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INTELLECTUAL PROPERTY RIGHTS AND BIOLOGICAL DIVERSITY: AN INTERNATIONAL LEGAL ANALYSIS

by

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DEDICATION

This thesis is dedicated to my husband Stanley, and my children Thecla and Dan.

DECLARATION

I, Edith Mneney, Reg. No. 9608923 hereby declare that the thesis entitled 'Intellectual Property Rights and Biological Diversity: An International Legal Analysis' is the result of my own investigation and research and that it has not been submitted in part or in full for any other degree or to any other University.

A handwritten signature in blue ink, appearing to read "Edith Mneney", written over a horizontal dashed line.

SIGNATURE

A handwritten date in blue ink, "4/11/1999", written over a horizontal dashed line.

DATE

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SUMMARY

Biological diversity is defined in Article 2 of the Convention on Biological Diversity as the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This, includes diversity within species and of ecosystems. Biological diversity and its components is valuable in meeting the social, economic, scientific, educational and other human needs. Biological diversity is also important for revolution and maintaining of life sustaining systems of the biosphere.

For many years biological resources were treated as common heritage of mankind; free access was consequently accepted. Most of the genetic resources used for developing new products originated from developing countries in the South; on the other hand research and development in respect of new technologies is carried out mostly by firms in developed countries in the North. New products resulting thereof are subsequently protected by the intellectual property rights (IPR). It is now recognised that new products using biological resources benefit directly or indirectly from indigenous knowledge. Such knowledge is of significant value for the understanding of the natural environment and for sustainable use of natural resources. However, the contribution made by these communities does not receive the same recognition or protection as products which benefit from their knowledge. Existing IPR systems were not designed to extend benefits to indigenous knowledge.

Changes in this area were necessitated by concerns about the significant reduction of biological diversity due to certain human activities. These concerns coupled with the recognition that issues of conservation of biological resources cannot be dealt with without addressing issues of equity in access to and sharing of both genetic resources and technologies, recognition of the role of indigenous and local communities, eradication of poverty and international co-operation

among others. The Convention on Biological Diversity entered into force in 1993 as a global effort into addressing these issues. It is recognised in the Convention that access to and transfer of technology among

members are essential elements for the attainment of its objectives. Parties are therefore called upon to facilitate access and transfer technologies that are relevant to conservation and sustainable use. Protection to IPR holders is provided by the requirements that access to and transfer of technology which is subject to patents and other IPR is to be provided on terms which recognise and are consistent with the adequate and effective protection of IPR. The relationship between environmental protection and IPR is thus made an important issue which may influence implementation of the Convention.

This thesis focuses on the study of national and international IPR regimes and their role in implementation of the provisions of the convention. Limitations of these regimes are identified, recent developments in addressing these limitations are analysed and possible alternatives are proposed. This study purports to supplement global efforts to effectively implement provisions of the Convention.

Key Terms:

Convention;

Biological Diversity;

Intellectual Property Rights.

Short Title:

Intellectual Property Rights and Biological Diversity.

ABBREVIATIONS

CTE	Committee on Trade and Environment
EBRD	European Bank for Reconstruction and Development
EC	European Communities
EEC	European Economic Community
FAO	Food and Agriculture Organisation
GATT	General Agreement on Tariffs and Trade
GRAIN	Genetic Resources Action International
IUNC	Commission of Environmental Law of the World Conservation Union
IP	Intellectual Property
IPR	Intellectual Property Rights
NAFTA	North American Free Trade Area
NGO	Non Governmental Organisation
PIC	Prior Informed Consent
SADC	Southern African Development Committee
SEA	Single European Act
TRIPS	Trade Related Intellectual Property Rights
WTO	World Trade Organisation
UNEP	United Nations Environment Programme
WIPO	World Intellectual Property Organisation

MODE OF CITATION

The method of citation employed is that of the South African Law Journal. The name of the author of a book is followed by the title in italics, followed by edition, year of publication, section or paragraph number and page number.

Thus: John H Jackson *International Economic Relations* 3 ed (1995) at 16.

The title of an article cited is in roman type, surrounded by single quotation marks. The name of the journal is in Italics. The year and volume number (if any) are given.

Thus: Phillipe Sands 'The Greening of International Law : Emerging Principles and Rules.'*Indiana Journal of Global Legal Studies* (1994) 1.

Cross references are used thus: op cit note 21 at 163;

Idem (meaning the same);

Ibid (meaning in the same place).

All the works that have been cited are referred to in the footnotes and the complete bibliographical references appear on pages.

PREFACE

The Convention on Biological Diversity was opened for signature at the Earth Summit in Brazil on 5 June 1992 and entered into force on 29 December 1993. This Convention was necessitated by international recognition of significant reduction of biological diversity caused by certain human activities. Conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population. Such conservation is a global issue which is best addressed through multilateral co-operation. The Convention contains three national level obligations; to conserve, to sustainably use and to equitably share the benefits of biological diversity. These obligations are embodied in Article 1 of the Convention which states:

'The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.'

Technology transfers are essential in order for developing countries to meet their obligations in abating environmental damage. Research and development in respect of environmentally sound technologies and biotechnologies have been carried out, for the most part by developed countries. Firms in these countries consequently own the relevant intellectual property rights (IPRs). In the case of biotechnology, most of the genetic resources used originate from developing countries in the South. Further, indigenous knowledge applied to biological diversity conservation by local communities contribute significantly to the process

of technology generation. IPR protection is however not extended to indigenous knowledge.

IPR are usually granted to furnish incentives for creative work in exchange for disclosure of knowledge. Incentives are therefore formulated in such a way that a balanced trade off between the costs of creation and societal benefits arising from dissemination of knowledge to the public is apparent. Thus IPR protection pits contrary societal interests against each other; owners against users.

IPR are domestic policy and legislative instruments granted by national governments. However, developments in global economic markets imply that IPR are no longer solely dictated by domestic choices; international economic factors do affect domestic IPR. IPR reform now involves consideration of complex international economic factors as well as domestic economic and political issues. Harmonisation of international and national IPR systems is necessary yet difficult to achieve. Much needed reform in this area has been very slow.

The objects of this study are firstly to analyse and evaluate the impact of IPR systems on implementation of relevant provisions of the Convention. Secondly, to identify aspects of existing IPR systems which need to be changed in order to ensure that the objectives of the Convention are achieved. Support for the thesis that extension of the scope of IPR to protect collective indigenous knowledge is a feasible proposition shall be undertaken.

Chapter one examines international legal responses prior to 1992. A survey of treaties and other international and regional arrangements is undertaken in order to single out efforts relevant to biodiversity. Relevant principles of international law are also examined. The background to the 1992 Rio Convention provides the necessary rationale for yet another international instrument on natural resources.

In chapter two of the thesis an attempt is made to highlight some of the issues surrounding access to biological resources. The concept of national sovereignty

and its implications on the right to exploit resources is examined. Sovereignty guarantees internal autonomy of each state, coupled with the right to manage domestic matters and handle international affairs. Despite criticisms of the doctrine, it is seen as an important weapon against exploitation of the rich potential of developing countries. This chapter forms an essential premise of the thesis to be advanced in this work.

The first part of chapter three begins by identifying technologies that are relevant to biological diversity, followed by a discussion of intellectual property rights utilised by owners. Inclusion of a discussion on patents and trade secrets, despite the existence of numerous works in this area is essential in this thesis. The second part examines intellectual property rights in the narrow area of biotechnology. The objective here is to establish that recent developments in biotechnology have necessitated changes in IPR regimes. An attempt is made to support the proposition that while developments in biotechnology are accommodated within existing IPR systems, indigenous/traditional knowledge receives no protection.

Chapter four deals with the international intellectual property regimes and how they grapple with developments, especially in the area of biotechnology and transfer of environmentally sound technologies. Questions relating to procedures for implementation, harmonisation and feasibility are raised. In appraising the effectiveness of international IPR regimes, problems will be identified leading to a meaningful programme of reform.

In chapter five an examination of modes of technology transfer is undertaken. The objective of this is to demonstrate that IPR play an important role in transfer of technology. Though it has been argued that IPR do not form a serious barrier to technology transfer, it is submitted in this chapter that restrictive practices in licensing agreements may create such a barrier. This may in turn affect the capability of developing countries to meet their obligations under the Convention on Biological Diversity.

Chapter six narrows down the discussion to implementation of IPR provisions of the Convention on Biological Diversity. The impact of IPR systems on equitable sharing of resources, transfer of and access to technology and incentives for conservation and sustainable use is examined. This chapter is an essential prerequisite to recommendations for reform.

The first part of chapter seven deals with limitations of current approaches. The premise here is that existing IPR systems are not sufficient for the achievement of the objectives of the Convention, and that a new system which addresses the area of genetic resources need to be developed. Evaluation of different strategies and attempts to create new systems proves that there are still serious issues which need to be addressed especially with respect to protection of traditional knowledge. In the second part of this chapter proposals for a new IPR system are put forward. A model IPR Act for indigenous knowledge is developed.

The model collective Intellectual Property Act which results from this study is the author's own contribution to knowledge. Initiatives of other scholars and organizations have been acknowledged in chapter seven of this thesis.

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CHAPTER ONE

Background to the 1992 Rio Convention on Biological Diversity

1.1 Background

The extinction of a major proportion of the species of plants, animals, fungi, and micro organisms which could amount to 20% of the total or more within 30 years constitutes a serious problem. These species are crucial since they form the basis of the life support system on which humanity depends. They are the source of food and other materials which are crucial to life.¹ Scientific evidence has established that, over the years, human activity has reversed the gradual increase in the total number of species. As the rate of extinction of species grows, complete destruction of particular communities is the inevitable consequence.²

The causes of loss of biodiversity include direct habitat loss, invasion by introduced species, over-exploitation of living resources, pollution, global climate change and industrial and agricultural activities.³ Also important is the continual poisoning of land and water by pesticides, herbicides and toxic wastes.⁴

The following extracts from *Global Biodiversity Strategy* present a clear picture of the situation.⁵

a) Habitat Loss and Fragmentation

¹ K Arroya, P Raven and J Sarukha 'Biodiversity' in JCI Dodge et al *An Agenda of Science for Environment and Development into the 21st Century* (1992) 205.

