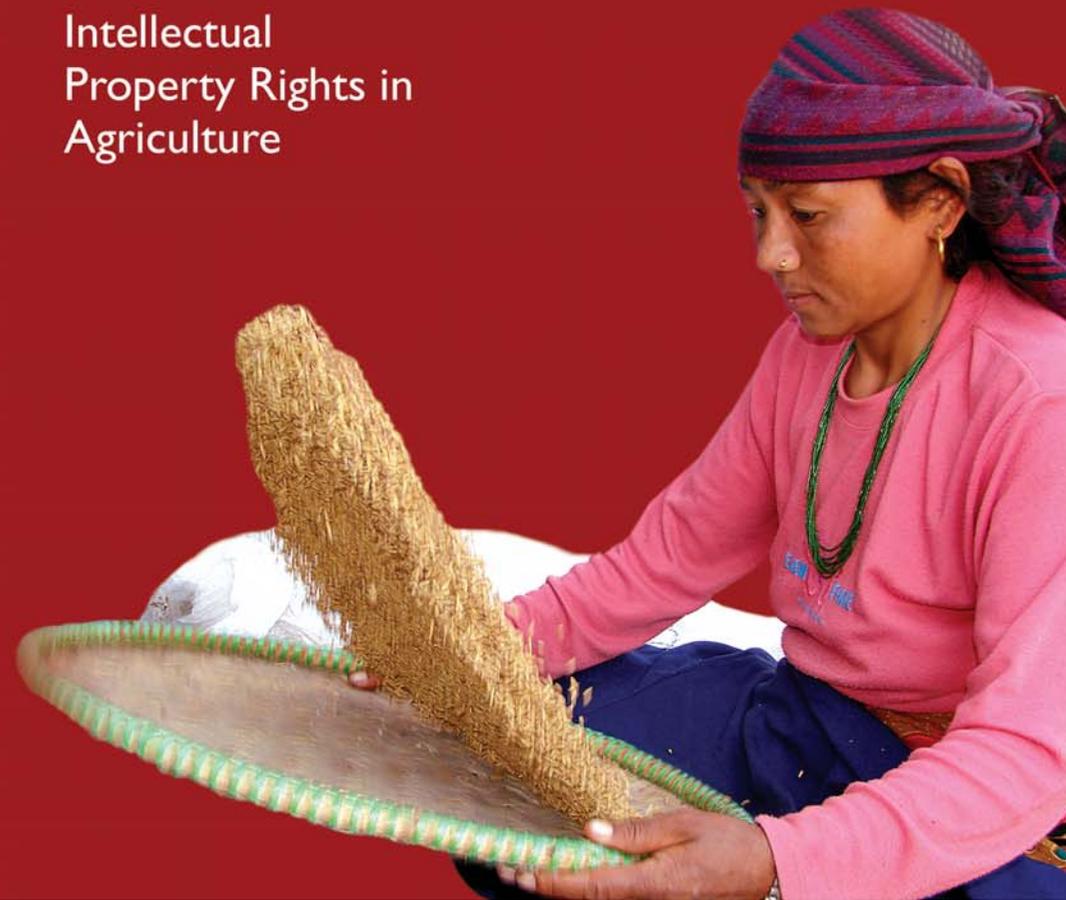


Intellectual Property Rights in Agriculture



PRO PUBLIC, a non-profit, a non-governmental organization dedicated to the cause of public interest, was founded in 1991 by a consortium of environmental lawyers, journalists, economists, engineers, consumers and women rights activists. It raises voice against corruption, red tapism and irregularities and makes the government bodies aware of their duties and responsibilities. Its focus over the years has been on good governance, protection of natural and cultural heritage, environmental justice, pollution control, gender justice and consumer protection.

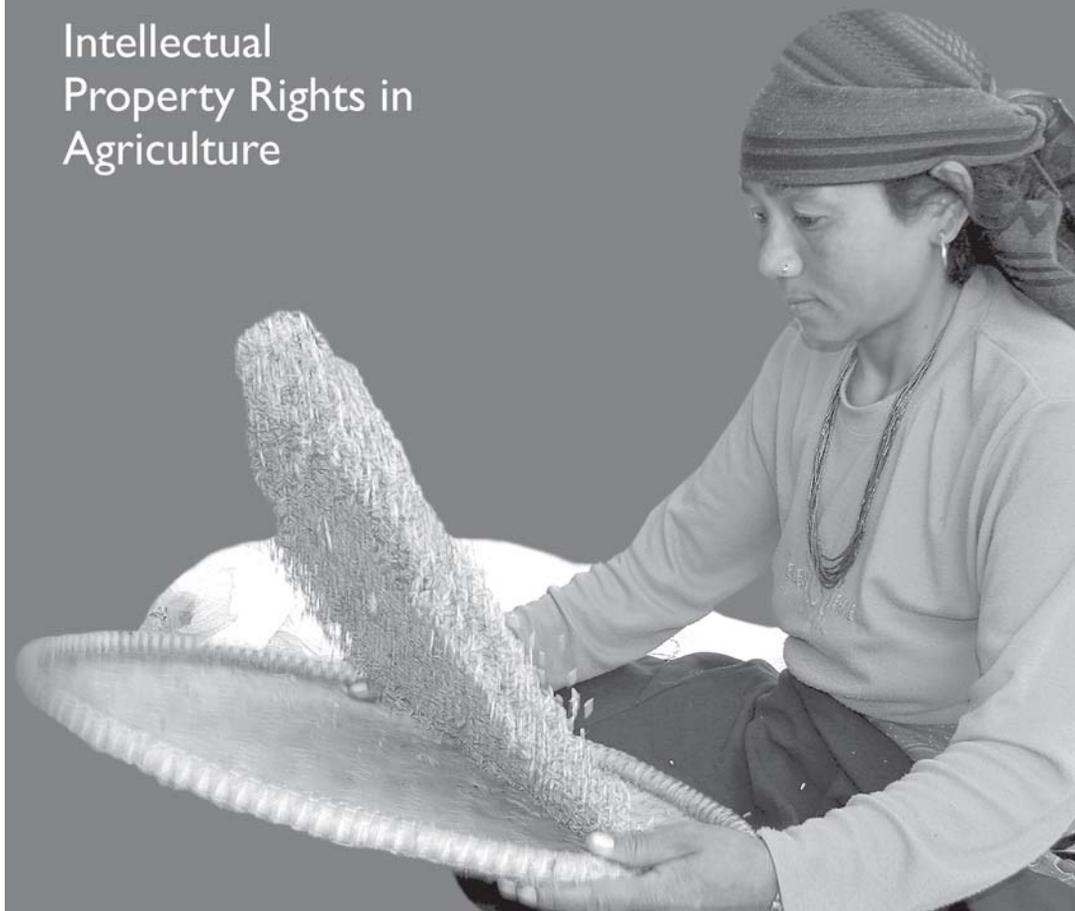
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LEGAL MECHANISMS TO PROTECT

Farmers' Rights in Nepal



Intellectual Property Rights in Agriculture



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Farmers' Rights in Nepal

Kamalesh Adhikari

Published by: Forum for Protection of Public Interest (PRO PUBLIC) and South Asia Watch on Trade, Economics & Environment (SAWTEE)

Supported by: Oxfam (Novib), The Netherlands

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Citation: Adhikari, Kamalesh. 2008. *Intellectual Property Rights in Agriculture: Legal Mechanisms to Protect Farmers' Rights in Nepal*. viii+56. Kathmandu: Forum for Protection of Public Interest (PRO PUBLIC) and South Asia Watch on Trade, Economics & Environment (SAWTEE).

ISBN: 978-99933-850-3-5

Design: Effect, 4433703

Cover Photo: Local Initiatives for Biodiversity Research and Development (LI-BIRD), Pokhara, Nepal

Printed at: Jagdamba Press, Kathmandu

Available from:

Forum for Protection of Public Interest (PRO PUBLIC)

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P.O. Box: 14307, Tel: +977-1-4268681, 4265023, Fax: +977-1-4268022

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Acknowledgement

Nepal has recently witnessed a metamorphosis in its political landscape. With the unprecedented political change, people's aspirations have soared and different groups of society have become ever more vocal in raising their concerns regarding the protection of their political, socio-economic and cultural rights. Amid this, it is easily noted that one of the groups that has not been able to enter the mainstream political process to voice their concerns for the protection of their rights is the group of farmers. This does not mean farmers' rights are not at stake.

Though farmers' rights have always been a major policy concern, most of the efforts made seem to be politically motivated, serving the vested interests. In addition, there has not been sufficient work to understand and recognise farmers' rights from the broader perspective, as farmers' rights issues have been confined to access to land, subsidies on agricultural inputs, etc. A vast amount of work still remains to be done to recognise and protect farmers' rights from the global perspective, for example, in the context of the globalisation of economies, external shocks that arise due to changes in global policies, and the global trend towards the commercialisation of agricultural biodiversity and related knowledge.

In the light of the global policies to promote the application of biotechnology in agriculture and the implications of intellectual property rights (IPRs) for farmers, this book deals with some crucial equity aspects of the commercialisation of agricultural biodiversity, and more importantly, the

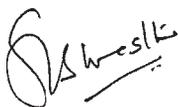
issue of protecting farmers' rights over plant varieties and related knowledge. The book emphasises the need to protect farmers' rights in the plant variety protection law that the country needs to implement by 2013 as part of its obligation and commitment under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organisation (WTO).

The book suggests some important legal measures Nepal can implement to protect farmers' rights over IPR-protected plant varieties. The book also deals with measures that are crucial for recognising farmers' rights over farmer-developed plant varieties and related knowledge.

The book is an outcome of the "Regional Programme on Securing Farmers' Rights to Livelihood in the Hindu-Kush Himalaya Region Project (FRP)". PRO PUBLIC, in collaboration with SAWTEE, has been implementing this project in Nepal since 2001. FRP is supported by Oxfam (Novib) for implementation in five South Asian countries—Bangladesh, India, Nepal, Pakistan and Sri Lanka.

I would like to thank Mr. Kamalesh Adhikari for doing a research on such an important issue for Nepal as well as authoring this book. I would also like to thank Mr. Ratnakar Ahikari, Mr. Navin Dahal, Mr. Paras Kharel, Ms. Darshan Karki and Mr. Prakash Ghimire for providing valuable comments on the contents of the book. I also thank Mr. Indra Shrestha for the cover design and layout of the book.

I sincerely hope that this publication will be helpful for policy makers, planners and other concerned stakeholders, including farmer groups and community-based organisations. I also hope that the study will be a useful reference for students, teachers and people concerned with and interested in the subject.



Dr. Shree Krishna Shrestha
President
PRO PUBLIC

Acronyms and abbreviations

AAN	:	ActionAid Nepal
ADB	:	Asian Development Bank
ABS	:	Access and Benefit Sharing
CBD	:	Convention on Biological Diversity
CBM	:	Community-Based Biodiversity Management
CBS	:	Central Bureau of Statistics
DUS	:	Distinct, Uniform and Stable
DUSN	:	Distinctness, Uniformity, Stability and Novelty
FAO	:	Food and Agriculture Organisation of the United Nations
FY	:	Fiscal Year
GDP	:	Gross Domestic Product
HDI	:	Human Development Index
ICIMOD	:	International Centre for Integrated Mountain Development
IP	:	Intellectual Property
IPRs	:	Intellectual Property Rights
ITPGRFA	:	International Treaty on Plant Genetic Resources for Food and Agriculture
km	:	Kilometre
LDC	:	Least-Developed Country

m	:	Metre
MFN	:	Most-Favoured-Nation
MoF	:	Ministry of Finance
MoFSC	:	Ministry of Forests and Soil Conservation
MW	:	Megawatt
NPC	:	National Planning Commission
NRs.	:	Nepalese Rupees
PIC	:	Prior Informed Consent
PPB	:	Participatory Plant Breeding
SAWTEE	:	South Asia Watch on Trade, Economics & Environment
SEAN	:	Seed Entrepreneurs' Association of Nepal
sq km	:	Square Kilometre
TK	:	Traditional Knowledge
TRIPS	:	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNDP	:	United Nations Development Programme
UNEP	:	United Nations Environment Programme
UPOV	:	International Union for the Protection of New Varieties of Plants
VDCs	:	Village Development Committees
WIPO	:	World Intellectual Property Organisation
WTO	:	World Trade Organisation

Notes

1. The Nepalese Fiscal Year extends from 15 July to 14 July.
2. US\$1 = NRs. 68.9 (Exchange Rate as of 3 July 2008)

The Nepalese economy

specific characteristics and constraints

This chapter presents an overview of the Nepalese economy, highlighting its geographic, demographic, environmental and socio-economic features. The chapter also deals with Nepal's poor socio-economic setting and demonstrates the changing patterns of the contribution of the agricultural sector to the country's gross domestic product over the past decades. The purpose of this chapter is to highlight the crucial role that the agricultural sector has been playing for Nepal's growth and development, including farmers' income and poverty reduction.

