *sui generis* model rather than a patent system or the UPOV'1991 is the best option for a developing country like Nepal. The patent model should be rejected straight away for various reasons including the monopoly on seeds it leads to in developing countries where R&D is weak and not competitive. Similarly, the UPOV'91 model does not consider concerns of developing country farmers.

**The essential features of a sui generis model:** While the choice of *sui generis* is for obvious reasons it is also clear that the model as such cannot be copied. It has to be "truly" reflective of the various specific features of the Nepalese agriculture, such as the high level of dependency on seeds from own sources and exchange in the village, and food security and livelihoods concerns. At the same time, Nepal being a biodiversity rich country, the eventual *sui generis* system should help to promote the conservation and sustainable utilization of bio-diversity and environment. The following should be some of its features.

First, the model must: recognize and protect the rights of farmers and local communities over genetic resources that were developed collectively by them over generations; have provisions for seeking prior informed consent in the case of the use of community owned plant varieties; and must protect these varieties from being subject to any property rights claim by others.

Second, farmers should be allowed to save, reuse, exchange and sale seeds of protected plant varieties. This provision of unrestricted use of seeds is essential considering the resource poor condition of the Nepalese farmers. However, the sale of such seeds should be limited to unbranded retailing.

Third, it must recognize and protect breeders' rights for their creation, in order to encourage innovations by private research (which is very promising for vegetable seeds); however, provisions should be made such that breeders disclose the source of genetic resource used in developing a new variety. The provision should not hinder researchers' exemption and at the same time help to claim farmers' right over their varieties. The criteria for the protection of farmers' varieties/landraces should be limited to identifiable and stable materials.

**Exclusion of varietal protection in matters of public interest:** In clearly identified matters of public interest, varieties should be excluded from protection. These matters of public interest must also be defined clearly. Generally these could refer to the following: potential threat to agricultural system, human and animal health; varieties that adversely affect environment; varieties that do not possess normal regenerative and reproductive capacity; where introduction of the variety may have an adverse socio-economic impact; or affect the innovative capacity and indigenous technologies of farmers and local communities; and where ethical reasons are involved.

**A provision for compulsory licensing:** Such a provision has also to be considered under certain situations, which could include: where anti-competitive practices of the holders of particular rights are identified; where food security may be affected; where a high proportion of the plant variety offered for sale is being imported; where requirements of the farming community for propagating material of a particular variety are not met.

**Defining "plant varieties":** The TRIPS Agreement has not defined plant varieties, which has been a source of some confusion. It is desirable that these are defined in the context of Nepal's *sui generis* system. At the same time, any narrow interpretation of the term plant variety should be avoided, and indeed can be avoided.

**Importance of stakeholders' participation:** Given the experiences of other countries, it is very important that the national *sui generis* system is developed by a multi-stakeholder platform that should include all major stakeholders, notably the government, NGOs, CBOs, farm representatives and associations, and private entrepreneurs.

**Institutional and legal aspects:** An appropriate institutional arrangement needs to be put in place for the proper implementation of the provisions of the *sui*

*generis* system. A separate legal arrangement for bio-diversity conservation needs to be established, complementing the *sui generis* system of plant variety protection. The bio-diversity conservation legislation should incorporate principles such as 'prior informed consent' and 'benefit sharing' for providing access to genetic resources. There should be provisions for officially registering "farmers' varieties/landraces" in order to establish the ownership of communities/farmers over the plant varieties and thus preclude unauthorized piracy of such resources. These varieties must be conserved through *in situ* and *ex situ* conservation strategies. Efforts should be made to restore genetic resources collected from Nepal prior to the CBD and preserved at international gene banks.

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