² Ibid.

³ See generally *Global Biodiversity Strategy* a United Nations Environmental Programme (UNEP) publication (1992).

⁴ P Eskins 'The Sustainable Consumer Society : A Contradiction in Terms?' (1991) 3 *International Affairs* 243-258.

'Relatively undisturbed ecosystems have shrunk dramatically in areas over the past decades as the human population and resource consumption have grown. Ninety eight percent of the tropical dry forest along Central America's Pacific Coast has disappeared. Thailand lost 22 percent of its mangroves between 1961 and 1985, and virtually none of the remainder is undisturbed. In freshwater ecosystem, dams have destroyed large sections of river and stream habitat. In main ecosystems, coastal development has wiped out reef and near-shore communities. In tropical forests, a major cause of forest loss is the expansion of marginal agriculture, though in specific regions commercial timber harvest may pose an even greater problem.'

b) Introduced Species

'Introduced species are responsible for many recorded species extinction, especially on islands. In these isolated ecosystems a new predator, competitor or pathogen can rapidly imperil species that did not co-evolve with the newcomer. In Hawaii, some 86 introduced plant species seriously threaten native biodiversity, one introduced tree species has now displaced more than 30 000 acres of native forest.'

c) Over-exploitation of Plant and Animal Species

'Numerous forest, fisheries and wildlife resources have been over-exploited, sometimes to the point of extinction. Historically, both the great ant and the passenger pigeon succumbed to such pressure, and the Lebanon cedar that once blanketed 500 000 hectares now is found in only a few scattered remnants of forest. Over-exploitation of the Peruvian anchor between 1958 and 1970 dramatically reduced the population size and the catch. Today, the Sumatran and Java rhinos have been hunted to the verge of extinction, along with numerous other vertebrates. Many extinction attend the human harvest of food, but search for precious commodities - notably ivory - and for pets, curiosities and collector's items has also impinged on some populations and obliterated others.'

⁵ Op cit note 3.

d) Pollution of Soil, Water, and Atmosphere

'Pollutants strain ecosystems and may reduce or eliminate populations of sensitive species. Contamination may reverberate along the food chain: barn owl populations in the United Kingdom have fallen by 10% since new rodenticides were introduced, and illegal pesticides used to control crayfish along the boundaries of Spain's Cota Donana National Park in 1985 killed 30 000 birds. Some 43 species have been lost in Poland's Ojcow National Park, due in part to severe air pollution. Soil microbes have also suffered from pollution as industry sheds heavy metals and irrigated agriculture brings on salinization. Acid rain has made thousands of Scandinavian and north American Lakes and pools virtually lifeless, and in combination with other kinds of air pollution, has damaged forests throughout Europe. Marine pollution, particularly from non-point sources, has defiled the Mediterranean and many estuaries and coastal seas throughout the world.'

e) Global Climate Change

'In coming decades, a massive "side-effect" of air pollution - global warming - could play havoc with the world's living organisms. Human caused increases in "greenhouse gasses" in the atmosphere are likely to commit the planet to a global temperature rise of some 1C to 3 C (2 F to 5 F) during the next century, with an associated rise in sea level of 1 to 2 metres. Each 1 C rise in temperature will displace the limits of tolerance of land species some 125 km towards the poles, or 150 metres vertically on the mountains. Many species will not be able to redistribute themselves fast enough to keep up with the projected changes, and considerable alterations in ecosystem structure and function are likely. In the United States rising seas in the next century may cover the entire habitat of at least 80 species already at risk of extinction. Many of the world's islands would be completely submerged by the mere extreme projections of sea level rise - wiping out their fauna and flora. And protected areas themselves will be placed under stress as environmental conditions deteriorate within and suitable habitat for their species cannot be found in the disturbed land surrounding them.'

f) Industrial Agriculture and Forestry

'Until this century, farmers and pastoralists bred and maintained a tremendous diversity of crop and livestock varieties around the world. But farm diversity is shrinking fast thanks to modern plant-breeding programs and the resulting productivity gains achieved by planting comparatively fewer varieties of crops that respond better to water, fertilizers, and pesticides. Similar trends are transforming diverse forest ecosystems into high yielding non-cultural tree plantations - some of which now resemble a field of maize as much as natural forest - and even fewer tree genes than crop genes have been preserved off site as an insurance policy against diseases and pests.'

Biodiversity conservation is an investment that yields substantial local, national and global benefits. Successful action to conserve biodiversity must, consequently, address the full range of causes of its current loss. Causes described above are recognised and are being addressed in different ways by most countries, relevant non-government organisations and international organisations.

One critical issue in this process is the correction of imbalance in the control of resources, which, has in the past resulted in inequitable sharing of the benefit of biodiversity.

1.2 International Legal Responses Prior to 1992

The Convention on Biological Diversity is one of the latest global agreements focusing on the protection of the environment. International conventions or treaties are an important source of international law.⁶ Treaties constitute the

⁶ Article 38 of the Statute of the International Court of Justice which provides in part that,
'(1) The Court, whose function is to decide in accordance with international law such disputes as are submitted to it shall apply
(a) international conventions, whether general or particular establishing rules expressly recognised by the contesting states;.....'

means by which states can create certain and specific obligations which are likely to be respected by the parties since they are, in most cases, the result of conscious and deliberate acts.⁷ Prior to 1992 treaties were used to address species, genes and habitats; all of which are central in the existence of biological diversity. Some of these treaties were also concerned with economic or social practice, together with physical conditions that affect living organisms or their habitat.⁸ The United Nations Environmental Programme compiled a list of 132 treaties in the general environmental field. The IUCN Commission on Environment singled out only those treaties focusing on biodiversity and came up with a total of 26 treaties.⁹ It is therefore not possible to exhaustively deal with all these treaties; a sample of treaties addressing issues affecting biodiversity are going to be examined in this chapter.¹⁰

1.2.1 Atmospheric Pollution

Pollution which is associated with industrialisation is a rampant problem threatening all forms of life. The obligation in customary international law with regard to atmospheric pollution was laid down in the Trail Smelter Case.¹¹ This was a dispute between USA and Canada. The issue revolved around gaseous fumes containing sulphur oxide emitted in the atmosphere from a smelting firm located at the Trail in British Columbia, Canada. There was evidence of precipitation in the form of acid rain which caused damage to crops in Columbia Valley in the State of Washington, USA. The USA complained and an arbitral tribunal was set up.

In giving its award, the tribunal stated, inter alia, that '..... under the principles of international law as well as the law of the USA, no state has the right to use or permit the use of its territory in such a manner as to cause

⁷ Martin Dixon MA *International Law* (1990) 18.

⁸ JB Ojwang ' ' in V Sanches and C Juma (eds.) *Biodiplomacy Genetic Resources and International Relations* (1994) 290.

⁹ A Lester 'Pollution' in AH Garretson, RD Hayton and CJ Olmstead (eds) *The Law of International Drainage Basins* (1967) at 89.

¹⁰ For a comprehensive list see V Sanches and C Juma op cit note 8, 291-298.

injury by fumes in or to the territory of another or to the properties or person therein'.

In 1979, under the auspices of the UN Economic Commission for Europe, the Geneva Convention was signed.¹² Transboundary air pollution is defined in article 1(b) of this Convention as air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one state and which has adverse effects in the area in the jurisdiction of another state at such a distance that it is generally not possible to distinguish the contribution of individual emission sources or groups of sources. The obligations under the Convention have however been criticised for not being extensive.¹³ States are called upon to endeavour to limit, as far as possible, gradually reduce and prevent air pollution including longrange transboundary air pollution.¹⁴ The Convention further provides that states shall develop policies and strategies by means of exchange of information and consultation.¹⁵ The question of state liability for damage resulting from pollution is however not addressed.¹⁶ This is seen as a serious limitation of this Convention.

Three important protocols to the Convention have been adopted:

- (a) The Helsinki Protocol signed in 1985 dealing with the reduction of sulphur emissions or their transboundary fluxes by at least 30% as soon as possible or at the least 1993 levels, using 1980 levels as the basis for the calculation of reduction.¹⁷
- (b) The Sophia Protocol concerned with the control of nitrogen oxides or their transboundary fluxes was adopted in 1988. The contracting parties undertook to reduce their national annual emissions of nitrogen

¹¹ United Nations Reports of International Arbitral Awards (1938) 3 at 1938 ff.

¹² L Tollan 'The Convention on Long-Range Transboundary Air Pollution' (1985) 19 *Journal of World Trade Law* 615.

¹³ Malcolm N Shaw *International Law* (1997) at 608.

¹⁴ Ibid. Article 2.

¹⁵ Ibid. Articles 3 and 4.

¹⁶ Op cit note 13 at 608.

oxides or their transboundary fluxes so that by the end of 1994 they do not exceed those of 1987. The protocol also made provision for negotiations for further reductions in national annual emissions and exchange of information and technology.¹⁸

- (c) The 1994 Oslo Protocol on further Reduction of Sulphur Emissions specifies sulphur emission ceilings for parties for the years 2000, 2005 and 2010.¹⁹

1.2.2 The Depletion of the Ozone Layer and Global Warming

Article 1(1) of the Vienna Convention for the Protection of the Ozone Layer 1985 defines the ozone layer as the layer of ozone above the planetary boundary layer. The implication of this definition is that this area constitutes a distinct unit with an identity of its own, separate from national sovereignty.²⁰

The Vienna Convention is a framework agreement providing the institutional structure for the elaboration of Protocols laying down specific standards concerning the production of chlorofluorocarbons (CFCs).²¹ Contracting parties agree to take appropriate measures to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer.²² Adverse effects is defined to mean changes in the physical environment or biota, including changes in climate, which have significant deleterious effects on human health or on the composition, resilience and productivity of natural and managed ecosystems or on materials useful to mankind.²³ The parties further agree to co-operate in the collection of relevant material and formulation of agreed measures, and to take appropriate legislative or

¹⁷ Idem.