1.1 Geographic features

Geographically landlocked between India on three sides—east, west and south—and China to the north, Nepal has 147,181 sq km of land. Ecologically, the country is divided into three regions: mountains in the north (altitude 4,877 m to 8,848 m), hills in the middle (altitude 610 m to 4,876 m) and the Terai (plains) in the south (upto 609 m). These regions have significant differences in topography, natural endowments, economic activities and human occupancy with corresponding implications for biodiversity and development activities (ICIMOD and ADB 2006). The mountain region covers about 35 percent of the country's land area, of which only about 2 percent is cultivable. Almost all big rivers of Nepal originate here and 10 of the 14

peaks over 8,000 m of the world are located in this region, including the Mount Everest (8,848 m). The hill region consists of several peaks, fertile valleys and basins. It accounts for 42 percent of the country's total land area, one fifth of which is suitable for cultivation. The Terai forms a low flat land occupying 23 percent of the country's total land area. Around 40 percent of its area is cultivable (UNEP 2001).

Apart from the ecological division, the country is divided into 14 zones, 75 administrative districts and 5 development regions—the eastern, central, western, mid-western and far-western development regions. There are 16 districts in the mountain region, 39 in the hills and 20 in the Terai. Districts are further divided into smaller units as village development committees (VDCs) and municipalities. There are 3,914 VDCs and 58 municipalities in the country. While each VDC is composed of 9 wards, a municipality comprises 9 to 35 wards. Kathmandu is the capital city (NPC 2005).

1.2 Demographic features

According to the 2001 Population Census, Nepal's population was 23.1 million in 2001 (CBS 2001). The annual population growth rate is above 2 percent since the past four decades (NPC 2007). The average population density is 157.73 per sq km, with the highest density (330.78 per sq km) in the Terai, followed by the hills (167.44 per sq km) and the mountains (32.62 per sq km) (MoFSC 2002). The density on agricultural land is 570 persons per sq km (ICIMOD and ADB 2006).

Around 86 percent of the population lives in rural areas, depending mostly on agriculture and natural resources for livelihood. Owing to variations in topography, natural resources, cultures and infrastructure facilities, the three ecological regions exhibit marked variations in the growth and distribution of rural population: 48.5 percent of the population lives in the Terai, 44.2 percent in the hills and 7.3 percent in the mountains (CBS 2001).

The number of female population (52 percent) is higher than the male population (48 percent). The average household size in the country is 5.3, with, on an average, 4.8 persons per household in urban areas and 5.4 persons per household in rural areas (CBS 2004).

The country is renowned for its socio-cultural diversity of 100 ethnicities, 92 languages and 9 religions. About 80.6 percent of the population is Hindu, and 10.7 percent, 4.2 percent and 2.6 percent are Buddhist, Muslim and Kirant, respectively. There are three major ethnic groups in terms of origin: Indo-Nepalese, Tibeto-Nepalese and Indigenous Nepalese, composed of Newar, Bhote, Rai, Limbu, Sherpa, Gurung, Tamang, Magar, Thakali, Brahman and other ethnic groups. Of the total population, indigenous Nepalese¹ constitute 37.5 percent. A large number of them live in rural areas and are engaged in subsistence agriculture (NPC 2005; CBS 2001).

1.3 Environmental features

With over 86 percent of its population living in rural areas, the economic well being of most Nepalese is closely related to agriculture and natural resources. Nepal's major environmental resources are land, water, forests, and faunal and floral biodiversity.

1.3.1 Land

Land constitutes about 97 percent of the country's total area. The agrarian country comprises around 4.27 million hectares (29 percent of the total land area) of forests, 1.56 million hectares (10.6 percent) of scrubland and degraded forests, 1.7 million hectares (12 percent) of grassland, 3 million hectares (21 percent) of farmland, and about 1 million hectares (7 percent) of uncultivated lands (MoFSC 2002). Although only comprising around 21 percent of the total land area, agricultural land is the major determinant of economic activities (UNDP 2004). As in the case of population, agricultural land is also unevenly distributed, with 55.7 percent in the Terai, 37.3 percent in the hills and 6.9 percent in the mountains (MoFSC 2002).

¹ The government of Nepal has identified and recognised 59 indigenous Nationalities through the enactment of the National Foundation for Development of Indigenous Nationalities Act 2002. Nepal Federation of Indigenous Nationalities has further classified the 59 *Janajatis* (indigenous) into five groups—endangered, highly marginalised, marginalised, disadvantaged, and advanced groups. The classification is based on a composite index comprising variables such as literacy rate, housing, land holdings, occupation and language, and residence and population size (*This book mostly mentions "farmers' rights" while dealing with issues relating to agricultural biodiversity and plant variety protection. However, it should not be interpreted as having any bias against the rights of the local and indigenous communities, and gender issues in agriculture.*)

Land reform for ensuring access to land to the poor, marginalised and vulnerable farmers has always been a major issue of political debate. The majority of agricultural households still depend on small farm size for cultivation. Small farmers operate only 13 percent of the total agricultural land while 31 percent of the land is operated by large farmers. Similarly, of the 31 percent of households living below the poverty line, 51 percent hold land less than 1 hectare and 25 percent have less than 0.2 hectare of land (CBS 2004).

1.3.2 Water

Water is one of the major natural resources of Nepal. The country has over 6,000 rivers and streams, with an estimated total length of 45,000 km. All large rivers are snow-fed and, hence, are renewable water resources. The country has 660 lakes of more than 1 hectare. Big lakes are used for irrigation, hydropower generation, fishing, etc. About 75 percent of the total annual rainfall falls during the summer monsoon season (June–September) during which major agricultural activities take place (ICIMOD and ADB 2006).

The hydropower potential of Nepal's river systems is 83,000 MW, of which development of 42,000 MW has been considered as technically and economically viable. Until now, the country has, however, realised only 0.67 percent of its huge techno-economic hydro-electricity potential. The total installed hydroelectric generation capacity is 556 MW. Of this, 408 MW comes from the public sector and 148 MW from the private sector (NPC 2007).

Besides hydropower generation, water resources in Nepal also have a significant potential for crop irrigation. Groundwater remains an important source of water, particularly in the Terai region and the Kathmandu valley (MoFSC 2002). Historically, irrigation development began with the initiative and investment of farmers in numerous farmer-managed irrigation schemes. Government investment in irrigation began only after Nepal started to implement development plans in the mid-1950s. Encouragingly, the government has still been supporting the rehabilitation and improvement of Farmer-Managed Irrigation Systems (NPC 2007).

Of the country's total geographical area of around 14.71 million hectares, the land suitable for arable agriculture is estimated to be about 2.6 million hectares. Of this land, owing to the rugged topography and landform, the potential irrigable area under surface and groundwater sources is about 1.7 million hectares (NPC 2007). The overall share of the irrigated land area in the total agricultural land area was 54 percent in Fiscal Year (FY) 2003/04 and 40 percent in FY 1995/96. The share of the irrigated land area is higher in the Terai relative to the hills and the mountains (CBS 2004).

1.3.3 Forests

Forests are the largest natural resource in terms of area coverage in Nepal. The country has 37 percent forest coverage and 9 percent shrub area, making up a total of 46 percent. The majority of Nepalese, mostly in rural areas, use forest products for firewood, fodder, timber and medicines. Local and indigenous knowledge related to the use of forest products, including medicinal plants, is a prime means to address health problems and sustain livelihood in rural areas (MoFSC 2002).

Energy consumption in Nepal is excessively dependent on fuelwood, which represents 75 percent of the total fuel consumption. Forests are also used as grazing land for livestock, and for the construction of roads, schools, public places, institutional buildings, houses, etc. More than 1.2 million hectares of forests have been cleared for infrastructure development (ICIMOD and ADB 2006).

Community forest management is a unique and popular forest development strategy. It is a participatory management approach that has been developed over 25 years in Nepal's forestry sector (NPC 2003). Until now, around 1.2 million hectares of forests have been handed over to more than 14,500 community forest user groups—involving about 1.4 million households—for ensuring people's participation in and ownership on the conservation, management and sustainable use of forest resources. Leasehold forest management through user groups is another important programme. More than 950 leasehold forest user committees have been formed to manage 3,700 hectares of forest land (NPC 2007; ICIMOD and ADB 2006).

1.3.4 Biodiversity

Nepal's rich biodiversity is a reflection of its unique geographic position, and altitudinal and climatic variations. Although comprising only 0.09 per cent of the global land area, Nepal possesses a disproportionately large diversity of flora and fauna at genetic, species and ecosystems levels. The country has 118 types of forest ecosystems. In terms of species richness, Nepal is in the 11th and 25th position in Asia and the world, respectively. The country possesses 181 species of mammals, 844 species of birds, 185 species of fish, 143 species of reptiles and amphibians, over 5,884 species of flowering plants, and about 2,287 species of fungus and lichens (ICIMOD and ADB 2006).

Nepal also houses 75 vegetation and 35 forest types. Over 400 species of agro-horticultural crops, including 200 species of vegetables, are available in Nepal. Of these, around 50 species have been domesticated for commercial and household consumption. Fifteen fruits with more than 100 varieties, 50 vegetables with 200 varieties, and 10 varieties of potato are cultivated commercially. Some wild genotypes have also been identified and domesticated by local people because of their economic value. Crops such as rice, rice bean, eggplant, buckwheat, soybean, foxtail millet, citrus fruits and mango have high genetic diversity relative to other food crops. Many crop species owe their variability to the presence of about 120 wild relatives of the commonly cultivated food plants. Nepal also houses over 200 species of commercially important medicinal and aromatic plants and over 300 species of orchids (MoFSC 2002).

Sixteen protected areas (together with six Buffer Zones) have been established for the protection of flora and fauna. These protected areas are: nine national parks, three conservation areas, three wildlife reserves, and a hunting reserve. The protected areas make up about 17 percent of the country's total area. Of these, the Sagarmatha National Park and the Chitwan National Park have been included in the World Natural Heritage List; and the Koshi Tappu Wildlife Reserve, Bishajari Tal (Chitwan district), Jagdishpur Jalasha Reservoir (Kapilvastu district), and Ghodaghodi Tal (Kailali district) have been designated as Ramsar sites (ICIMOD and ADB 2006).

1.4 Socio-economic features

Nepal is a landlocked least-developed country² (LDC). Since 1956, 10 periodic plans have been implemented in the five decades of Nepal's planned development efforts. During this period, development efforts focused on different aspects such as physical infrastructure, regional development, fulfilment of basic needs, high and broad-based growth and poverty alleviation. However, the country has not been able to achieve the targeted economic growth rates due to several internal and external constraints that negatively affect its growth and development process. Despite having tremendous potential for high growth and development, for example, through the development of the tourism and hydropower sectors, Nepal still lags behind in economic progress even in relation with most of the other LDCs (NPC 2007).

The country is characterised by small economic size, poverty, inequality, food insecurity, and relatively poor status of human development. Sluggish economic growth, low level of industrialisation, underdeveloped production systems with limited export commodities and destinations, unbalanced population growth rate coupled with high concentration of population and labour force in agriculture, high indebtedness, etc., are some of the specific characteristics that indicate Nepal's underdeveloped economic structure and poor socio-economic setting (Box 1.1).

² LDCs are categorised by the Economic and Social Council of the United Nations based on three criteria: per capita income, human assets and economic vulnerability. There are altogether 50 LDCs in the world.

box 1.1 Some facts about Nepal's poor socio-economic setting

- **Small economic size:** Nepal's real GDP at factor cost was merely NRs. 486.84 billion in FY 2006/07 (MoF 2007).
- **Poverty:** The average per capita income is US\$297 and 31 percent of the population—9.6 percent in urban areas and 36.4 percent in rural areas—still lives below the poverty line. Among the population living below the poverty line, 95 percent live in rural areas, 67 percent are self-employed in agriculture, 71 percent are illiterate, 54 percent have a family size of seven or more, 51 percent hold land less than 1 hectare, and 25 percent have less than 0.2 hectare of land. Poverty is highest among the lower castes and indigenous groups (CBS 2004).
- **Income inequality:** The Gini coefficient has increased from 0.34 in FY 1995/96 to 0.41 in FY 2003/04, showing an increasing trend of income gap between the poor and the rich; the income of the richest 10 percent is 10 times higher than that of the poorest 10 percent (CBS 2004).
- **Food insecurity:** Nepal is a net-food importing country since the 1980s. Although food production is marginally surplus, 55 of the 75 districts are categorised as food deficit. Two-fifths of 3.4 million land holdings in Nepal produce enough food only for less than six months. Food production in the mountains remains short of the requirement by 35-45 percent. In the hills, the deficit is between 15-30 percent (NPC 2007; UNDP 2004).
- **Medium human development status:** Nepal is ranked 142 among 177 countries in terms of Human Development Index (HDI). The country's HDI is 0.534, compared to the world average of 0.743 and the average of 0.691 for developing countries (UNDP 2007). Among the three ecological regions in Nepal, the highest HDI has consistently been in the hill region, with the lowest in the mountains (UNDP 2006).
- **Unbalanced population growth:** Nepal has a population of more than 23 million. As the population growth is 2.25 percent per annum, the gain achieved by development activities has been overshadowed by growing population. Only around 59 percent of the working age people are usually economically active. Similarly, 53.1 percent Nepalese of age 10 years and over are employed and 5.1 percent are unemployed (CBS 2001).

- **Sluggish economic growth:** Nepal is historically a low growth country with GDP growth rates averaging less than 5 percent per annum during the 1980s as well as the 1990s. During 2001/02–2006/07 too, the average annual growth rate was 3.4 percent (2.67 percent in the agricultural sector and 3.79 percent in the non-agricultural sector) (NPC 2007).
- **Subsistence-based farming:** Agriculture is the major economic sector. Around 80 percent of the households depend on farm for livelihood as agricultural households. However, agriculture suffers from low productivity and the commercialisation efforts in the sector have not been able to generate promising results and achieve targeted growth rates (NPC 2007).
- **Low level of industrialisation:** Industrial activities are limited to a few industries and are yet to be diversified. The industrial establishments in many sectors are not self-sufficient to be globally competitive and lack competitive advantage, economies of scale, technology, and efficient production and distribution set-up. Various supply- and demand-side constraints offset Nepal’s potential to gear up the industrial growth process, which is critical to absorb a greater share of the labour force and lighten the burden on the less productive agricultural sector (NPC 2007; SAWTEE and AAN 2007).
- **High indebtedness:** Nepal is highly indebted—external debt/GDP ratio was around 33 percent in FY 2006/07. In the last three decades, gross foreign borrowing constituted almost 36 percent of the total development expenditure. Debt servicing alone consumes more than 15 percent of the annual budget (SAWTEE 2007).
- **Undiversified market and export basket:** Carpet, textiles and agricultural produce are three major export items, constituting more than 90 percent of Nepal’s exports. More than 80 percent of Nepal’s total exports go to India, Germany and the United States (NPC 2005). Among these markets also, the country’s foreign trade is mostly with India. For instance, in FY 2006/07, the share of trade with India in Nepal’s foreign trade was around 65 percent (MoF 2007). Tourism and remittances are Nepal’s major source of foreign exchange earnings.

1.5 Sectoral growth patterns

Nepal's economy has been growing at an average rate of less than 5 per cent (Table 1.1). The Tenth Five-Year Plan (2002–2007) had targeted the average annual normal economic growth rate to be 4.3 percent (2.8 percent in the agricultural sector and 5.2 percent in the non-agricultural sector). However, during the plan period, the average annual growth rate remained 3.4 percent (2.6 percent in the agricultural sector and 3.7 percent in the non-agricultural sector) (NPC 2007).

The growth pattern of the country's gross domestic product (GDP) suggests that Nepal's agricultural sector has not been able to record sustainable growth rates in the 1990s and thereafter (Table 1.1).

Period	GDP growth rate	Agricultural GDP growth rate	Non-agricultural GDP growth rate
1980–1985	4.70	5.21	3.77
1986–1990	5.22	3.57	6.95
1991–1995	4.88	1.85	7.31
1996–2000	4.73	3.69	5.47
2001–2005	2.02	2.85	2.63

MoF. Economic Survey (various issues).

There have been some improvements in the non-agricultural sector but its growth too has been confined to urban areas. Particularly, the reform process complemented by the political change in 1990—from the party-less *Panchayat* system to multi-party democracy—led to some positive changes in the growth of the private sector but, as a whole, the performance of the non-agricultural sector did not improve as projected after 2001 (SAWTEE and AAN 2007).

Over the past decades, the share of the agricultural sector in GDP has been rapidly declining—from 61.3 percent in 1975/76 to 41.7 percent in 1995/96 to 33.9 percent in 2005/06 (MoF 2007). According to NPC (2007), the share of the agricultural sector in GDP was 33.1 percent in 2006/07 (Table 1.2).

table 1.2 Sectoral contribution to GDP

Sectors	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Agriculture, fishery and forestry	37.4	36.5	35.9	35.2	33.9	33.1
Non-agriculture (industry and services)	62.6	63.5	64.1	64.8	66.1	66.9

Source: NPC (2007)

Notwithstanding the sluggish performance of the agricultural sector and the decreasing pattern of its contribution to the GDP, self-employment in agriculture continues to be the major source of household income, followed by agricultural wage employment—together they account for over half the income of the rural poor. This clearly means that the performance of the agricultural sector will continue to remain crucial in determining the future pace of poverty reduction in Nepal (CBS 2006).

1.6 Government's vision in agriculture

The government has targeted the annual growth rate of the agricultural sector to be at 3.6 percent during the Three-Year Interim Development Plan (2007/08–2009/10) period. The government's long-term vision is to modernise and commercialise the agricultural sector by acknowledging the Agriculture Perspective Plan (1995–2015) and the National Agriculture Policy 2005 as the central policy for the development of agriculture. The overall goal is to achieve broad-based, gender inclusive and sustainable agricultural growth. In order to achieve this goal, the Interim Plan stipulates that the agricultural sector will have the following specific objectives: to increase agricultural production and productivity; to maintain food sovereignty by ensuring food security; to make the agricultural and livestock sector competitive by transforming subsistence agriculture into commercial agriculture; to increase employment opportunities for rural youths, women, *Madhesis*, persons with disability, Muslims and deprived groups; and to conserve, promote and utilise agricultural biodiversity through the development and dissemination of environment-friendly technologies (NPC 2007).

The government has also identified strategies that help in achieving a sustainable basis for the development of the agricultural sector. With regard to the protection and promotion of agricultural biodiversity, the government plans to support conservation, promotion and sustainable utilisation of agricultural resources by preparing an inventory of agricultural biodiversity; protect and promote traditional knowledge, skills, research, technology use and practices of farmers; and make arrangements for the equitable and judicious distribution of opportunities and benefits generated by the access and utilisation of agricultural genetic resources and materials (NPC 2007).

These important strategies have to be supported by adequate policy and legal measures, as well as effective institutional arrangements. The government's working policies and programmes have identified some important activities in this regard but they are not clear about measures that safeguard farmers' interests in the commercialisation process of the agricultural sector as well as agricultural biodiversity. In the light of the global agreements and Nepal's obligations and commitments, this book highlights some important legal measures that the government should incorporate in its policy programme while making arrangements for the recognition and establishment of farmers' rights over plant varieties and related knowledge.

Agriculture and biodiversity

the mainstay of farmers' livelihood

This chapter highlights how traditional farming still forms the basis of farmers' livelihood in Nepal. The chapter also emphasises the role that farmers, through their intricate knowledge about the nature, production management and the use value of a wide range of plant species, have been playing in the conservation and development of agricultural biodiversity. The purpose of this chapter is to highlight the importance of protecting the traditional rights of farmers to save, exchange, reuse and sell farm-saved seeds so as to enable them to sustain their livelihood.

2.1 Agricultural patterns and farmers

Low production and productivity are the two major problems of the agricultural sector in Nepal. Issues of land fragmentation, dual land ownership and protection of the rights of tenants have not been addressed effectively. Growing dependency on pesticides and their haphazard and inappropriate use have caused negative effects on the environment as well as human health. Although at the aggregate level, the country appears to be self-sufficient in food production, 55 districts are food deficit. In the hill areas, food-related problems are more complicated due to transportation constraints and uncompetitive markets (NPC 2007).

Agricultural commercialisation is a major policy agenda of the government since the mid 1990s. However, due to above and many other reasons, agricultural commercialisation has not occurred as intended in the 20-year Agriculture Perspective Plan (1995–2015). Inadequate supply of basic agricultural production inputs such as improved seeds and chemical fertilisers; limited irrigation facility; a big gap in the production cost and consumer price of agricultural products; and lack of agricultural credits and high interest rates on the available agricultural credits have largely affected the prospects of agricultural commercialisation (NPC 2007).

Yet, agriculture is the major economic sector in Nepal and subsistence-based farming continues to be a major source of household income and livelihood for the majority of farmers. Of the country's total households, around 80 percent depend on farm for their livelihood as agricultural households³, and of the total households, 78 percent are agricultural households with land and about 2 percent without land (Table 2.1). Of the total agricultural holdings⁴, less than 10 percent are in the mountains. The remaining 90 percent holdings are almost equally divided between the hills and the Terai. The average size of the agricultural land area in the country is 0.8 hectare. The average area of agricultural land is higher for richer households compared to that for poor households (CBS 2004).

About 93 percent of the agricultural households own land and 7 percent rent out some or all of their land to others. On the other hand, 31 percent rented in some land from others and 7 percent do not own any land but operate land owned by others on a contractual basis. Male-headed agricultural households are dominant, though between 1995/96 and 2003/04, there was an increase in the number of female-headed agricultural households by 7 percentage points (from 12 percent in 1995/96 to 19 percent in

³ According to CBS (2004), an agricultural holding is an economic unit of agricultural production under single management comprising all livestock and poultry kept, and all land used, wholly or partly, for agricultural production purposes, without regard to title, legal form, or size. Agricultural holdings are grouped into two categories: land holdings and holdings with no land. Holdings with land are those cultivating at least 0.013 hectare (1,458 square feet or 8 *dhur*) in the case of the Terai and at least 0.0127 hectare (1,369 square feet or 4 *ana*) in the case of the hills and the mountains during an agricultural year. Holdings with no land, on the other hand, are those with two or more cattle (or the equivalent of other livestock and poultry birds) and operating less than 0.013 hectare of land for agricultural purposes.

⁴ CBS (2004) has used the terms "holder", "farmer" and "grower" interchangeably. Similarly, the terms "holding" and "agricultural household" have been used interchangeably.

table 2.1 Some features of agricultural households in Nepal

Description	1995/96	2003/04
Agricultural households with land (% of total households)	83.1	77.5
Average size of agricultural land (in hectares)	1.1	0.8
% of irrigated land area	39.6	54.3
Holdings operating less than 0.5 hectare (% of total holdings)	40.1	44.8
% of holdings operating renting in land only	4.8	7.3
% of holdings growing main paddy	76.0	76.1
% of holdings growing summer vegetables	35.6	60.8

Source: CBS (2004).

2003/04). On an average, 45 percent of agricultural household heads are literate. A higher proportion of heads in the richer quintiles is literate relative to those from poorer quintiles (CBS 2004).

Cereal crops dominate cropping pattern; paddy, maize, wheat, millet and legumes are the major grown crops. The proportion of households cultivating main paddy is 76 percent, wheat and summer maize 63 percent each, and millet 39 percent. Similarly, 24 percent of households cultivate soybean, 32 percent lentil, 50 percent winter potato, 38 percent mustard, 27 percent onions, 35 percent garlic, 63 percent winter vegetables and 61 percent summer vegetables. Only a small portion of farmers use improved seeds. On an average, about one fifth of winter vegetable growers use improved seeds followed by onion growers (18 percent), winter potato growers (16 percent), summer vegetable growers (12 percent), wheat growers (6 percent), main paddy growers (5 percent) and summer maize growers (4 percent) (CBS 2004) (Table 2.2).

The percentage of growers using chemical fertilisers is the highest for main paddy (66 percent). The other crop growers using chemical fertilisers are: wheat (56 percent), summer maize (34 percent), winter potato (22 percent), millet (16 percent), lentil and mustard (10 percent each), winter vegetables (8 percent) and summer vegetables (4 percent). Among develop-

ment regions, the proportion of main paddy growers using chemical fertilisers is the highest in the central (90 percent) and the lowest in the far-west region (38 percent). This figure in the Terai is 77 and 78 percent for main paddy and wheat, respectively (CBS 2004).