¹⁸ Ibid at 609.

¹⁹ 33 ILM 1994 at 1540.

²⁰ Op cit note 13 at 610.

²¹ Ibid at 611.

²² Article 2(1).

²³ Article 1(2).

administrative action to control, limit, reduce or prevent activities which have or are likely to have adverse effects on the ozone layer.²⁴

The Montreal Protocol on Substances that Deplete the Ozone Layer was adopted in 1987. The Protocol called for a phased reduction of CFCS and a freeze on the use of halons.²⁵ Production of controlled substances is to be regulated at 1986 levels followed by a progressive reduction; by mid 1998 consumption should be reduced by 20% in comparison with 1986. From 1998 onwards consumption is to be reduced to 50% of the 1986 level.²⁶

Action on global warming was however slow. The UN General Assembly recognised that climate change was a common concern of mankind and called for timely action; the convening of an international conference on climate change was recommended.²⁷ A UNEP Governing Council Decision on Climate Change also called for a conference on the issue.²⁸

These initiatives led to The Hague Declaration on the Environment signed in 1989 by 24 states. The Declaration called for the establishment of a new institutional authority under the auspices of the UN to combat any further global warming.²⁹ The UN Framework Convention on Climate Change was adopted in 1992.³⁰ The objective of the Convention is to achieve stabilisation of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The acceptance level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that production is not threatened and to enable sustainable development to proceed in a sustainable manner.³¹

²⁴ Article 2.

²⁵ 1987 26 ILM 1541 and 1989 28 ILM 1301.

²⁶ Idem.

²⁷ General Assembly Resolutions 43/53 of 1988 and 44/207 of 1989.

²⁸ UNEP decision dated 25 May 1989.

²⁹ Op cit note 13 612.

³⁰ 1992 31 ILM 849.

³¹ Ibid Article 2.

States further undertake to do the following:-³²

- (a) develop, update and publish national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not covered by the Montreal Protocol;
- (b) formulate, implement and update national and where appropriate, regional programmes containing measures to mitigate climate changes;
- (c) promote and co-operate in the development application and transfer of technologies and processes to control, reduce or prevent such anthropogenic emissions;
- (d) promote sustainable management and conservation of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol;
- (e) Take climate change considerations into account to the extent feasible in their relevant social, economic and environmental policies;
- (f) promote and co-operate in research, exchange of information and education in the field of climate change.

In terms of article 4(2) of the Convention, developed country parties commit themselves to take the lead in modifying longer-term trends in anthropogenic emissions and particularly to adopt national policies and take corresponding measures on the mitigation of climate change by limiting anthropogenic emissions of greenhouse gases. Developed countries are also required to submit within six months of the Convention coming to force, and periodically thereafter, information on such matters with the aim to returning anthropogenic emissions to their 1990 levels. The Convention entered into force in 1994 and the first session of the Conference of the Parties was held in Berlin in 1995.³³ In an effort to facilitate implementation of commitments under the Convention, the parties agreed to initiate a pilot phase for joint implementation project involving the provision of investment from one party in

³² Ibid Article 4(1).

³³ 1995 34 ILM 1671.

greenhouse gas emissions reduction opportunities to another party.³⁴ Though joint implementation has been hailed as a useful instrument in implementing environmental agreements, some scholars argue that in the Climate Change Convention, the focus should be on fossil fuel emission reduction more than on carbon absorption through afforestation.³⁵

1.2.3 Protection of flora and fauna

International efforts towards the protection of flora and fauna picked momentum towards the 2nd half of the 19th century.³⁶ One of the first agreements in the area is the Convention Relative to the Preservation of Fauna and Flora in their Natural State signed in London on November 8, 1933. The objective of the Convention was to preserve the natural fauna and flora of certain parts of the world, in particular, Africa. Article 4 of this Convention called on parties to ensure control of human settlements in national parks with as little disturbance as possible to the natural fauna and flora and the establishment of intermediate zones around borders of the parks. Although the Convention may be referred to as an example of the extension of the interests of colonial masters to their African Colonies, the safeguards provided led to the existence of some of the most famous national parks in Africa.³⁷ The safeguards in this Convention included prohibition on hunting, regulation of national and international trade in trophies, and special measures for the protection of specified species.³⁸

³⁴ Op cit note 13 614.

³⁵ Philipe Cullet and Annie Patricia Kameri - Mbote 'Activities Implemented Jointly in the Forestry Sector : Conceptual and Operational fallacies' (1997) 10 *Georgetown International Environmental Law Review* 98.

³⁶ C Okidi 'International Environmental Law and National Interests' in Sanches and Juma op cit note 8 at 34.

³⁷ Op cit note 8 at 293.

Examples include

- (a) Kagera Park, Uganda (1934).
- (b) Gorongosa Park, Mozambique (1936).
- (c) Garamba Park, Zaire (1938).
- (d) Tsavo Park, i'Kenya (1948).
- (e) Kafue Park, Zambia (1950).
- (f) Serengeti Park, Tanzania (1951).

(source: C de Klemm 'Species and Habitat Preservation : An International Task' (1975) 1 No. 14 *Environmental Policy and Law*).

³⁸ Article 10 and 11.

The Convention of the World Cultural and Natural Heritage was adapted in Paris on November 23, 1972 and has been accepted by more than one hundred countries.³⁹ The Convention seeks to establish an effective system of collective protection of cultural and natural heritage of outstanding universal value. Article 2 defines natural heritage as

'..... natural features consisting of physical and biological formations or groups of such formations which are of outstanding universal value from the aesthetic or scientific point of view; geological and physiographical formations and precisely delimited areas, which constitute the habitat of threatened species of animals or plants of outstanding universal value from the point of view of science or conservation; natural sites or precisely delimited areas of outstanding value from the point of view of science, conservation or natural beauty.'

In terms of article 5 of this Convention, state parties undertake to ensure that effective and active measures are taken for the protection and conservation of the cultural and natural heritage situated in their territories. The World Heritage Committee is established under article 1(1). One of its functions is to receive from the parties inventories of property forming part of the cultural and natural heritage, situated in their territories suitable for inclusion in a protected list - kept by the Committee. The Convention provides a framework for the conservation of natural as well as manmade resources. Included in the Committee's list are features such as the Ngorongoro Crater in Tanzania, the Grand Canyon in the USA and the Sinien National Park in Ethiopia.⁴⁰

The International Tropical Timber Agreement which entered into force in 1985 provides a framework for co-operation and consultation between countries producing and those consuming tropical timber. The agreement's

³⁹

Op cit note 36 at 35.

main objective is to promote the expansion and diversification of international trade in tropical timber and the improvement of structural conditions in the timber market.⁴¹ Members are encouraged to support and develop industrial tropical timber, reforestation, forest management activities, natural policies aimed at sustainable utilization and conservation of tropical forests and their genetic resources. The maintenance of ecological balance in the regions concerned is called for.⁴²

1.2.4 Protection of Marine Environment

Pollution in the marine environment can arise from different sources including the operation of shipping, dumping, sea-bed activities and effects of activities on land.⁴³ Treaties for the protection of marine environment have responded to increasing pollution, particularly from the following specific sources:-⁴⁴

- (a) pollution by oil from ships,
- (b) deliberate dumping of hazardous wastes into oceans, and
- (c) exploitation of marine resources.

The first conference to negotiate the regulation of marine pollution was convened by the British government in London in 1954. This conference resulted in the International Convention on the Prevention of Pollution of the Sea by Oil, 1954.⁴⁵ The Convention addressed both deliberate and accidental discharges of oil within specified zones. Deliberate discharges usually involve oily water resulting from deballasting and tank flashing. The Convention introduces prohibited zones; a belt ranging from 20 to 150 miles of coastline where no discharges are allowed. Parties are also required to ensure the availability of reception facilities at ports and terminals for storage of oily waters.⁴⁶

⁴⁰ Op cit note 8 at 296.

⁴¹ Idem.

⁴² Article 1(f) and (h)

⁴³ Op cit note 13 at 628.

⁴⁴ Op cit note 36 at 29.

⁴⁵ Idem.

The inadequacy of the prohibited zones was evidenced by the Torrey Canyon incident in 1967. In this incident, oil slicks from the accident moved with wind and tide against the shore. The slick spread in an area approximately thirty five miles in length and twenty miles in width. It became clear from this incident that the effect of wind and currents made the application of the concept of prohibited zones ineffective for the control of marine pollution.⁴⁷ The concept of prohibited zones was abandoned in 1969. Serious concerns on the need for a legal mechanism to authorize intervention in the high seas in the event of an oil tanker accident as well as compensation for those adversely affected by polluting incidents were raised by parties.⁴⁸ Debates on these issues led to the adoption of the International Convention Relating to the Intervention on the High Seas in Cases of Oil Pollution Casualties and the International Convention on Civil Liability for Oil Pollution Damage 1969.⁴⁹

Comprehensive measures for the control of marine pollution were incorporated in the 1973 Convention on the Prevention of Marine Pollution from Ships. The Convention is concerned with all forms of non-accidental pollution from ships apart from dumping.⁵⁰ The Convention lays down detailed standards covering oil, noxious liquid substances carried by sea in packaged form, sewage and garbage.⁵¹

The regional initiatives are also important in this area. The Convention on the Protection of the Marine Environment of the Baltic Sea Area was signed by 7 states in Oslo in 1974. It focuses on pollution from land-based sources, ships, dumping and exploitation of resources.⁵² The Convention for the

⁴⁶ Idem.