Although the agricultural sector has a significant influence on the manufacturing and export sectors of the economy, a large majority of farmers still use locally made agricultural tools. Mechanisation of agriculture is at a very low stage. About 57 percent of farmers own only the most basic equipment—a plough or improved type of plough (*bikase halo*). About 28 percent of farmers use bins and containers for grain storage. Only 1 percent of farmers own tractor or power tiller. Similarly, 1 percent of farmers own a thresher. Of the total farmers, only 3 percent own a pumping set. This pattern holds true across all development regions, ecological zones, consumption quintiles, and urban and rural groups (CBS 2004).

table 2.2 Households using improved seeds in select crops (%)

	Main paddy	Wheat	Summer maize	Winter potato	Onions	Winter vegetables	Summer vegetables
Ecological zone							
Mountains	2.2	2.9	3.6	7.2	4.4	1.9	1.9
Hills	3.3	2.5	3.8	14.8	13.8	16.2	10.4
Terai	7.5	9.1	6.1	19.0	23.4	31.6	17.1
Area							
Urban	6.6	9.3	6.6	28.9	24.7	36.1	24.3
Rural	5.3	5.4	4.1	15.5	17.3	19.6	11.0
Consumption quintile							
Poorest	4.4	2.8	1.6	9.5	11.9	11.5	5.3
Second	3.9	4.1	1.8	11.9	12.5	12.0	6.0
Third	3.8	4.6	2.4	12.9	13.4	16.6	8.7
Fourth	5.7	8.2	6.8	20.2	21.0	23.4	13.5
Richest	9.5	8.0	8.5	23.1	27.8	36.2	23.8
Nepal	5.4	5.6	4.3	16.3	17.8	20.7	11.9

Source: CBS (2004).

The above-mentioned features of Nepal's agricultural sector show that the majority of Nepalese farmers still practise traditional farming to sustain their livelihood. Hence, it is critically important for the government to promote agricultural commercialisation only after it adequately puts in place such promotional and safety measures that protect farmers' traditional rights. If the government fails to do so, it will not only restrict farmers' rights to livelihood but will also make them more vulnerable to the market economy and external shocks that arise from changes in global policies.

2.2 Agricultural biodiversity and seed systems

Of more than 6,000 vascular plant species⁵ found in Nepal, about 550 species and sub-species have food value and 200 are cultivated species. Similarly, over 400 species of agro-horticulture crops are estimated to be available in Nepal, and there are over 100 varieties of 15 major fruit species, 200 varieties of 50 vegetable species, and about 10 varieties of potato under commercial cultivation. Seasonal fruits harvested from forests belong to over 37 genera and 45 separate species (MoFSC 2002).

Farmers' continued contribution in maintaining and improving agricultural biodiversity in both home gardens and farm land is one of the major driving forces behind the development of the agricultural sector, and on-farm maintenance of agricultural biodiversity in Nepal. Nepalese farmers widely practise mixed farming, which involves a high interdependence between crop production, livestock rearing, and use of tree resources from community forests and/or farm-managed trees. They have intricate knowledge about the nature, production management and use value of a wide range of plant species. They extensively use such traditional knowledge (TK) to maintain and develop a wide range of varieties of desired traits that address their diverse needs (Shrestha 2008).

In recent years, the use of improved seeds by farmers is gradually increasing, and seed production and marketing is emerging as an important profit-making business enterprise. Particularly, the trend of using improved seeds

⁵ Though agricultural biodiversity encompasses plants as well as animals, facts, figures and issues relating to animal species and their breeds have not been included in this publication, as this book deals with farmers' rights over plant varieties and related knowledge.

table 2.3 Farmers' dependency on informal seed system

Seed system	Seed sources	Quantity of seed supplied*	Frequency of use (%)
Informal	Saving from production	-	-
	Farmer-to-farmer exchange	-	-
	Informal purchase	-	-
	Sub-total	164,488	93.9
Formal	National Agriculture Research Council	480	0.3
	Department of Agriculture	3,105	1.8
	National Seed Company Ltd.	3,117	1.8
	Private seed companies	3,946	2.2
	Sub-total	10,648	6.1
	Grand Total	175,136	100.0

Note: * Metric tonnes

Source: Bajracharya (2008).

is higher in the case of vegetable seeds because of a rapid growth in commercial production and marketing of vegetables throughout the country and higher profit margins for the seed entrepreneurs. Though the demand and transaction volume of cereal seeds, especially those of wheat, maize and rice are also at rise (Shrestha *et al.* 2008), the formal sector has not been able to meet farmers' growing demand of improved seeds, which is evident from the very low seed replacement rate⁶. Moreover, a study shows that of the total demand for improved seeds by farmers, only around 6 percent is being fulfilled by formal institutions—the Department of Agriculture, National Agriculture Research Council, National Seed Company Ltd. and private seed companies⁷ (Bajracharya 2008).

⁶ Though the area coverage of major cereal crops under improved seeds in Nepal is, on an average, about 89 percent—wheat (96 percent), rice (85 percent) and maize (86 percent), the replacement rate of such seeds is merely around 6 percent (Thapa *et al.* 2008). This shows that, in most cases, local farmers themselves have to manage seeds for plantation.

⁷ Until now, National Seed Board has approved 11 private seed companies to produce foundation seeds in Nepal. The private sector has been involved in the seed business since the 1980s and Seed Entrepreneurs' Association of Nepal (SEAN) was formed in the late 1980s.

On the other hand, it is interesting to note that a large majority of local crop diversity for rice, taro, finger millet and barley is still being maintained by farmers through informal channels. Estimates reveal that around 94 percent of the seed requirement of major food crops is met by farmers themselves through their own production, saving, farmer-to-farmer exchange and informal purchase (Table 2.3). Under such informal seed system, local farmers themselves utilise and manage landraces and it is encouraging that they also have adequate information about production environment, and user needs and preferences (Shrestha 2008; Joshi 2000).

Looking at such trends, it can be understood that there is not only a need to focus on policy and institutional aspects to ensure farmers' access to seeds from the formal seed system but adequate measures also need to be implemented to protect farmers' traditional rights to save, exchange, reuse and sell seeds. In order to increase farmers' access to improved seeds, more investment in the formal seed sector, particularly in the area of research and development, and marketing, is critical. This requires the government to address the administrative limitations of the public sector and provide investment incentives to the private sector to invest in the seed sector. Encouragingly, not only the government agencies but the seed entrepreneurs in Nepal are also willing to strengthen public-private partnership for improving the situation of the limited availability of improved seeds in the seed market.

However, how such partnership will be established and mobilised to work in favour of the public sector, and more importantly, to protect farmers' traditional rights and help the government meet its development goals such as agricultural biodiversity conservation, food security and livelihood enhancement of farmers (See, for example, NPC 2003; NPC 2007) is a major concern. One critical aspect both the government agencies and private seed companies need to realise is: farmers are not merely the consumers of seeds supplied by the formal sector; they are also the producers of seeds and food, and importantly, the custodians and owners of plant genetic resources that form the basis of variety development and plant breeding.

Until now, there have been limited policy and institutional initiatives to register agricultural biodiversity and associated TK. The government has

recently adopted a policy on agro-biodiversity but is yet to develop a law that establishes farmers' rights over plant varieties and related knowledge. The recently introduced Three-Year Interim Development Plan (2007/08–2009/10) has emphasised the need to protect farmers' traditional systems and knowledge by establishing their ownership over them (NPC 2007). It, however, remains to be seen as how the government will materialise this vision and implement effective laws and institutional mechanisms to establish farmers' rights over plant varieties and related knowledge.

Agricultural biodiversity, its use and international agreements

issues and concerns

This chapter deals with the emerging issues and concerns that Nepal needs to address to protect farmers' rights to livelihood from the risks that may arise due to the loss of agricultural biodiversity, and the growing application and use of biotechnology and global intellectual property rules in the agricultural sector. The purpose of this chapter is to highlight the features of different international agreements dealing with agricultural biodiversity and Nepal's status with regard to their ratification and implementation.

3.1 Loss of agricultural biodiversity

Agricultural biodiversity in Nepal is in a state of depletion. For example, among 32 rare plant species identified as threatened in Nepal, eight species are already extinct. Moreover, the use of modern varieties is being promoted in many development regions without any proper mechanisms to conserve the local landraces. Estimates have been made that around 80-90 percent of local rice varieties have been replaced by modern varieties in Kathmandu, Chitwan and Trisuli valleys of the central development region. Traditional rice varieties such as *Samundraphinj*, *Bayarni* and *Ramani*—once

widely grown in the Pokhara valley of the western development region—are also on the verge of extinction. There are also the cases of growing dependence on a few modern crop varieties both in terms of inter- and intra-species—out of 56 rice varieties released in Nepal, only six varieties used landraces as one of the parents and only two were from local selection (Shrestha 2008).

If the country fails to undertake effective measures to address the loss of agricultural biodiversity, it would not only make farmers more vulnerable but would also worsen the situation of food security. For an LDC like Nepal, such loss of agricultural biodiversity is also a major concern from the viewpoint of poverty reduction, rural development and ecological balance. The government should, therefore, pay increased attention towards implementing the measures that promote the conservation of agricultural biodiversity and its sustainable use.

3.2 Promoting traditional agricultural systems

The country's goal to ensure food security and reduce poverty through agricultural commercialisation seems to be biased against the crucial role that many traditional agricultural systems and practices have been playing in the conservation and development of agricultural biodiversity. Initiatives are lacking towards devising policy and institutional mechanisms that support and strengthen traditional and informal seed systems, which are critical to promote on-farm conservation⁸ and create a sustained base for food security and livelihood enhancement in rural areas.

The Three-Year Interim Development Plan (2007/08–2009/10) has emphasised the need to encourage farmer-to-farmer seed exchange and traditional seed distribution system (NPC 2007) but such goal does not match with the country's seed policies and laws. Many farmers and local organisations view that there is a need for community-friendly variety development, verification and popularisation strategies, as the existing seed legislation do not support local farmers to register their seeds, mainly because of the

⁸ On-farm conservation refers to plants or its wild relatives that are conserved in the very place where they developed their present-day characteristics.

rules that bind them to meet certain technical and infrastructural requirements (See Chapter 4, Box 4.3).

Thus, seed policies and rules need to find approaches to reward farmers for their contribution to seed conservation and development. The government should put in place legal and institutional mechanisms to enable farmers to enhance seed quality, and obtain, as breeders, ownership rights over the seeds they develop. In this regard, the simplification of seed registration, release and certification systems is important to ensure farmers' affordability to capitalise on formal seed systems. Adequate and effective implementation of "truthful labelling" and "self-declared quality assurance" schemes are also important to enable farmers to benefit from variety development, registration and marketing initiatives.

In addition to such reforms in the seed legislation, it is imperative to implement measures that promote community-led conservation and development initiatives. The government should prioritise community-based biodiversity management (CBM) programme across all regions. In particular, technical and financial support for community seed banks for seed conservation and participatory plant breeding (PPB) for seed development should be extended to all parts of the country. These activities can play an instrumental role in strengthening traditional agricultural systems and promoting their sustainable use for the benefit of farmers as well as society. However, the government should implement such programmes keeping in view the need to protect farmers' rights over their resources and knowledge. The community biodiversity registers and "access and consent" agreements with the communities could be useful in this process.

3.3 Bioprospecting and commercial use of biodiversity

Bioprospecting is the systematic process of inventorying, sampling, collecting and testing the biological materials to search for economically and socially valuable genetic and biochemical resources in the nature (Posey and Dutfield 1996). Until the 1980s, access to and commercial exploitation of biological resources were free for the international community, as the universally recognised notion was "biological resources are the common heritage of humankind". Such notion, however, led to unregulated access to and

use of biological resources. Biodiversity-rich countries viewed that such access generated several concerns, ranging from biopiracy to unfair and unethical monopolies over the use of genetic resources as well as products that relied on the resources and TK obtained from their territories.

In the mid-1980s, a series of global negotiations were held to address such concerns, mainly at forums held under the auspices of the Food and Agriculture Organisation of the United Nations (FAO). While the technology-rich developed countries (mostly the users of resources) were in support of the widespread use of biotechnology for the commercialisation of biological diversity, biodiversity-rich developing and least-developed countries (mostly the providers of resources) viewed that the local, indigenous and farming communities were being marginalised in such process due to inequitable and unfair practices such as:

- biopiracy and misappropriation of TK through unauthorised access to and/or commercial exploitation of their resources and TK (such as without obtaining the prior informed consent (PIC)⁹ from the government and the concerned communities);
- their exclusion in the benefits derived from the commercial utilisation of their resources and TK; and
- “strict” restrictions on the use of products and technologies that are developed in the formal sector and protected by intellectual property rights (IPRs) (See Chapters 4 and 5).

In particular, biodiversity-rich countries stated that there had been asymmetries in the distribution of benefits between the local, indigenous and farming communities and the commercial users of resources and related TK. For example, they highlighted that while new plant varieties had been generating significant amount of returns to the breeders and seed companies through exclusive rights over the production, marketing and distribution of new seeds, no system had been established to address the equity considerations in the commercialisation process of plant genetic resources and related knowledge (See Adhikari 2006).

⁹ PIC is the consent that the receiver (user) of resources and/or TK, based on complete and accurate information, needs to obtain from the provider (owner) of resources and/or TK.

In order to address some of these issues, two international instruments came into being—the Convention on Biological Diversity (CBD) in 1992 and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in 2001. These instruments call upon its contracting parties to provide access to resources in a manner that supports the conservation and sustainable use of biological resources, and protects the rights of local, indigenous and farming communities, for example, through a fair and equitable access and benefit sharing¹⁰ (ABS) regime.

3.4 International instruments and farmers’ rights

Broadly, these international instruments are supportive of biodiversity conservation and protection of the rights of local, indigenous and farming communities. While calling upon the contracting parties to facilitate the “appropriate access and use” of biological (genetic) resources, these instruments have recognised the sovereign rights of states over the resources in their territories as well as the rights of local, indigenous and farming communities over the resources and associated TK they have been conserving and using since generations.

3.4.1 Convention on Biological Diversity

CBD was adopted on 5 June 1992 at the United Nations Conference on Environment and Development at Rio de Janeiro, Brazil. The Convention came into force on 29 December 1993. Currently, 191 countries are contracting parties to CBD. Nepal ratified the Convention on 23 November 1993 but is yet to implement a national ABS law, an obligation of each party to the Convention.

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 are the three overriding objectives of CBD. In the preamble to the Convention, the international community has recognised the close and traditional dependence of many indigenous and

¹⁰ Access is the acquisition of biological (genetic) resources and/or TK, innovations, technologies or practices. Benefit sharing is the sharing of benefits (either in a monetary or a non-monetary form or both) arising out of the commercial use of resources and/or TK between the provider (owner) and the receiver (user) of the resources and/or TK. One should note that ABS mechanisms are different under CBD and ITPGRFA.

local communities on biological resources. There is also a broad recognition of the contribution that TK can make to both the conservation and the sustainable use of biological diversity (See UNEP/CBD 2001).

In particular, ABS and PIC—the two major equity concerns in the commercialisation process of biological diversity and TK—have been recognised and legitimised in CBD. Article 15 of CBD provides a framework for the implementation of ABS. In recognition of the sovereign rights of the states over their biological resources, national governments, subject to their national laws, are conferred the authority to determine access to genetic resources. The Convention requires the parties to create conditions, subject to allowed safeguards, to facilitate access to genetic resources for environmentally sound uses by other parties. According to CBD, access to genetic resources should be on mutually agreed terms and also on PIC of the parties providing the access. The providing and accessing parties are required to establish legal, administrative and policy measures on mutually agreed terms to achieve fair and equitable sharing of technological benefits arising from research and developments, and economic benefits arising from the commercial utilisation of genetic resources (Adhikari 2006).

Article 8 (j) of the Convention provides for equitable sharing of benefits arising from the utilisation of knowledge, innovations and practices of the local and indigenous communities embodying traditional life styles relevant for conservation and sustainable use of biological diversity. The Convention mentions that access to such knowledge, subject to national laws, has to be with the approval and involvement of the holders of such knowledge (See UNEP/CBD 2001).

3.4.2 International Treaty on Plant Genetic Resources for Food and Agriculture

After more than 15 sessions of the FAO Committee on Genetic Resources and its subsidiary bodies, ITPGRFA was approved during the FAO conference in 2001. The Treaty was introduced to harmonise the International Undertaking on Plant Genetic Resources signed in 1983 with CBD. The Treaty came into force on 29 June 2004 and, until now, 116 countries have ratified it. Nepal ratified ITPGRFA on 2 January 2007.

This Treaty covers only plant genetic resources for food and agriculture, and does not deal with other plant genetic resources. It sets up a multilateral system¹¹ of ABS, and the application of the Treaty provisions is limited to 64 plant genetic resources—food and forages—that, according to FAO, are fundamental to food security and are either in the public domain or are under the hold of natural and legal persons.¹² The Treaty has recognised the contributions of farmers in conserving, improving and making available the plant genetic resources for sustainable agriculture and food security, and has recognised farmers’ rights to benefit from such contribution through a multilateral system (Adhikari 2006).

Farmers, their contribution and corresponding rights have found a place in the Treaty right from the preamble. The Treaty has recognised the role of farmers as the custodians of plant genetic resources. In Article 9, ITPGRFA has recognised their rights to save, use, exchange and sell farm-saved seed/propagating material. In addition, in the same Article, The Treaty also mentions other important farmers’ rights: right to TK; right to participate in sharing benefits; and right to participate in making decisions at the national level. Regarding the implementation of these farmers’ rights, the Treaty states, “...in accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers’ Rights...”. In addition to it, the provisions of the Treaty on general obligations and financial resources also refer to farmers (See FAO 2002).

3.4.3 National legal measures under CBD and ITPGRFA

The protection of the rights of local, indigenous and farming communities through CBD and ITPGRFA measures is important to address the challenges associated with biotechnology and IPRs. The implementation of such measures is also crucial for rewarding the communities for the contribution they have been making to the conservation of biological diversity. This will, in turn, enable such communities to benefit from the commercialisation of their resources and knowledge on a fair and equitable basis, and contrib-

¹¹ In the case of CBD, access to genetic resources and benefit sharing arrangements are a bilateral matter, i.e., parties have to bilaterally deal with ABS issues based on mutually agreed terms between the two.

¹² See Annex 1 of the Treaty for the listed food and forages at <http://www.planttreaty.org/>

ute more to conserve agricultural biodiversity and develop agricultural systems that contribute to national and global food security and overall development. Nepal has not, however, made sufficient efforts to realise the goals and objectives of CBD and ITPGRFA¹³ (See Chapter 5).

3.5 Nepal's membership in the WTO and IPRs

As far as commercial exploitation of and IPRs over plant varieties are concerned, Nepal's membership in the World Trade Organisation (WTO) (See Annex on page 56) needs special mention. Its legally binding Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) has generated several concerns due to the requirement to provide non-discriminatory¹⁴ intellectual property protection in areas such as plant breeding. Many WTO Members, mostly the developing and least-developed countries which are rich in biodiversity, argue that there is an inherent conflict between CBD and TRIPS. They have, thus, been calling for the amendment of TRIPS to remove such conflict (WTO 2006a).

Intellectual property refers to the creation of the mind in the form of ideas and knowledge. IPR is the right granted to a person for his/her intellectual creation where he/she uses his/her ideas and knowledge. While granting an IPR to a person, the right is conferred exclusively for a definite period (in some types of IPRs for an indefinite period, e.g., trade secrets) to the creator. The main purpose of granting IPRs is to legally recognise and reward the creator for his/her intellectual creation. IPRs under TRIPS include copyright, trademark, geographical indications, patent, plant breeders' rights, industrial design, trade secret, and layout designs of integrated circuits. These IPRs could be categorised in two groups: copyright and related rights, and industrial property rights (Box 3.1).

¹³ Since this publication focuses on plant variety protection and farmers' rights issues, it does not deal with CBD and ITPGRFA provisions in detail. One should note that these instruments also have some limitations and many of the crucial issues concerning ABS and other community rights are still a matter of global negotiations.

¹⁴ There are two important non-discriminatory principles within the WTO system: most-favoured-nation (MFN) and national treatment. According to the MFN principle, a country should not discriminate between its trading partners and give them equally "most-favoured-nation" or MFN status. The national treatment principle means that a country should not discriminate between its own and foreign products, services, IPRs or nationals. These treatments also apply in the case of the implementation of TRIPS by Nepal.

box 3.1 Two categories of IPRs in TRIPS

Copyright and related rights: Copyright includes the right relating to literary and artistic works (e.g., book, article, music, etc.). Such a right is granted for a minimum period of 50 years after the death of the copyright holder. Likewise, under copyright, rights of performers (actor, singer, musician, etc.), producers of phonograms (sound recordings) and broadcasting institutions are also protected. The main purpose of granting such rights is to encourage and reward the creative literary and artistic works and the creators of such works.

Industrial property rights: These rights can also be grouped into two categories. In the first category, distinctive signs—especially trademark, which distinguishes a particular good or service from another good or service (e.g., a brand name in a product), and geographical indication, which distinguishes a particular good from another good on the basis of geography (e.g., tea of Ilam or Darjeeling)—are protected. These IPRs can be given for an indefinite period provided the signs used continue to remain distinctive. The protection of these IPRs is meant to ensure fair competition and protect consumers, by enabling them to make informed choices between various goods and services.

In the second category of industrial property rights are IPRs such as patent, industrial design and trade secrets. Patent is granted for innovations in products (e.g., new seeds) as well as processes (e.g., new technologies); industrial design for new designs of goods (e.g., designs of clothing and jewellery); and trade secrets for maintaining secrecy in matters relating to trade (production-related information or marketing information, e.g., a formula to make a product). While patent can be protected for 20 years and industrial design for at least 10 years, trade secrets can be protected till the period right holders want. The purpose of granting these IPRs is to provide protection to the creator and create incentives to stimulate investment in the development of new products and technologies. Besides these, there are other IPRs that are dealt by TRIPS such as layout designs of integrated circuit, which are granted in the field of electronics (e.g., a digital programme) and plant variety protection (e.g., breeders' rights over new seeds).

Adapted from: www.wto.org

Establishing a minimum standard for the implementation of such IPRs is one of the major features of the Agreement. This means that WTO Members have to provide a minimum standard of protection for IPRs (e.g., 20 years in the case of patents), that too, in both products and processes, and in all fields of technology.

Like many other developing countries, Nepal faces special challenges for developing supportive IPR policies and laws not least because it lacks technical, financial and human resources. The country is currently making preparations to develop and implement IPR laws in line with commitments it made during WTO accession. The focal point for the implementation of the national law on industrial property rights (such as patent) is the Ministry of Industry, Commerce and Supplies. The Ministry of Agriculture and Cooperatives is the focal government institution to make arrangements for the enactment and implementation of the plant variety protection law (See Chapters 4 and 5). While making initiatives for the implementation of these laws, whether Nepal would be able to safeguard farmers' rights to livelihood by harmonising such IPR laws with agriculture- and biodiversity-related laws is a serious concern.

IPRs are a tool that can support agriculture development through the creation of ideas, knowledge and innovations in the agricultural sector but, to a great extent, they may also affect the traditional patterns of farming and livelihood of farmers. Thus, intellectual property regime needs to be tailored to the conditions within each country, keeping in view the specific development needs and priorities in the agricultural sector. The goal should be to provide incentives for seed sector development through IPRs such as trademarks, trade secrets and plant breeders' rights but such incentives should not create unnecessary limitations on the practices and livelihoods of farmers (See World Bank 2006).

Hence, there is a need for the government as well as concerned stakeholders and community groups to work together and develop a comprehensive and development-friendly IPR policy so that both breeders and farmers benefit without unnecessarily affecting each other's rights.

Plant variety protection under TRIPS

rules and commitments

This chapter deals with the nature and scope of global intellectual property rules for plant variety protection under WTO/TRIPS, focussing on Nepal's commitment to provide protection to plant varieties through a free-standing act. The chapter also highlights the nature and scope of Nepal's existing seed legislation, emphasising the need to recognise farmers as breeders by the legislation. The purpose of this chapter is to discuss the country's developmental concerns regarding intellectual property protection to plant varieties.

4.1 IPRs over plant varieties

Collection and storage of plant genetic materials and their commercial use by both public and private sectors have been taking place for centuries, either for the purpose of taxonomic research or for commercial purposes. However, while the oldest and the most numerous collections are held in industrialised countries (the North), most of the germplasm in these collections has come from the greatest centres of genetic diversity, which are mainly within the tropics (the South) (Posey and Dutfield 1996).