⁴⁷ Idem.

⁴⁸ Idem.

⁴⁹ Idem.

⁵⁰ Op cit note 13 at 629.

⁵¹ Standards are set out in Annexes I and II which are fully binding. Annexes III, IV and V are options which a state may declare it does not accept in terms of Article 14 of the Convention.

⁵² Op cit note 36 at 31.

Prevention of Marine Pollution from Land-based Sources was signed in Paris in 1974 by 8 states and the European Community.⁵³

Okidi argues that although pollution of the marine environment had global implications, it was primarily a regional problem requiring concerted regional approaches.⁵⁴ Other regional arrangements in this area include the following:-⁵⁵

- (a) The Abidjan Convention signed by 10 states in the West Coast of Africa in 1981.
- (b) The Lima Convention signed by 5 states in 1981. The Convention covered the south-east pacific region. The parties signed 2 protocols focusing on land-based sources and one concerned with emergency pollution.
- (c) The Jeddah Convention signed by 6 states and the Palestinian Liberation Organisation in 1982 covering the Red Sea and the Gulf of Aden.
- (d) The Catagena Convention signed by 17 states in 1987 covering the Carribean region.
- (e) The Nairobi Convention signed by 4 states and the European Community to cover East Africa.

The United Nations Convention on the Law of the Sea adopted in Montago Bay in 1982 provides that States are to legislate for the prevention, reduction and control of pollution of the marine environment from vessels flying their flag or of their registry.⁵⁶ Specific articles deal with the pollution from the land, sea-bed activities, dumping ships and the atmosphere. For example, article 217 of the Convention calls on states to ensure that the ships of their nationality or of their registry comply with applicable international rules and standards and with domestic rules governing the prevention, reduction and

⁵³ See a discussion in AC Kiss (ed) *Selected Multilateral Treaties in the Field of Environment* (1983) 44, 405, 430.

⁵⁴ Op cit note 36 at 31.

⁵⁵ Ibid at 32.

⁵⁶ Convention on the Law of the Sea 1982, Article 211 (2).

control of pollution. Coastal states are granted the jurisdiction to physically inspect ships and commence proceedings against ships in their territorial waters where evidence exists on the ship's violation of domestic or international pollution regulations.⁵⁷ The Convention makes provision for the establishment of Exclusive Economic Zones; described as a belt of the sea extending 200 nautical miles from the baseline. The Exclusive Economic Zone is reserved to the coastal state which has sovereign rights and exclusive jurisdiction for the exploitation of and exploration of living and non-living resources. Access to the EEZ by foreign fisherman or for scientific research is subject to the consent of the coastal state.⁵⁸ Provision is made however, for the international regulation regarding the conservation of living resources, stocks accruing in two or more states, highly migratory species, marine mammals, anadromous species, catadromous species and sedentary species.⁵⁹ Of particular relevance for biodiversity is article 61(2) which provides

'..... the coastal state, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over exploitation.'

1.2.5 International Watercourses and Lakes

International water-courses are systems of surface waters and ground waters which are situated in more than one state.⁶⁰ Such water-courses form a unitary whole which normally flow into common terminus.⁶¹ The main focus of early treaties in this area was the delienation of spheres of influence by various European powers. Others were concerned with navigation for

⁵⁷ Op cit note 13 at 630.

⁵⁸ Op cit note 36 at 32.

⁵⁹ Articles 61-68.

⁶⁰ (a) Op cit note 13 at 616.

(ii) See also Article 1 of the UN Convention on the Protection of and Use of Transboundary Watercourses and International Lakes.

⁶¹ Idem.

commercial purposes.⁶² International action was prompted by the increasing problem of the disposal of toxic and hazardous wastes especially in the 20th century.⁶³ The Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft adopted in 1972 provides for a ban on the dumping of certain substances and for controls to be placed on the dumping of others.⁶⁴ The 1972 London Convention on the Prevention of Marine Pollution by Dumping of wastes and Other Matter prohibits dumping of wastes unless provisions of the Convention are complied with.⁶⁵ In 1991 the OAU adopted the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous wastes within Africa.⁶⁶ The parties are called upon to prohibit the importation of all hazardous wastes for any reason into Africa by non-parties and to prohibit the dumping at sea of such wastes.⁶⁷

The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal adopted in 1989 provides that parties shall prohibit the export of hazardous and other wastes to parties which have prohibited the import of such wastes and have so informed the other parties. In the absence of prohibition by the importing state, export to that state of such waste is only permissible where the consent in writing to the specific import is obtained.⁶⁸ The Convention also provides that any proposed transboundary movement of hazardous wastes must be notified to the competent authorities of the states concerned by the state of export.⁶⁹

Regional agreements also play a significant role in efforts to prevent transboundary pollution. Examples include the 1963 Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution

⁶² Op cit note 36 at 27.
⁶³ Op cit note 13 at 626.
⁶⁴ Idem.
⁶⁵ Idem.
⁶⁶ 1991 30 ILM 773.
⁶⁷ Op cit note 13 at 627.
⁶⁸ Article 4.
⁶⁹ Ibid.

which was signed by 5 riparian states. The continued problem of pollution in the Rhine led to the conclusion of the Convention for the Protection of the Rhine against Chemical Pollution and the Convention on the Protection of the Rhine Against Pollution by Chlorides; both signed in Bonn in 1976.⁷⁰ In Latin America the 1978 Treaty for Amazonian Co-operation was adopted in Brasilia. The Convention focused on both environmental issues as well as the rights of indigenous peoples.⁷¹ In Asia 3 drainage basin agreements for the Indus, Mekong, Delta and Ganges rivers have been adopted to address similar issues.⁷²

In Africa one of the first agreement is the Nile Waters Agreement between Egypt and Sudan which was signed in 1959. The main focus of this agreement was the apportionment of water from the Blue and White Nile.⁷³ In 1972 an agreement creating the Organisation for the Development of the Senegal River was signed by riparian states. Similarly, the Convention Creating Niger Basin Authority was signed by 9 basin states in 1980. In East Africa the Agreement Creating the Kagera Basin Organisation was signed by 3 riparian states in 1977; a 4th state joined in 1980.⁷⁴ Most of these agreements make provision for multipurpose and basinwide development and include environmental protection, wildlife conservation and the protection of wetlands.⁷⁵

One of the latest initiatives is the Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System signed by 5 riparian states in Harare in 1987. The agreement was signed under the aegis of UNEP.⁷⁶ This agreement together with earlier counterparts emphasise the fact that the drainage basin approach offers the best opportunity for implementation of environment and development goals.

⁷⁰ Op cit note 9 89, 105-106.

⁷¹ 1989 8 ILM 905.

⁷² 1978 17 ILM 103-106.

⁷³ Op cit note 36 at 28.

⁷⁴ Ibid at 29.

⁷⁵ Idem.

Multipurpose management of drainage basins invariably requires sustainable management of natural resources.⁷⁷

1.3 The 1992 Rio Convention on Biological Diversity

1.3.1 Background to the Convention

Responses prior to the 1992 Rio Convention reflect a growing interest in the use of international treaties in the area of biodiversity. However, most of the earlier treaties were concerned with the economic value of biodiversity; they were mainly specie specific and participation of states was limited. There was also no common machinery of co-ordination between one treaty and another leading to overlaps in subject matter.⁷⁸

The 1992 Rio Convention was negotiated under the aegis of UNEP. The need for a global Convention arose due to concerns including conserving biodiversity, protection of tropical forests; international recognition of the Sovereign rights of developing countries over their genetic resources and access to advanced technology in exchange for access to genetic resources.⁷⁹ From 1980 a number of organisations were involved in producing draft articles for an agreement. The World Conservation Union (IUCN) started exploring the possibility of a treaty on biodiversity in 1981. In the period between 1984 to 1989 the IUCN prepared several drafts or articles for inclusion in a possible treaty using experts from within as well as from outside. Alternative articles to the IUCN draft articles were developed by the FAO in 1989.⁸⁰

In 1987 the UNEP Governing Council established an ad hoc Working Group to investigate both the need and form of an international convention to

⁷⁶

Idem.

⁷⁷

Idem.

⁷⁸

Op cit note 8 at 296.

⁷⁹

WTO 'Trade-Related Aspects of IPR' (1995) WT/CTC/W/8.
<http://www.mtholyoke.edu/acad/intrel/tradnv.html>.

⁸⁰

Idem.

rationalize ongoing activities in the field of biodiversity. The Committee was also given the mandate to identify areas to be included in the Convention. Consensus on the need for a global treaty on Biodiversity was reached by the Committee in 1990.⁸¹

During discussion, it became evident that several states preferred to broaden the scope of issues to be addressed beyond conservation and include in-situ and ex-situ conservation of wild and domesticated species, sustainable use of biological resources, access to genetic resources and to relevant technology (including biotechnology), access to benefits derived from such technology, safety of activities related to modified living organisms and the provision of new and additional financial support.⁸²

Formal negotiations started in February 1991 under the ad hoc Working Group which was renamed the Intergovernmental Negotiating Committee for a Convention on Biological Diversity.⁸³ The need to promote the integration of environment and development policies through effective international agreements while taking into account the needs and concerns of developing countries was emphasised throughout the negotiations. Adede describes these concerns as follows:-⁸⁴

'The Earth Summit in Rio was about environment and development. But there is a primary emphasis on development and economic change. For it is through the development process that we carryout activities with impact upon the environment. It is also through fundamental changes in our economic behaviour, in lifestyles and in management or development processes that we can effect the positive synthesis

⁸¹ Idem.

⁸² Idem.

⁸³ Idem.

⁸⁴ AO Adede 'International Environmental Law from Stockholm to Rio' (1992) 22 No2 *Environmental Policy and Law* at 101.

between the environment and development that will produce life that is sustainable, both in economic and environmental things. The challenge is that we have to make the necessary efforts towards the transition to sustainable development.'