Evidences suggest that today's plant breeding would not have come to the present stage of modern biotechnology had there been no contribution

from farmers in the South to conserve and develop agricultural biodiversity. However, not only have there been little efforts to recognise and reward such contribution of farmers (though there exist international instruments such as CBD and ITPGRFA), tremendous amount of pressures are also being exerted on traditional systems of farming through IPR rules, threatening farmers' rights to livelihood (evident from the way TRIPS has introduced global IPR rules for harmonisation at national levels by WTO Members).

The application of IPRs in agriculture, as allowed under TRIPS, has long been contentious, mainly because of its provisions under Article 27. As a whole, Article 27 of the TRIPS Agreement deals with patentable subject matter (Box 4.1), mentioning which inventions WTO Members are obliged to make eligible for patenting and what they can exclude from patenting (based on their own needs and priorities). Inventions that can be patented include both products and processes, and should cover all fields of technology, including biotechnology.

Specifically, Article 27.3 (b) allows governments to exclude some kinds of inventions from patenting, i.e., plants, animals and "essentially" biological processes. The Article, however, makes it mandatory for WTO Members to provide patent protection to micro-organisms, and non-biological and microbiological processes, on the basis of three patent eligibility criteria: they must be new, involve an inventive step, and should be industrially applicable. Further, though Article 27.3 (b) gives an option to exclude plants from patenting in its first sentence, the same Article, in its second sentence, makes it mandatory for Members to provide protection to plant varieties (Box 4.1). As per the Article, plant varieties have to be eligible for protection either through patent protection or a system created specifically for the purpose ("*sui generis*", i.e., of its own kind of system), or a combination of the two. However, the Agreement does not specify any criteria for the protection of plant varieties.¹⁵

Besides these provisions on patentability and plant variety protection, Article 27.3 (b) itself has also mandated WTO Members to review its provi-

¹⁵ Most of the developed and developing countries have recognised the following four criteria for the protection of plant varieties: Distinctness, Uniformity, Stability and Novelty, collectively known as DUSN.

box 4.1 Patentable subject matter under TRIPS Article 27

1. ..., 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. ... , 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 micro-organisms, 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.

Source: WTO (2002).

sions four years after the implementation of the Agreement. As the Agreement came under implementation in 1995, the review negotiations started in 1999 at the Council for TRIPS. Due to diverse views and concerns, the negotiations have not, however, reached any consensus. Many countries have expressed concerns with regard to the implementation and implications of Article 27.3 (b). A number of developing and least-developed countries view that TRIPS has created a route for the inventors to obtain “excessively broad patents” in a manner that perpetuates and legitimises biopiracy

box 4.2 Options for the protection of plant varieties in TRIPS

Option 1	Option 2	Option 3
WTO Members can choose to protect plant varieties through patents	WTO Members can develop an effective <i>sui generis</i> system to protect plant varieties. This means they should bring an effective kind of national law that grants IPR over new plant varieties through plant breeders' rights certificates.	WTO Members can develop a system that gives patents as well as plant breeders' rights certificates to protect plant varieties.

Adapted from: Adhikari (2007).

and threatens the rights of local, indigenous and farming communities over their biological resources and associated TK. On the issue of patenting of life forms, which is allowed under TRIPS Article 27.3 (b), they argue that it has given rise to a number of ethical, religious, environmental and developmental concerns, putting further pressures, among others, on the livelihood of local, indigenous and farming communities of agriculture-based developing and least-developed countries (Adhikari and Adhikari 2007; WTO 2006b).

4.2 Global debate on plant variety protection

IPRs are broadly the monopolies on the use of inventions such as invented seeds and technologies that the inventors enjoy for a specified period of time. As per TRIPS, patents and plant variety protection certificates are the two important tools that Members can use to enable inventors of new plant varieties (seeds) to restrict others, for example, from “making, using, offering for sale, selling, or importing them” (WTO 2002).¹⁶ During review negotiations on Article 27.3 (b) of TRIPS, in particular on the issue of the

¹⁶ The UPOV Convention 1991—which most developing and least-developing countries consider as being against the rights of local and small farmers—enables the IPR holders to “generally restrict others” from “producing and reproducing, offering for sale, selling or marketing, exporting, importing, and stocking for any of these purposes the propagating materials of the protected varieties”. The UPOV Convention also recognises DUSN as criteria for new plant variety protection.

need to enforce domestic plant variety protection laws for protecting plant breeders' rights as a form of IPRs in the seed sector, WTO Members have expressed diverse interests and views.

4.2.1 Arguments in favour of plant variety protection

Some developed countries view that plant variety protection allows development of new technological solutions in the field of agriculture. They argue that such protection also encourages the easy introduction of new varieties and ensures that breeders continue breeding effectively. They have also made a point that improvements in agricultural biotechnology have resulted in the design of new plants through direct manipulation of the genome of a plant rather than reliance upon conventional plant breeding techniques that involve a trial and error process. Advances in the area include the development of new crops with higher productivity, yields and disease resistance. Further, it has been said that strengthened plant variety protection ensures a more efficient agricultural sector (WTO 2006b), by providing incentives to the private sector to make investments in the plant breeding sector.

4.2.2 Arguments against plant variety protection

Some developing countries argue that the protection of plant varieties can have adverse implications for the fulfilment of their national goals, in particular with regard to food security, health, rural development and equity for local communities whose TK systems have produced staple varieties, including varieties that have medicinal and biodiversity value. A group of countries also view that plant variety protection could lead to excessive dependence on foreign commercial breeders, and that such persons could not always be relied upon. Concern has also been expressed about the possible adverse implications for the cooperative relationships among neighbouring farmers that are common in developing countries and the difficulty of traditional farmers in having the capacity or education required to use the system to protect their own interests (WTO 2006b). Therefore, many developing countries such as Brazil and India have been calling for the need to address such concerns and create a space within the TRIPS Agreement to balance the rights of both breeders and farmers. A group of

developing countries have also proposed for inserting some provisions in TRIPS Article 27.3 (b) so that global IPR rules could safeguard farmers' rights to livelihood (See Chapter 5, Box 5.2).

4.3 Plant variety protection in Nepal

Nepal does not have any specific policy or law for plant variety protection. Until now, the seed development, certification, registration and release programme is being administered through the Seed Act and Regulations 1988. In order for the seeds to be qualified for registration and release, the Seed Act requires the seeds to be distinct, uniform and stable (DUS).

Under the Seed Act, a National Seed Board¹⁷ has been formed, which is tasked, among others, with the role to maintain coordination between the private and government sectors in the activity of the production and distribution of the seeds; and encourage the private sector to make investment in the seed industry. The Board is also responsible to regulate or control the quality standards of seeds produced by the private and government seed companies. In addition, subject to specified terms and conditions, the Board has the authority to approve, release and register the seeds; test their specialty, uniformity and permanency; and provide ownership certificates to the breeders over their seeds (the scope of such ownership certificate is, however, not clear and, interestingly, this is a voluntary clause). Besides these legislative measures, the government also formulated National Seed Policy in 1999. The policy focuses on variety development, maintenance, seed supply, and private sector participation in seed business and quality control.

The Seed Act is, however, being implemented in only 33 of the 75 districts. Seed certification is mostly effective in cereal crops, and there is very limited seed trade outside the country. While the private sector was not involved in breeding until recently, public sector crop breeding research has not been remarkable, given the low numbers of varieties released, the varietal replacement rate and the adoption rates of modern varieties. For example, until now, the Variety Registration and Release Sub-Committee

¹⁷ The National Seed Board has three sub-committees: variety approval, release and registration sub-committee, program planning/formulation and monitoring sub-committee and quality standards determination and management sub-committee.

of the National Seed Board has released and notified only 216 varieties of 44 crops, of which 35 varieties have been de-notified, restricting their production, marketing and use in the country (Thapa *et al.* 2008).

Generally modern varieties that are delivered from research to farmer fields are supported by seed certification. Seed produced by local farmers does not formally qualify for certification, ignoring the fact that local-level seed production usually includes farmers' preferred varieties, which may include both landraces and modern varieties. This lack of an option for certification has become a disadvantage for farmer-produced seeds in a competitive market. The existing seed legislation should, thus, be flexible and

box 4.3 Farmers' concerns over a government decision

Though there were no such provisions in the Seed Act and Regulations 1988, the government, through the publication of a notice in the government-owned daily, *Gorkhapatra*, has provisioned that the private and non-governmental sectors should meet certain requirements for seed development and promotion in Nepal.

The Notice mentions that there should be adequate land for research, seed godown for storage, and related machinery and equipment needed for seed development. The Notice also requires the private and non-governmental sectors to fulfil specified human resources criteria for seed development and promotion. For example, in the seed development programme, a breeder must possess, at least, an MSc degree, and there should not only be a seed technology expert with a similar degree but also a multi-disciplinary team.

Following such notice, it has been held by many stakeholders that such rules and conditions do not help and enable farmers, mainly those who are illiterate but have intricate knowledge about farming, including seed selection and development, to engage in seed development and benefit from seed business. They view that it restricts their right to be recognised as breeders.

Source: Gorakhapatra (2007); Shrestha et al. (2008).

allow private and non-governmental organisations, and farmers' groups to join the formal seed systems¹⁸ (See Joshi 2000). However, the country's legislative measures have not even been supportive to recognise local farmers as breeders (Box 4.3), though there are strong cases (e.g., the registration of two rice varieties under the Seed Act: *Jethobudho* and *Sunaulo Sugandha*) showing that farmers have been continuously contributing to the seed sector through variety enhancement and quality seed development.

4.4 Nepal's commitment for plant variety protection

During WTO accession, Nepal expressed its commitment to implement the national IPR laws in compliance with the TRIPS Agreement. Specifically, the country has made a commitment to enact and implement an industrial property law that deals with IPRs such as patent, trademark and geographical indications.¹⁹ In addition, it has made a commitment to introduce a separate free-standing act to deal with plant variety protection (Box 4.4).

This means that Nepal shall have to devise a new law on plant variety protection and also amend the existing seed legislation to harmonise them with new IPR rules, as the current provisions under the Seed Act and Regulations deal with many of the aspects and elements of IPRs (e.g., seed ownership, marketing and distribution). In such policy making process, it is critical for policy makers "to ensure that trade considerations do not dictate development pathways for national seed systems. In particular, strengthened IPRs in breeding need to be justified on the basis of careful assessment of the national breeding and farming sectors if they are to play a positive role in agriculture development by providing incentives for both domestic and foreign investment" (World Bank 2006).

In the recent years, there have been pressures on the government, from both national and international actors and agencies, including developed-

¹⁸ The National Seed Board has started the introduction of flexible certification schemes. For instance, *truthful labelling* is an official policy but this is less known to farmers and grassroots organisations and is yet to be practiced (see Joshi 2000).

¹⁹ This publication deals mainly with plant variety protection law. However, one should note that other industrial property laws such as those related to patent, trade secrets, geographical indications, trademark, etc., and the copyright law also have connection with and, thus, implications for the agricultural sector and farmers' rights.

box 4.4 Nepal's commitment for plant variety protection

During its accession to the WTO, Nepal chose to develop a *sui generis* system for the protection of plant varieties, that is, granting of plant breeders' rights certificates and not patents to the inventors of new plant varieties. The Working Party Report of Nepal's Accession to the WTO states:

On the section of plant variety protection: The representative of Nepal said that the present legislation (*in Nepal*) did not cover the protection of plant varieties. In accordance with the action plan on the implementation of the TRIPS Agreement, the protection of plant varieties would be included in the new Plant Variety Protection Act to be promulgated by *December 2005*. The drafting of the Plant Variety Protection Act was not yet initiated, however it would be intended to *protect the rights of related stakeholders in accordance with the needs of the country*. This law would be *a separate free-standing Act*. (emphasis added).

On the section of Membership in International Intellectual Property Conventions: The representative of Nepal stated that Nepal had been a member of the World Intellectual Property Organisation (WIPO) since 4 February 1997 and the Paris Convention since 22 June 2001. Nepal would join the Berne Convention, by December 2005, and join the Rome Convention and the Treaty on Intellectual Property by 2006. Nepal would also look at other WIPO and IP related Conventions, e.g. Geneva Phonograms Convention, *UPOV 1991*, WIPO Copyright Treaty and the WIPO Performances and Phonograms Treaty, *in terms of national interest and explore the possibility of joining them in the future, as appropriate*. (emphasis added).