Some of the most difficult issues in negotiations were those concerning access to and transfer to technology. Developing countries argued that the value of their genetic materials had increased due to developments in biotechnology coupled with the granting of intellectual property rights to the biotechnological products. They motivated for the inclusion of provisions addressing three types of access:-⁸⁵

- '(a) access to genetic resources subject to national sovereignty;
- (b) access to relevant technologies including biotechnology by those conserving and providing the genetic resources; and
- (c) for the state providing the genetic material, access to benefits ultimately gained from the use of genetic material in the development of biotechnology.'

Arguments for assistance to developing countries to enable them develop their own technologies were also put forward. Strong support for setting up a clearing house mechanism for transfer of technology including biotechnology came from developing countries. Developed countries however expressed different views. Several developed countries were not in favour of inclusion of any provision on technology transfer in the Convention. These views were based on the grounds that issues on technology transfer were being dealt with in other, more appropriate fora and that these issues should be addressed separately by the 1992 UNCED conference.⁸⁶ There was also strong resistance from developed countries to the imposition of any requirement that would force their private sector to transfer technology. The

⁸⁵ Op cit note 79.

draft articles prepared for negotiations however addressed the issue of technology transfer.

Regarding access to genetic resources, most proposals dwelt on the concept of equitable sharing of benefits by countries of origin of genetic material. The question of 'free', 'open' access to genetic material, both in-situ and ex-situ, was hotly contested with most participants arguing for access to be provided with due regard to ownership rights. While developing countries argued for easy access to relevant technology and information, developed countries were more interested in protection of legitimate interests especially of the private sector to patents and other property rights.⁸⁷

There was also no agreement on the technologies to be covered by the Convention; the issue was whether access should cover only those technologies which are relevant for conservation and sustainable use or include technologies which make use of genetic resources. The drafters of the articles attempted to capture the differing views in the following provision:-

Article 16.1⁸⁸

'The developed countries have an obligation to transfer technology (those technologies that support conservation and sustainable utilization of biological diversity as well as those technologies that make use of genetic resources for other purposes such as the production of pharmaceuticals) by means of technical co-operation in acquiring relevant technology to developing countries on a preferential and non-commercial fair and favorable basis.'

⁸⁶ Idem.
⁸⁷ Idem.
⁸⁸ Idem.

Developed countries did not agree to this draft, continuing to argue that the private sector could not be forced to undertake any obligations and that the legitimate interests of the private sector should be protected in all activities. Such protection should extend to technology transfer through private sector's investments in developing countries. Developing countries also did not shift from their earlier positions that they should benefit from access to and transfer of technologies which make use of genetic material; that their special needs should be considered in providing access to technology and information to them and that the access to and transfer of technologies should take place within the framework of the financial mechanism provided in the Convention.⁸⁹

The difference of opinion on technology transfer which persisted throughout the negotiations led to weaker conditions as a compromise. By early 1992 there was general understanding with regard to access to genetic resources. It was more or less accepted that such access, where granted would be on mutually agreed terms and would be subject to prior informed consent of the party providing such resources. On the issue of technology transfer compromise was reached by inclusion of the following sentence in Article 16.2.⁹⁰

'In the case of technologies subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights.'

A further compromise was included by in article 16.5 of the Convention which provide inter alia that

'.... that contracting parties recognizing that patents and other intellectual property rights may have been an influence on implementation of this Convention shall co-

⁸⁹ Idem.

operate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.'

These provisions are discussed in details in Chapter 5 of this thesis.

1.3.2 Main Provisions of the 1992 Rio Convention

The Convention is made up of the preamble and the main body. The main principles incorporated in the Convention are as follows:-

- (a) States have the sovereign right to exploit their own resources pursuant to their own environmental policies; and the responsibility to ensure that activities within their jurisdiction do not cause damage to the environment of other states.⁹¹
- (b) The role of indigenous and local communities and the importance of maintaining their knowledge and lifestyles on biological resources must be recognised.⁹²
- (c) Identification and monitoring of the components of biological diversity is an ongoing process.⁹³
- (d) Incentives for conservation and sustainable use should, as far as possible and as appropriate be adopted.⁹⁴
- (e) The objectives of the Convention can best be achieved through increased interaction and co-operation.⁹⁵

The Rio Convention applies to in situ and ex situ genetic resources acquired in accordance with the provisions of the Convention. Article 8 dealing with in situ conservation call on parties to

- (a) establish a system of protected areas;

⁹⁰

Idem.

⁹¹

Article 3.

⁹²

Preamble; Articles 8(j) and 10(c).

⁹³

Article 7.

⁹⁴

Article 11.

⁹⁵

Articles 12, 13, 14, 17 and 18.

- (b) develop guidelines for selection, development and management of such areas;
- (c) regulate or manage biological resources important for the conservation of biological resources whether within or outside these areas;
- (d) promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
- (e) rehabilitate and restore degraded ecosystems and promote the recovery of threatened species;
- (f) promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to further protection of these areas; and
- (g) establish or maintain means to regulate, manage or control risks associated with the use and release of living modified organisms resulting from biotechnology.

Less emphasis is given to ex-situ conservation through article 9 which calls on parties to

- (a) establish and maintain facilities for ex-situ conservation of and research on plants, animals and micro-organisms;
- (b) adopt measures for the recovery and rehabilitation of threatened species and for their re-introduction into their natural habitats;
- (c) regulate and manage collection of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and in-situ populations; and
- (d) co-operate in providing financial and other support for ex-situ conservation.

Although sovereign rights of states are recognised by the Convention, the parties are called upon to facilitate access to genetic resources.⁹⁶ Access to

⁹⁶ Article 15 and 19.

and transfer of technology is provided for in the heavily negotiated article 16 discussed earlier in this Chapter.

Detailed discussions of the relevant provisions of the Rio Convention will be undertaken in this thesis. All these provisions are expected to be supportive of the main objectives of the Convention which include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.⁹⁷

1.3.3 Implementation of the Provisions of the 1992 Rio Convention

A general rule applicable in most states is that rights and obligations arising from treaties have to be transformed into municipal law by Act of Parliament before they can create any rights of obligations under municipal law.⁹⁸ In some states a distinction is drawn between self-executing treaties which do not require enabling legislation and non-self executing treaties which impose no obligations on individuals.

In Britain, the Crown retains the right to sign and ratify international agreements. However, before a treaty can become part of English law, an Act of Parliament is essential.⁹⁹ In the case of *MacLain v Department of Trade and Industry*¹⁰⁰ it was held, inter alia, that,

'As a matter of the constitutional law of the United Kingdom, the royal prerogative, whilst it embraces the making of treaties, does not extend to altering the law or conferring rights on 'individuals or depriving individuals of rights which they enjoy in domestic law without the 'intervention of Parliament. Quite simply a

⁹⁷ Article 1.

⁹⁸ Op cit note 7 at 42.

⁹⁹ Op cit note 13 at 111.

¹⁰⁰ (1989) 3 All ER 523, 531.

treaty is not part of English law unless and until it has been incorporated into the law by legislation.'

The only exception to this rule involves treaties relating to the conduct of war or concession of territory. It follows therefore, that parliamentary legislation is required where a treaty's application results in a modification of or addition to existing common law or statute.¹⁰¹

In the USA a distinction is drawn between self-executing and non-self-executing treaties. Self-executing treaties are operative without the need for enabling municipal legislation.¹⁰² It was held, in the case of *Sei Fujii v State of California*¹⁰³ in part

'.... in order for a treaty provision to be operative without the aid of implementing legislation and to have the force and effect of a statute, it must appear that the framers of the treaty intended to prescribe a rule that, standing alone would be enforceable in the Courts.....'

Self-executing treaties apply directly in the US as part of the supreme law of the land. Non-self executing treaties are regarded legally enforceable against American citizens or institutions after enabling legislation has been passed.¹⁰⁴

In countries where English Common Law was adopted, such as Commonwealth states, the British system applies. In South Africa international agreements require enabling national legislation in order to bind individuals and institutions. However, a self-executing provision of an

¹⁰¹ Op cit note 3 112, 114.

¹⁰² Ibid at 118.

¹⁰³ 242 D. (2d) 617 (1952) at 620.

¹⁰⁴ See decisions in the following cases:-

- (a) *Foster v Neilson*, 27 U.S. (2 Pet.) 253, 311, 7 L.Ed. 415 (1829).
- (b) *United States v Percheman* 32 45 (7 Pet.) 51 1833.
- (c) *United States v Postal*, 589 F. 2d 862, 875 (5th Cir. 1979).

agreement that has been approved by Parliament becomes law unless it is inconsistent with the Constitution or any Act of Parliament.¹⁰⁵

The Rio Convention cannot be placed in the category of self-executing treaties. Most of the provisions of this Convention require parties to develop and maintain necessary legislation and/or other regulatory provisions. For example, article 8(k) dealing with in-situ conservation calls on parties to develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations. Similarly, article 15(7) on access to genetic resources requires parties to take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way the result of research and development and the benefits arising from the commercial and other utilization of genetic resources with parties providing such resources. Article 16(3) (4) and (5) calls on parties to take legislative, administrative or policy measures with the aim of :-

- (i) providing access to and transfer of technology to developing countries which provide genetic resources; including technology protected by patents and other intellectual property rights;
- (ii) facilitating joint development and transfer of technology involving the private sector;
- (iii) ensuring that intellectual property rights are supportive of and do not run counter to the objectives of the Convention.

Finally, article 19(a) regarding the handling of biotechnology calls on parties to take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities especially by developing countries which provide genetic resources.