Source: WTO (2003).

country governments and private seed companies (of Nepal as well as abroad), for enacting a plant variety protection law based on the International Union for the Protection of New Varieties of Plants (UPOV) model. Some of these stakeholders have also been calling for Nepal's UPOV membership on the assumption that it would attract multinational seed companies to invest in plant breeding and seed development in the country.

Such stakeholders should note that the *sui generis* system of plant variety protection means a kind of system that favours Nepal's economy, environment and, more importantly, farming systems and practices. Article 27.3(b) does not bind Members to use UPOV as a model in providing protection for plant varieties, although UPOV may be "an important point of reference for the design of the law". More particularly, Members are free to choose a model other than UPOV, such as those based on ITPGRFA and CBD (WTO 2006b).

Most of the developed countries have chosen the UPOV model because it suits the requirement of their industrial farming—where farmers constitute merely 1 percent to 5 percent of their total population. For such countries, agriculture is a matter of trade and business and it is in their interest to promote IPR-led plant breeding. However, for an economy like Nepal, this is not the case, as agriculture in Nepal is still a major source of livelihood for the majority of households. The membership of UPOV or the enactment of the UPOV-style plant variety protection law means that the government shall not have adequate policy and legal space to implement farmers' rights that could be affected by the IPR-led breeding or seed systems (Adhikari and Adhikari 2003).

Such stakeholders should also note that due to such important development concerns, the government of Nepal has clearly mentioned in the Protocol of Accession to the WTO to devise such a plant variety protection law that safeguards "the rights of related stakeholders in accordance with the needs of the country" (Box 4.4)—which basically means the need to safeguard the rights of farmers. And, though there is a reference of UPOV in the Accession Protocol, it should not be interpreted to have restricted Nepal's policy space to devise a *sui generis* law that protects farmers' rights but should be understood as a policy space that enables Nepal to balance the rights of both breeders and farmers.

Legal mechanisms to protect farmers' rights

issues for policy considerations

This chapter suggests some important legal measures that Nepal needs to implement while granting intellectual property protection over plant varieties. The chapter, drawing from the nature, importance and role of Nepal's traditional agricultural systems and the status of traditional practices among farmers with regard to the use and development of seeds at the local level, recommends how Nepal can implement adequate safety and promotional measures for establishing farmers' rights over plant varieties and related knowledge.

5.1 Legislative measures under CBD and ITPGRFA

CBD and ITPGRFA both recognise that the contracting parties have sovereign rights over their biological resources, including plant genetic resources. These instruments also enable the contracting parties to implement measures necessary to protect the rights of local, indigenous and farming communities in their national legislation. Since Nepal is a party to both of these international agreements, the country can implement important measures to protect biodiversity, including plant genetic resources from

any use that affects the environment, public health and the health and life of animals and plants. Importantly, while facilitating access to its genetic resources through the implementation of domestic laws under these global instruments, the government can also undertake measures that protect the rights of its local, indigenous and farming communities.

However, Nepal's Access to Genetic Resources and Fair and Equitable Benefit Sharing law is still in the draft form, which the country needs to implement to enforce CBD provisions at the national level. Similarly, the domestic legislation under ITPGRFA—that has to deal with the multilateral system of access to plant genetic resources and benefit sharing, and farmers' rights—is yet to be drafted. The government should understand that Nepal may have to face greater challenges if it does not devise and implement policies and laws dealing with ABS rules and farmers' rights in the near future.

The ABS law is crucial to create a "legal basis" for the documentation and registration of varieties (including other biological resources) and TK that are in the public domain. In particular, this law will be instrumental in institutionalising and mobilising mechanisms that appropriately regulate biopiracy, protecting, among others, the right of local and indigenous communities to a fair and equitable share of the benefits arising from the commercialisation of their resources and TK. Similarly, the national law on farmers' rights under ITPGRFA will help the country implement farmers' rights over TK and plant genetic resources, including those that are covered by the multilateral system of ITPGRFA under Annex 1.

Prior to enacting these two laws, the government, in consultation with concerned stakeholders, however, needs to pay increased attention towards harmonising them, for example, in terms of their nature, scope, objectives and implementation issues, including the benefit-sharing mechanism. This is important for two main reasons. First, to ensure that these laws do not contradict with each other but complement the implementation of both, and second, to develop national positions on negotiation issues that affect Nepal's biodiversity conservation efforts and the rights of local, indigenous and farming communities (as a number of critical issues under these instruments are still subject to negotiations at the CBD and ITPGRFA levels).

5.2 Legislative measures under TRIPS

Nepal's commitment to comply with TRIPS and implement a *sui generis* system to protect plant varieties through IPRs has generated a vast amount of interest and debate among concerned stakeholders. During national-level consultations, government officials, civil society experts, farm-group leaders and seed entrepreneurs are debating on various aspects of the protection of plant varieties and their implications for the agricultural sector, including seed business and marketing.

In addition to issues concerning breeders' rights and incentives for investment and technology transfer in the plant breeding sector, issues such as farmers' access to protected varieties; ABS and PIC; disclosure of the source and country of origin of resources and knowledge in the intellectual property application for breeders' rights; protection of farmers' varieties and knowledge and the role of the public research organisations have drawn significant attention during consultations on the plant variety protection law.

As an LDC, Nepal is not required to provide for plant variety protection until 2013.²⁰ However, the government should proactively look forward to devising mechanisms that promote the application of plant variety protection on a judicious and sustainable basis so as to implement a development-friendly law after 2013. This includes the introduction of effective measures that balance the rights of both breeders and farmers in the plant variety protection law. And, in particular, critical to the process of the implementation of such law would be the utilisation of TRIPS flexibilities to address national development goals; incorporation of promotional and safety measures for the establishment of farmers' rights; effective institutional arrangements for the implementation of farmers' rights and breeders' rights; and broad-based consultations for developing national positions for review negotiations of TRIPS Article 27.3 (b).

²⁰ This was decided on behalf of the LDC Members of the WTO prior to the sixth WTO Ministerial held in Hong Kong in 2005.

5.3 TRIPS flexibility and development priorities

Despite pressures to join UPOV 1991, Nepal managed to choose the option of devising a *sui generis* plant variety protection system during accession negotiations for WTO membership. Such commitment has enabled the government to secure some policy space to safeguard its national interest while extending breeders' rights over new plant varieties (Adhikari and Adhikari 2003).

Currently, the Ministry of Agriculture and Cooperatives in Nepal is undertaking some legislative initiatives to draft the plant variety protection legislation. During national-level consultations on the need for such legislation, there have been serious debates among stakeholders about whether or not there is any flexibility for the government to protect farmers' rights in the plant variety protection law, and whether such protection is in Nepal's interest. In this respect, the argument that the government can and should provision for the implementation of farmers' rights in the national plant variety protection law should not be diluted for the following four main reasons.

First, Nepal's interest lies in safeguarding the livelihood options of farmers to promote the agricultural sector for sustained growth and ensure food security, poverty reduction and rural development. The issue of protecting farmers' rights in the IPR regime should, thus, be taken as a major development priority of the country. This will not only reward farmers but will also create incentives for them to further develop agricultural systems and conserve agricultural biodiversity. The preservation of some policy space to protect farmers' rights was also one of the major objectives of Nepal during accession negotiations for WTO membership. The government has, therefore, expressed its intention to "protect the rights of related stakeholders in accordance with the needs of the country" while committing at the WTO for the implementation of a separate free-standing act on plant variety protection in the country (See Chapter 4, Box 4.4).

Second, TRIPS, in many of its provisions, mentions about the need to address the specific development needs and priorities of the LDC Members (WTO 2002). For an LDC like Nepal, the protection of farmers' rights in the plant variety protection law is, thus, not a violation of TRIPS provisions but a well-

justified legal approach to capitalise on its flexibilities that allow WTO Members to devise their own kind of system of protection to plant varieties. One should note that by capitalising on such flexibilities and keeping its development goals at the forefront, India has already enacted the “Plant Variety Protection and Farmers’ Rights Act” in 2001. Interestingly, this law is being undertaken as an effective *sui generis* model law by many other developing and least-developed countries, including those in South Asia.

Third, Nepal has ratified CBD as well as ITPGRFA, the two important international instruments that deal with ABS and PIC, including farmers’ rights. The commitment to implement the ABS regime in line with the objectives of CBD and the flexibility to implement farmers’ rights through a national law under ITPGRFA already enable Nepal to implement measures that address the issue of equity and conservation, while promoting “appropriate” access to and commercial use of genetic resources, including IPRs. The harmonisation of CBD and ITPGRFA provisions with those of TRIPS, including the plant variety protection law, is, therefore, crucial. Nepal should not make any less effort to capitalise on such international instruments that have been signed and ratified by the majority of nations in the world.

Fourth, the Fourth Ministerial Conference of the WTO held in Doha in 2001 mandates the Council for TRIPS in the Main Doha Declaration to examine, *inter alia*, the relationship between TRIPS and CBD.²¹ Progress in this connection identifying that TRIPS should not conflict with CBD and should include provisions to protect farmers’ rights is visible in the proposals submitted to the Council for TRIPS by a number of Asian, African and Latin American developing and least-developed countries. It will not be in the interest of Nepal if it does not implement farmers’ rights in the plant variety protection law, and support and strengthen such positions during negotiations at the WTO and other important forums such as CBD and ITPGRFA.

²¹ Paragraph 19 of the Doha Ministerial Declaration states: We instruct the Council for TRIPS, in pursuing its work programme including under the review of Article 27.3(b), the review of the implementation of the TRIPS Agreement under Article 71.1 and the work foreseen pursuant to paragraph 12 of this Declaration, to examine, *inter alia*, the relationship between the TRIPS Agreement and the Convention on Biological Diversity, the protection of traditional knowledge and folklore, and other relevant new developments raised by Members pursuant to Article 71.1. In undertaking this work, the TRIPS Council shall be guided by the objectives and principles set out in Articles 7 and 8 of the TRIPS Agreement and shall take fully into account the development dimension.

5.4 Promotional and safety measures to establish farmers' rights

A fundamental thrust of the *sui generis* plant variety protection system in an agriculture-based LDC like Nepal would be to ensure that plant breeders' rights do not restrict farmers' rights to livelihood. Thus, care should be given to develop a system that makes farmers a beneficiary of the IPR regime. This can be done, for example, through the implementation of promotional and safety measures that establish farmers' rights in relation to both breeders' new varieties and farmer-developed new varieties and related knowledge (Box 5.1).

5.4.1 Farmers' rights over their varieties and related knowledge

Nepalese farmers have not merely been contributing to farming and agricultural biodiversity conservation as guardians and custodians of plant genetic resources but, as breeders, have also developed several varieties that are crucial for agricultural biodiversity and food security. Thus, the *sui generis* system of plant variety protection should aim at enabling farmers to obtain legal ownership over their varieties and knowledge.

This requires the law to make adequate provisions for the registration of farmers' varieties and knowledge as a unique form of IPR (farmers should be enabled to obtain such ownership based on the DUS criteria), and provide farmers with ownership certificates. Farmers should not, however, be required to pay any fee or pass through a cumbersome bureaucratic process for such registration and ownership. At the minimum, while establishing such ownership, the government should implement the following farmers' rights:

- Right to grant PIC over the use of their varieties and knowledge through a proper institutional mechanism;
- Right to provide or regulate access to their varieties and knowledge if PIC is not taken from them through a proper institutional mechanism;
- Right to know about the primary, secondary as well as any other use of their varieties and knowledge such as through the PIC process and the requirement for the IPR applicants to disclose the source of origin of resources and associated knowledge as well as provide the evidence of ABS and PIC agreements (also known as "disclosure requirement").

box 5.1 Farmers' rights over plant varieties and related knowledge

Farmers' rights over IPR-protected (breeders') varieties	Farmers' rights over their varieties and knowledge
<ul style="list-style-type: none"> • <i>Right to save, exchange and reuse protected (breeders') seeds</i> and also <i>sell them</i> in non-branded form for livelihood purposes • <i>Right to legally challenge breeders' rights and claim compensation</i> in cases of non-compliance with the national plant variety protection and ABS laws by breeders • <i>Right to a fair and equitable share</i> in the benefits derived from the commercial use of their varieties and knowledge • <i>Right to compensation</i> in cases of crop failure or any damage caused due to misinformation about the quality of breeders' seeds, or supply of bad seeds • <i>Right to access breeders' seeds</i> through adequate regulatory measures (including compulsory licensing) if breeders indulge in anti-competitive practices <p><i>These farmers' rights should not be interpreted as to affect incentives for breeders to invest in plant breeding but be observed from the perspectives of equity, livelihood enhancement, agriculture development and biodiversity conservation.</i></p>	<ul style="list-style-type: none"> • <i>Right to register their varieties and related knowledge and obtain IPRs</i> over varieties and knowledge they develop • <i>Right to grant PIC</i> over the use of their varieties and knowledge through a proper institutional mechanism • <i>Right to regulate access</i> to their varieties and knowledge if PIC is not taken from them through a proper institutional mechanism • <i>Right to know</i> about the primary, secondary as well as any other use of their varieties and knowledge such as through PIC process and "disclosure requirement" <p><i>These farmers' rights are a unique form of IPR and should not be interpreted as to affect the access and use of seeds by other farmers for livelihood purposes.</i></p>

Source: Adhikari (2007).