¹⁰⁵

S 231(4) of the SA Constitution provides

‘Any international agreement becomes law in the Republic when it is enacted into law by national legislation; but a self-executing provision of an agreement that has been approved by Parliament is law in the Republic unless it is inconsistent with the Constitution or an Act of Parliament.’

Clearly the Rio Convention is a treaty arising from negotiations resulting in a written agreement whereby participating states bind themselves legally to carry out specific obligations. The Convention falls within the definition of treaties in terms of Article 2 (1) of the Vienna Convention on the Law of Treaties 1969.¹⁰⁶ The Rio Convention does not, however, contain provisions which confer specific rights on individuals. It is submitted that the drafters of the Convention did not intend to prescribe rules which would be enforceable in courts without enabling legislation.

Wallace argues that there is no international legislature or an international constitution which identifies the principle organs of governance or which defines the scope of their power. Neither are procedures for exercise of any such powers prescribed. For that reason, international regulations will only be effective if states respond by pursuing domestic policies which accommodate international opinion or agreement.¹⁰⁷ The absence of a legislative organ with the power to lay down binding principles of law is also raised by Greig in a discussion on self-executing and non-self-executing treaties.¹⁰⁸ Shaw aptly sums up as follows:-¹⁰⁹

'Indeed it is precisely because of inadequate enforcement facilities that lie at the disposal of international law that one must consider the relationship with municipal law of more than marginal importance. This is because the extent to which domestic courts apply the rules of international law may well determine the effectiveness of international legislation, and judicial decision-making.'

¹⁰⁶

A treaty is defined as

'an international agreement concluded between states in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation.'

¹⁰⁷

Rebecca MM Wallace *International Law* (1997) at 7.

¹⁰⁸

DW Greig *International Law* (1976) at 69.

¹⁰⁹

Op cit note 13 at 128.

The model legislation on collective intellectual property rights proposed in this thesis is a response to these concerns. Article 16 which forms the heart of this thesis does not impose specific legal obligations on individuals and cannot be implemented on its own. Without national legislation, the bulk of the main provisions of the Rio Convention will remain ineffective.

Provisions for the establishment of the Conference of the Parties,¹¹⁰ the secretariat¹¹¹ and the subsidiary Body on Scientific, Technical and Technological Advice¹¹² mainly deal with review of implementation by parties, administration of meetings, performance of administrative functions and the provision of scientific technical and technological advice. Implementation of the main, substantive provisions relies heavily on action taken by the parties at the national level.

1.3.4 Principles of International Environmental Law Relevant to Biological Diversity

(a) State Responsibility

The principle of State responsibility provides that states are accountable for breaches of international law. In cases of such breaches, the injured state has a claim against the irresponsible state. Claims against breaches of treaty or international customary law may be pursued through diplomatic mechanisms or other international structures such as the International Court of Justice or international arbitration.¹¹³

Customary international law places a basic duty on states not to act in a manner which causes injury to the rights of other states. The duty is elaborated in the International Commission on River Ode Case as follows:-¹¹⁴

'.... this community of interest in a river becomes the basis of a common legal right, the essential features of

¹¹⁰ Article 23.

¹¹¹ Article 24.

¹¹² Article 25.

¹¹³ Op cit note 13 at 590.

¹¹⁴ Idem.

which are the perfect equality of all riparian states in the use of the whole course of the river and the exclusion of any preferential privileges of any riparian state in relation to others.'

The principle of state responsibility was also dealt with in the Trail Smelter Arbitration¹¹⁵ which has been discussed in section 1.1 of this Chapter. Apart from making reference to state action which cause injury to other states, the Tribunal further stated;¹¹⁶

'..... the Dominion of Canada is responsible in international law for the conduct of Trail Smelter, apart from the undertaking of the Convention, it is therefore, the duty of the Government of Canada to see to it that this conduct should be in conformity with the obligation of the Dominion under International Law herein determined.'

Although Trail Smelter is a private firm, the responsibility of Canada to control pollution was clearly spelt out in this decision. It has been contended by scholars that the decision in this case is partly based on the famous case of *Ryland v Fletcher* which laid down the rule of strict liability.¹¹⁷

In the *Corfu Channel Case* the International Court of Justice held Albania responsible for explosive mines that blew up British ships in the Corfu Channel.¹¹⁸ There was however, no evidence linking the government of Albania to the mines. The decision in this case was based on the concept of sovereignty over territorial water and the attendant responsibility of states to prevent activities within their territories from causing injury to other states.

¹¹⁵ Op cit note 11.

¹¹⁶ As quoted in C Okidi op cit note 36 at 23.

¹¹⁷ AE Utton 'International Water Quality Law' in AL Teclaff and AE Utton (eds) *International Environmental Law* (1974) at 158.

¹¹⁸ ICJ Reports 1949 at 4.

In one of the latest developments, the International Court of Justice, in an Advisory Opinion to the UN General Assembly on the Legality of the Threat or Use of Nuclear Weapons stated,¹¹⁹

'The existence of the general obligation of states to ensure that activities within their jurisdiction and control respect the environment of other states or of areas beyond national control is now part of the corpus of international law relating to the environment.'

Closely related to the principle of state responsibility is the principle of neighbourliness which requires reciprocity in the conduct of states which share a neighbourhood.¹²⁰ This principle derives from the physical interdependence of continuous states. Problems like pollution have created neighbourhood amongst otherwise distant states. Okidi argues correctly that states on opposite ends of a large ocean are neighbours joined, rather than separated by the physical presence of the sea.¹²¹ Pollution may easily reach the neighbours across the sea through wind and currents.

Breach of good neighbourliness occurs where neighbours within a problem shed conduct themselves in a manner which causes transboundary environmental harm. The neighbourliness doctrine places an obligation on a state to prevent environmental degradation out of self interest and reciprocity. Self interest arises since the environment is shared; consequently any harm caused may also harm the perpetrator. Reciprocity becomes relevant since one who causes harmful effects to the detriment of neighbours may face similar or worse effects from neighbours.¹²² Good neighbourliness is based in the Roman maxim '*sic utere tue ut alienum non laedas*'. This doctrine has been applied in the control of international behaviour, specifically in international drainage basins.¹²³

¹¹⁹ ICJ Reports, 1996 para 29, 1996 35 ILM 809, 821.

¹²⁰ Op cit note 9 at 89.

¹²¹ Op cit note 36 19-41.

¹²² Ibid at 22.

¹²³ Op cit note 117 at 158.

The approach used in judicial decisions has now been adopted in international treaties and other agreements. For example, Article 192 of the Law of the Sea Convention, 1982 places an obligation on states to protect and preserve the marine environment. States are also required to take all necessary measures to ensure that activities under their jurisdiction and control are so conducted as not to cause damage by pollution to other states and their environment.¹²⁴ Principle 21 of the Stockholm Declaration of 1972 provides that states have the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond national jurisdiction.

The approach has clearly been adopted in the Rio Convention 1992; Article 3 provides inter alia that:

'States havethe sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage, to the environment of other states.....'

The appropriate standard of state responsibility remains flexible.¹²⁵ Most conventions use general terms such as due diligence; while others leave it to states to determine measures that are deemed necessary under the circumstances.¹²⁶ Although some conventions specify standards, mostly flexibility is advocated in order to accommodate different circumstances.

The issue of whether damage must actually be caused before a state assumes international responsibility must be examined by reference to provisions of different international instruments. Article 1 of the Convention

¹²⁴ Article 194 of the Convention on the Law of the Sea 1982.

¹²⁵ Op cit note 13 at 592.

¹²⁶ e.g. (a) Article 194 of the Convention on the Law of the Sea 1982.

(b) Article 14 of the Rio Convention 1992.

Provision of this Convention make reference to appropriate procedures, measures, arrangements or responses.

on Long-Range Transboundary Air Pollution 1979 provides that the pollution concerned must result in deleterious effects of such a nature as to endanger human health, harm living resources and ecosystems and material property and impair or interfere with amenities and other legitimate uses of the environment.¹²⁷ The Vienna Convention on Substances that Deplete the Ozone Layer defines adverse effects upon the ozone layer as changes in the physical environment including climatic changes which have significant deleterious effects on human health or on composition, resilience and productivity of natural and managed ecosystems or on materials useful to mankind.¹²⁸

Adverse effects in the Convention on Climate Change 1992 are defined as¹²⁹

'changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural managed ecosystems or on human health and welfare.'

Transboundary impact is defined in the Convention on the Protection and Use of Transboundary Watercourses and International Lakes 1992 as any significant adverse effects on the environment resulting from a change in the condition of transboundary waters caused by human activity.¹³⁰ Article 8(g) of the Rio Convention 1992 refers to adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking into account the risks to human health. On the other hand, article 7 of the Convention makes reference to significant adverse impacts on the conservation and sustainable use of biological diversity without attempting to offer any definitions. Sustainable use is however defined in Article 2 as:

¹²⁷ See a detailed discussion in Shaw, op cit note 13 at 594.

¹²⁸ Article 1(2) of the Vienna Convention on Substances that Deplete the Ozone Layer 1985.

¹²⁹ Article 1(1) of the Climate Change Convention 1992.

¹³⁰ Article 1(2).

'.... use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.'

It is evident from all these provisions that the responsibility of states is not limited to damage to property; it has now been extended to include adverse effects and/or impact on the environment.

(b) The Precautionary Rule

This principle is now recognised as an important tool for providing guidance to states in the development of international environmental law and policy. It is important in view of new developments, especially in biotechnology, an area which is plagued with the uncertainties associated with the application of new technologies, processes and practices.¹³¹

Although there is no uniform meaning of the principle, it has been understood to mean that states will agree to act carefully with foresight when making decisions which concern activities that may have an adverse impact on the environment. The principle requires states to regulate and where necessary prohibit activities and substances which may be harmful to the environment, even if no conclusive or overwhelming evidence is available as to the harm or likely harm.¹³² The Bergen Ministerial Declaration summarised it thus:

*'Lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.'*¹³³

¹³¹ P Sands 'The Greening of International Law : Emerging Principles and Rules (1994) Issue No. 2 *Indiana Journal of Global Legal Studies* <http://www.law.indiana.edu/glsj/vol1/sands/html>.
¹³² Idem.