5.4.2 Farmers' rights over breeders' varieties

Plant breeders' rights for the protection of new plant varieties are the rights provided to breeders for making available the invented seeds in the market. Such rights comprise exclusive marketing rights to breeders for the use, production, reproduction, and selling and marketing of new seeds. However, if such strict rights of breeders are not balanced with farmers' rights, there is a greater possibility of seed insecurity at the national level, with serious implications for food security and farmers' livelihood. Hence, plant breeders' rights should not restrict farmers from saving, exchanging, reusing and selling the farm-saved seeds for livelihood purposes, as these are their traditional rights (See Chapter 2, Table: 2.3).

In addition, it is important to check whether breeders have developed new varieties based on farmer-developed varieties and related knowledge, or varieties that are in the public domain or TK²². In order to address the issue of equity and fairness in this regard, the plant variety protection law should make provisions for the implementation of the following farmers' rights.

- Right to legally challenge breeders' rights and claim compensation if evidence is made that breeders did not comply with national laws on plant variety protection and ABS while commercially exploiting farmers' varieties and knowledge, or obtaining breeders' rights over new varieties;
- Right to a fair and equitable share in the benefits arising out of the commercial use of farmers' varieties and knowledge;
- Right to compensation in cases of crop failure or any damage caused due to misinformation about the quality of breeders' seeds, or supply of bad seeds; and
- Right to access breeders' seeds through adequate regulatory measures (including compulsory licensing) if breeders indulge in anti-competitive practices such as artificial shortages, or irregular supply, or unreasonable price rise of seeds (Even if breeders fail to supply seeds for

²² In the case of varieties that are in the public domain or TK, the Ministry of Forests and Soil Conservation—the focal point for the implementation of CBD in Nepal—should ensure that Nepal's ABS law deals with this issue in the interest of the protection of the rights of local and indigenous communities, including farmers. The harmonisation between ABS and plant variety protection law is, however, important even if these laws are supposed to be implemented by two different ministries.

reasons of financial and technical capacities or any other genuine causes, the right of farmers to access new seeds should be protected with adequate provisions such as compulsory licensing).

- Right to know about the primary, secondary as well as any other use of their varieties and knowledge such as through the PIC process and the “disclosure requirement”.

5.4.3 Farmers’ participation in decision making

Stakeholders’ participation in decision making is crucial for safeguarding their concerns and rights in any process of law making and its implementation. ITPGRFA has mentioned adequately about the right of farmers to participate in decision making on matters related to plant genetic resources at the national level. In countries like Nepal, it is, however, still not a recognised institutional practice. In most cases, policies and laws are drafted, enacted and implemented without adequate consultations and participation of stakeholders in decision-making processes.

Thus, there is a need for the government to put in place a mechanism for farmers’ participation in decision-making processes and bodies of the plant variety protection, and related policies and laws. Identification and strengthening or formation of farmers’ groups (such as genetic resources custodians groups at the village, district and central levels) for their “active and effective” representation and participation in policy-making processes and bodies could help in this regard. This, however, also requires the government, and, to a great extent, other stakeholders such as non-governmental organisations, community-based organisations and the media to undertake strategic and coordinated initiatives, mostly in rural areas, to empower farmers to raise concerns regarding the protection of their rights.

5.4.4 Institutional arrangements

The implementation of the plant variety protection law, i.e., the rights of breeders and farmers, and other provisions—such as those relating to the registration of varieties and knowledge, and the management of biodiversity or gene fund—requires effective institutional arrangements at the government, farmers’ as well as other stakeholders’ levels. In the case of Nepal,

the decentralised structure of government institutions (at the centre, district and local levels) needs to identify an effective institutional set-up needed for the implementation of the plant variety protection and relevant policies and laws. Importantly, mechanisms also need to be put in place to enable the centre-, district- and local-level government institutions to identify, recognise and empower local farmers and their groups to work with them in the area of agricultural biodiversity conservation and development, including plant breeding.

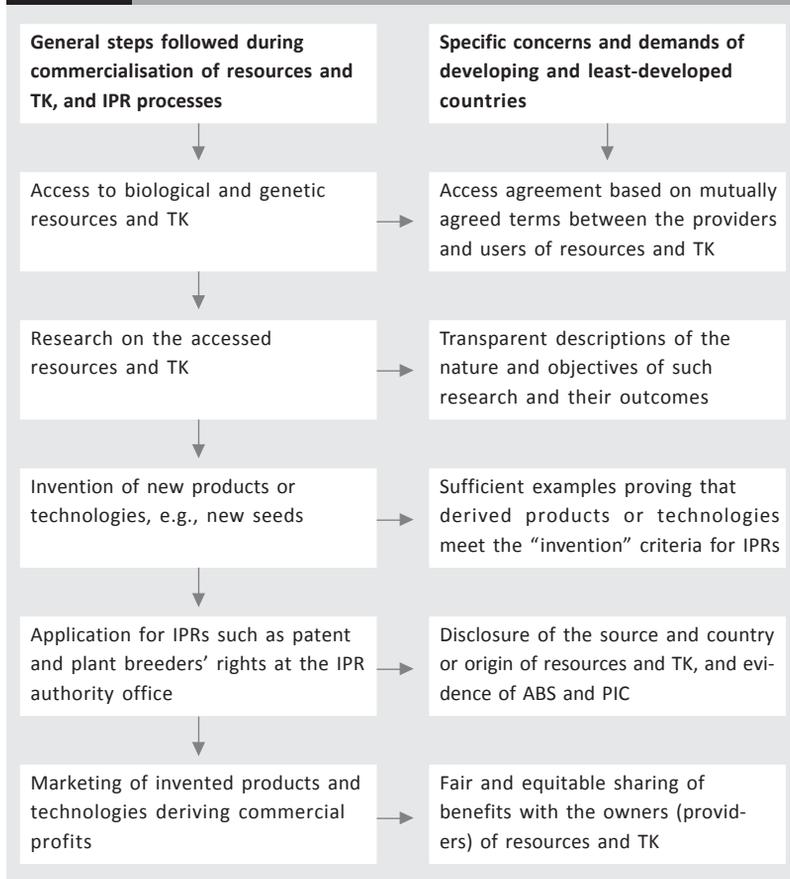
The government should also identify the role of non-governmental and community-based organisations in the entire process of the implementation of the plant variety protection and related policies and laws. This is important not least because such organisations have been working with and for communities in helping them conserve and develop agricultural biodiversity through various programmes such as CBM (community seed bank, PPB, value addition, etc.) and many other agricultural biodiversity policy-related programmes. In fact, their role will be critically important in the IPR regime, including ABS, such as for capacity building and awareness raising, management of biodiversity or gene fund, plant breeding, negotiations for fair and equitable ABS contracts and agreements, etc.

5.5 Position for review negotiations at the WTO

The fourth Ministerial Conference of the WTO in Doha in 2001 adopted a Ministerial Declaration instructing the Council for TRIPS to examine, *inter alia*, the relationship between TRIPS and CBD. During negotiations for the review of Article 27.3 (b) at the Council for TRIPS, developing countries such as Brazil, India and a number of African countries have been increasingly calling for the harmonisation between TRIPS and CBD. These countries want the entire WTO Members to agree to incorporate some important measures within TRIPS (Chart 5.1) so as to ensure that TRIPS does not conflict with the objectives of CBD. In addition, through the amendment of TRIPS Article 27.3 (b), they also want the WTO to incorporate some specific provisions for the protection of farmers' rights in TRIPS (Box 5.2).

Such concerns and demands of developing and least-developed countries with regard to the amendment of TRIPS Article 27.3 (b) need a thorough

chart 5.1 Measures necessary for the harmonisation between TRIPS and CBD



Source: Author

review by the government of Nepal as well as concerned stakeholders, including farmers' groups. The government should urgently initiate consultations at different levels to develop Nepal's positions on these crucial issues. The position demanding transparency, fairness and equity in all the processes of the commercial exploitation of biological resources and associated knowledge, including IPRs is not merely important from the standpoint of other countries but should also be a position of Nepal's government for global negotiations on IPRs and ABS.

box 5.2 Incorporation of farmers' rights in Article 27.3 (b)

A number of developing countries view that a footnote should be inserted after the sentence on plant variety protection in Article 27.3(b), stating that any *sui generis* law for plant variety protection can provide for: the protection of innovations of indigenous and local farming communities in developing countries, consistent with CBD and ITPGRFA; the continuation of traditional farming practices including the right to save and exchange seeds, and sell farmers' harvest; and the prevention of anti-competitive rights or practices which threaten the food sovereignty of developing countries, as is permitted by Article 31 of the TRIPS Agreement.

A group of another developing countries also view that provisions permitting specific exceptions to plant variety rights should be included in TRIPS covering, as a minimum, farmers' rights, in particular to sow and share harvested seed of a protected variety, communities' rights and compulsory licensing where plant varieties are not available on reasonable commercial terms, in times of national emergency and in cases of public non-commercial use.

Source: WTO (2006b).

In particular, the requirement for the IPR applicants to disclose the source of origin of biological resources and associated TK, as well as provide the evidence of ABS and PIC agreements enables the country to effectively regulate unauthorised access to agricultural biodiversity and associated knowledge, thus preventing the threat of biopiracy and misappropriation of local knowledge. Importantly, efforts in this connection at the global level have already generated a significant amount of support from more than 80 countries. Hence, the government of Nepal, after necessary consultations with concerned stakeholders, should also support such proposal and negotiate accordingly in international forums concerned with Nepal's development, biodiversity, agriculture systems and farmers' rights.

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Annex: About the WTO

Prior to the establishment of the World Trade Organisation (WTO), multilateral trade used to be governed by the General Agreement on Tariffs and Trade (GATT) 1947. This agreement was initiated at the Bretton Woods Conference held in the United States (US) after World War II. The GATT's objective was to promote and regulate the liberalisation of international trade through "rounds" of trade negotiations. From 1947 to 1994, the GATT provided the rules for goods trade. The Eighth Round of multilateral trade negotiations, held in Uruguay in 1986 (known as the Uruguay Round) and concluded in April 1994 by the signing of Marrakesh Agreement, transformed the GATT into a new international trade organisation, the WTO. The GATT, however, still exists as the WTO's umbrella treaty for trade in goods (which is now known as GATT 1994).

The WTO is a "rules-based" and "member-driven" organisation, which oversees a large number of agreements defining the "rules of trade" between its Members. At the heart of the WTO system are agreements that are negotiated and signed by a majority of Members and approved in their own national parliaments. These agreements form the basic rules for international trade within the framework of the WTO. The WTO agreements are lengthy and complex because they are legal texts covering a wide range of activities. They deal with: agriculture, telecommunications, industrial standards and product safety, food sanitation regulations, intellectual property, and much more. Some of the major multilateral agreements related to agriculture are the Agreement on Agriculture (AoA), the Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) and TRIPS.

A number of fundamental principles, which are also the foundation of the multilateral trading system, apply to all of these agreements. According to such principles, the trading system should be "without discrimination", "freer", "predictable", "more competitive" and "more beneficial for less developed countries". Importantly, the WTO is also a negotiating forum for Members to resolve their trade disputes, for which there is a Dispute Settlement Body.

At present, WTO Members are negotiating for a successful conclusion of the Doha Round of multilateral trade negotiations, which they initiated after the adoption of the historic Doha Development Agenda (DDA) at the Fourth Ministerial Conference in Doha in 2001. Nepal became a member of the WTO in April 2004.

Adapted from: www.wto.org