¹³³ Bergen Ministerial Declaration on Sustainable Development in the ECE Region, Preparatory Committee for the United Nations Conference on Environment and Development 44th Session (1990) Year Book of International Law 429 at 431.

Principle 15 of the Rio Declaration 1992 provides that

'in order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreparable damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.'

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes 1992 provides that the parties would be guided by the precautionary principle.¹³⁴ The principle requires parties not to postpone action to avoid potential transboundary impact of the release of hazardous substances on the ground that scientific research has not proved a causal link between these substances or the potential transboundary link.¹³⁵ The Vienna Convention for the Protection of the Ozone Layer 1985 followed by the 1987 Montreal Protocol also make reference to precautionary measures in their preambles.

Article 3 of the Rio Convention 1992 adopts this principle by the requirement that states take responsibility to ensure that activities within their jurisdiction do not cause environmental injury to others. Further, paragraphs 3 and 4 of Article 19 of this Convention which deals with the safe transfer handling and use of any living modified organisms resulting from biotechnology also take cognisance of this principle. Paragraph 4 calls on states to provide available information about the use and safety regulations as well as information on the potential adverse impact of specific organisms. The precautionary principle, therefore, requires stringent global commitments in hazardous and ecologically sensitive areas.¹³⁶

(c) Obligation to make Environmental Impact Assessment

¹³⁴ Article 2(5).

¹³⁵ Idem.

¹³⁶ Op cit note 131.

The Convention on Environmental Impact Assessment in a transboundary Context 1991 requires parties to take the necessary legal, administrative and other measures to ensure that prior to a decision to authorize or undertake a proposed activity that is likely to cause a significant adverse transboundary impact, an environmental impact assessment is carried out. The party of origin must thereafter notify any party which may be affected by the proposed activity, providing full information relating to the proposed activity and the potentially affected environment. Consultations should then take place between the party of origin and the affected party concerning the potential transboundary measures and the measures to reduce or eliminate the impact. The outcome of the environmental impact assessment and consultations shall be taken into consideration before a final decision is taken on the proposed activity.¹³⁷

Earlier Conventions which considered the requirement for environmental impact assessment include the Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution 1978,¹³⁸ the Protocol on Environmental Protection to the Antarctica Treaty 1991¹³⁹ and Convention on the Law of the Sea 1982.¹⁴⁰

The Rio Convention 1992 incorporates this principle in its article 7 which requires parties to:-

- (a) identify components of biological diversity important for its conservation and sustainable use;
- (b) monitor through sampling and other techniques the components of biological diversity identified;

¹³⁷ Articles 4 - 7.

¹³⁸ Article 11.

¹³⁹ Article 8.

¹⁴⁰ Article 204 provides that states should observe, measure, evaluate and analyse by recognised scientific methods the risks or effects of pollution on the marine environment. In particular they are required to keep under surveillance the effects of any activities which they permit or engage in, in order to determine whether these activities are likely to pollute the marine environment.

- (c) identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques.

The principle of environmental impact assessment is developing into one of the acceptable international environmental law norms. The principle was taken into account in a Dissenting Opinion in the Request for an Examination of the Situation in Accordance with Paragraph 63 of the Court's Judgment in the 1974 Nuclear Tests Case.¹⁴¹ The judge, arriving at the conclusion that the matter before the court raised serious environmental issues of global importance; coupled with the existence of a *prime facie* case of possibility of environmental damage, declared that the court was entitled to take into account the environmental impact assessment principle.¹⁴²

(d) International Co-operation

Environmental degradation challenges states to search for multilateral solutions and a restructured international system of co-operation. These challenges are said to cut across the divides of national sovereignty, of limited strategies for economic gain and of separated disciplines of science.¹⁴³ A substantial number of international environmental agreements have adopted this approach. Co-operation is reflected in different ways, including exchange of information, notification, joint implementation and consultation. Conventions dealing with transboundary pollution issues were amongst the first to formulate provisions on co-operation.

The Long-Range Transboundary Air Pollution Convention 1979 provides for consultations at an early stage between states within whose jurisdiction the activity is to be conducted and states which are actually affected by or

¹⁴¹ ICJ Reports 1995 288, 344.

¹⁴² Ibid at 345.

¹⁴³ World Commission on Environment and Development *Our Common Future* 1987 at xi.

exposed to a significant risk of long-range transboundary air pollution.¹⁴⁴

Article 198 of the Convention on the Law of Sea 1982 provides that

'When a state becomes aware of cases in which the marine environment is in imminent danger of being damaged or has been damaged by pollution, it shall immediately notify other states it deems likely to be affected by such damage as well as the competent international authorities.'

Article 13 of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes 1989 makes provision for accidents occurring during the transboundary movement of hazardous wastes which are likely to present risks to human health and the environment in other states. Parties are required to inform affected states as soon as they gain knowledge of such accidents.

The Rio Declaration 1992 addresses a broad duty to co-operate. Principle 7 of the Declaration calls on states to co-operate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystems. The Rio Declaration makes reference to co-operation on issues regarding liability and compensation for victims of pollution and environmental damage. Timely notification of natural disasters as well as any other activities that may have significant adverse transboundary environmental effect are also addressed by the Declaration.¹⁴⁵ Article 5 of the Rio Convention 1992 incorporates a broad provision on co-operation which provides that

'Each Contracting Party shall, as far as possible and as appropriate co-operate with other Contracting Parties, directly or, where appropriate, through competent international organizations, in respect of areas beyond national jurisdiction and on other matters of mutual

¹⁴⁴

Article 5.

interest, of the conservation and sustainable use of biological diversity.'

This implies that parties can co-operate in almost any issue relating to the objectives of the Convention.

(e) States have Common but Differentiated Responsibilities

This principle is premised on the recognition of the fact that many critical survival and environmental issues are related to uneven development.¹⁴⁶ Developed countries, for the most part are in a position to meet their obligations under international instruments while developing countries face serious limitations. The preamble to the Rio Convention 1992 emphasizes those sentiments by

- a) stressing the importance and need to promote international, regional and global co-operation,
- b) acknowledging the need for additional financial resources to ensure implementation of the Convention,
- c) acknowledging that special provision is required to meet the needs of developing and least developed countries; and
- d) recognizing that economic and social development and poverty eradication are the first and overriding priorities of developing countries.

Although Article 20(1) calls on parties to provide financial support and incentives in respect of activities which are intended to achieve the objectives of the Convention; paragraph 2, 3 and 4 of this article provide for differentiated responsibilities. Article 20(2) provide new and additional financial resources to enable developing country parties to fulfill their obligations under the Convention.

¹⁴⁵ Article 18 and 19.

¹⁴⁶ Op cit note 143.

Developed countries acknowledge the pressure that their societies place on the global environment. These countries also accept the fact that sustainable development will only be effective if it is implemented globally, they are consequently prepared to accept the principle of common but differentiated responsibility. The principle has also been adopted by the Convention on Climate Change. Article 3 (1) of the Convention provides that parties should act to protect the climate system ;

' . . . on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities so that the developed countries would take the lead in combating climate change.'

1.3.4 Conclusion

This chapter seeks to highlight the seriousness of the problems relating to the extinction of a major proportion of the species of plants, animals, fungi and micro-organisms. The main causes of loss of biodiversity have been identified and they include pollution, global climate change, industrial and agricultural activities.

Treaties have been used over the years to address some of these concerns. A survey of these treaties in this chapter has established the fact that concerted, co-ordinated efforts are required in order to address the depletion of biological resources. Most of the problems, for example transboundary pollution cannot be dealt with solely through national initiatives; Regional and international action is imperative. International efforts are evidenced by the number of treaties prior to 1992 aimed at addressing different environmental issues including loss of biodiversity.

The Rio Convention 1992 was negotiated in recognition of a need for a co-ordinated effort involving as many states as possible in order to guarantee legitimacy. During negotiations, differing perspectives of developing and developed countries became apparent. Provisions on transfer of technology

for example reflect the degree of compromise which was necessary in order to address, on the one hand the concerns of the developing countries over access and those of developed countries over protection of private property rights. Implementation of the Convention is an important aspect of the long, hotly contested negotiating process. It is submitted in this chapter that, since most of the provisions of this Convention are not self-executing, national enabling legislation is critical to ensure effective implementation.

CHAPTER TWO

Access to Genetic Resources

2.1 Introduction

A state exercises, in accordance with international law, rights of sovereignty over its territory and over areas of the sea and seabed within its jurisdiction.¹⁴⁷ Natural resources are all derived from the land and the sea. Development of these resources largely depend on socio-economic and political considerations coupled with institutional capacity. Legal regimes are relevant as far as they provide mechanisms for exploitation or conservation of these resources. These legal mechanisms have the capability of either facilitating or inhibiting policies for sustainable development.

The sovereignty of a state comprises the land mass of the state, its internal waters, and subject to certain qualification, its territorial waters.¹⁴⁸ Genetic resources within the territory of a state fall exclusively within its jurisdiction and consequently matters relating to their development, conservation and control are governed by municipal law.

However there are categories of genetic resources which have not been, until recently, subject to rights of sovereignty. These resources were deemed as common heritage of mankind and the rights arising thereof were consequently vested in mankind as a whole.¹⁴⁹ Roman Law, for example, recognised that certain things could not belong to individual persons. These things were regarded as common to all. They include natural things like air, rivers, the sea, seashore and mountains. At a certain stage in development

¹⁴⁷ DE Fischer *Natural Resources Law in Australia* (1987) 37.

¹⁴⁸ *Ibid* at 47.

¹⁴⁹ *Ibid* at 49.

control and regulation were not necessary; there was abundance of nature, which was ready and available for the use by anyone who wished to use it. Notions of property in the narrow sense had no place in this set up; instead the concept of common property was seen as satisfactory.

On the basis of this, biological species and varieties and knowledge related to them have been openly and freely exchanged between societies and individuals.¹⁵⁰ This was the spirit within which the International Undertaking on Plant Genetic Resources was formulated under the aegis of the Food and Agriculture Organisation (FAO). Developments in technology increased the rate at which countries in the North (developed countries) poor in biological diversity, benefited from open, free access to the resources of the nations in the South (developing countries) which are rich in biodiversity. Developed countries then proceeded to create protectionist systems which made it possible for them to limit access to technologies and other benefits arising from these resources.¹⁵¹

Two different systems governing ownership and access to genetic resources existed. On the one hand, unimproved genetic resources which included wild species, traditional varieties of crops and livestock were treated as an open access resource. On the other hand, new varieties of plants and animals developed by pharmaceutical firms were and still are, protected by intellectual property rights including patent, trade marks, copy rights, plant breeders rights and trade secrets.¹⁵²

Unimproved genetic resources retained their common heritage status until the 1980s. Changes were necessitated by problems arising from the

¹⁵⁰ A Kothari 'Beyond the Biodiversity Convention : A view from India' in V Sanches and C Juma (eds) *Biodiplomacy Genetic Resources and International Relations* (1994) 71.

¹⁵¹ Idem.

¹⁵² WV Reid, SA Laird, CA Meyer, R Gomez, A Sitenfeld, D Jansen and C Juma 'Biodiversity Prospecting : Strategies for Sharing Benefits.' (1993) Unpublished paper presented at the International Conference on the Convention on Biological

application of the two systems. In the agricultural sector for example, a significant portion of what was considered unimproved genetic resources was the product of extensive hard work involving the selection and breeding of varieties suited to local conditions.¹⁵³ The time, skills and expense involved in this process ought to have given rise to certain property rights over the end product, rights which would limit access to the product. Further, some pharmaceutical products developed from natural products were first discovered by traditional healers. The question is why intellectual contributions of indigenous people did not receive the same protection as contributions of pharmaceutical companies.¹⁵⁴

What eventually forced changes was the realisation that it was inequitable for individuals and companies from developed countries to obtain resources free of charge from gene-rich developing countries, patenting the genes and chemicals, and then selling patented products resulting thereof back to the country where they originated. The first significant change however, is embodied in the United Nations Convention on Biological Diversity (hereinafter referred to as the Convention) which recognises that biodiversity is a sovereign national resource and a 'common concern' of human kind - not common heritage.¹⁵⁵

2.2 The Concept of National Sovereignty

The original sovereignty of a state is acquired through occupation and control amounting to first possession of territory previously without a master or sovereign; *terra nullius* (i.e. land belonging to no one).¹⁵⁶ A state comprises

Diversity : National Interests and Global Imperatives. January 26-29 1993. Nairobi, Kenya.

¹⁵³ Idem.

¹⁵⁴ BA Kamara 'The Role of Indigenous Knowledge in Biological Diversity Conservation' (1993). Unpublished paper presented at the International conference on the Convention on Biological Diversity referred to in note 11.

¹⁵⁵ The Preamble to the 1992 Convention on Biological Diversity; June 5, 1992, 31 ILM 818,822. See also Article 3 of the Convention.

¹⁵⁶ Barbara C Hocking 'Colonial Laws and Indigenous Peoples: Past and present law concerning the recognition of human rights of indigenous native peoples in British

a government which is usually the repository of supreme power; a people over whom that power is exercised; and a territory within which defined area the exclusive authority of the government is exercised.¹⁵⁷ In the Island of Palmas Case, it is stated that :¹⁵⁸

'Sovereignty in the relation between states signifies independence. Independence in regard to a portion of the globe is the right to exercise therein, to the exclusion of any other state, the functions of a state.'

Sovereignty therefore implies the existence of singular and exclusive power to make decisions in territory falling within the jurisdiction of the state. This concept is however, applied differently in states constituted by several governments each having limited sovereignty; for example Canada, the U.S.A. and Australia.¹⁵⁹

The focus of this section is sovereignty over natural resources. International recognition of this concept is evidenced by several resolutions, agreements and treaties. Examples include a United Nations General Assembly Resolution on Permanent Sovereignty which was adopted in 1962.¹⁶⁰ Sovereignty of States over their natural wealth and resources is reaffirmed in paragraph 1(1) of this Resolution. Further, the Declaration on the Establishment of the New International Economic Order adopted by the General Assembly of the United Nations in 1974 provides for this concept.¹⁶¹

colonies with particular reference to Australia' in Barbara Hocking (ed) *International Law and Aboriginal Human Rights* (1988) 6.

¹⁵⁷ Rosalie Schaffer 'International Law and Sovereign Rights of Indigenous Peoples' in Barbara Hocking *ibid* at 21.

¹⁵⁸ (1928) 2 UNRIAA 829 at 838.

¹⁵⁹ *Op cit* note 2.

¹⁶⁰ (a) GA Res 1803 (XVIII) of 1962.

(b) See also a discussion in Hercules Booyesen 'The Dilemma of International Economic Human Rights. Their Improvement Through an Integrated System Approach' (1998) 23 *South African Year Book in International Law* at 105.

¹⁶¹ GA Res 3201 in 1974 13 ILM 715.

Paragraph 4(d) of this Resolution gives recognition to the right of states to adopt economic and social systems deemed most appropriate for their development. Paragraph 4(e) reiterates the states' permanent sovereignty over natural resources and all economic activities; this is coupled with the right of the state to exercise effective control over its resources.

The same sentiments are expressed in the Charter of Economic Rights and Duties of States which was adopted by the United Nations General Assembly in 1974.¹⁶² Article 1 of the Charter clearly states that every state has the sovereign and inalienable right to choose its economic system. Every state is further given the right to freely exercise full permanent sovereignty, including possession, use and disposal over all its wealth, natural resources and economic activities.¹⁶³

Recognition in other international instruments include the establishment of Exclusive Economic Zones under the Convention on the Law of the Sea 1982; giving coastal states sovereign rights and exclusive jurisdiction for the exploitation of living and non-living resources.¹⁶⁴

Principle 2 of the Rio Declaration adopted by the United Nations Conference on Environment and Development reaffirms this stand by providing that states have the sovereign right, to exploit their own resources pursuant to their own environmental and developmental policies.

Although principle 8 of the Stockholm Declaration of United Nations Conference on the Human Development 1992 recognises the necessity of economic and social development for ensuring favourable living environment and conditions,; states are limited in their pursuit of goals to this end by certain international environmental law principles. Limiting principles of

¹⁶² 1975 14 ILM 251.

¹⁶³ See discussion in Hercules Booyens op cit note (5(b) at 106.

¹⁶⁴ See generally Chapter One of this thesis.

international law include state responsibility, international co-operation and the precautionary principle already discussed in Chapter 1 of this thesis. As already pointed out, these principles have been incorporated in the Rio Convention on Biological Diversity 1992.

2.2.1 Implications of the concept of national sovereignty

Article 3 of the Convention provides as follows:-

'States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.'

It is important at this stage, before discussion of the implications of this Article, to define 'environment'. The definition of environment which is going to be adopted in this work is the one formulated by the Commission of Environmental Law of the World Conservation Union (IUCN), in the draft Covenant on Environmental Conservation and Sustainable use of Natural Resources.¹⁶⁵ The Commission defines the environment as

'The totality of nature and natural resources, including the cultural heritage and infrastructure essential for socio-economic activities.'

¹⁶⁵

Ad Hoc Working group met in Bonn, Germany on September 7 - 9 1992 convened by the Commission of Environmental Law of the World Conservation Union in conjunction with the International Council of Environmental Law. See details in Global Biodiversity Strategy op cit note 3.

The environment therefore, may be 'perceived as the total context of nature'. Nature is, in turn, defined as the earth's geosphere, biosphere and associated processes. Water, the atmosphere, forests, wildlife, soil and the general flora and fauna are simply the components of nature which are or can be used to satisfy the needs of human beings and other living species.¹⁶⁶

Two important implications can be clearly identified from Article 3. The first one is the right to exploit own resources, the second is the right of control over access to resources. We proceed to discuss these implications separately.

(a) The Right to Exploit Resources

The provisions of Article 3, which give states the right to exploit their own resources pursuant to their own environmental policies must be read together with the following provisions of the Convention:-

- (i) Article 1 which provides that the objectives of the Convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.
- (ii) Article 6 which calls on nations to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity. States are further required to integrate as far as possible the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.
- (iii) Article 10 which deals with sustainable use of components of biological resources diversity also calls on states to integrate consideration of the conservation and sustainable use of biological

¹⁶⁶

Op cit note 1.

resources into national decision making. States are also required to adopt measures relating to the use of biological resources to avoid or minimise adverse impacts on biological diversity.

From the above, it is evident that in exercising their rights to exploit their own resources, states must also conserve biodiversity and exercise sustainable utilisation of its components. Consequently, sustainability must be the key to all policies and laws on resource management.

The principle of sustainability has been described as follows:-

*'Humanity has the ability to make development sustainable - to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits - not absolute limits but limitations imposed by the present state of technology and social organisation on environmental resources and by the ability of the biosphere to absorb the effect of human activities.'*¹⁶⁷

The Commission on Environment and Development has emphasised that the common theme of the strategy for sustainable development is the need to integrate economic and ecological considerations in decision making.¹⁶⁸ The Commission developed 22 principles which were then formulated in terms of broad legal propositions. The principles addressed amongst others, matters such as:-

- (i) the right to an environment adequate for health and well being;
- (ii) the principle of intergenerational equity;
- (iii) maintenance of ecosystems and biological diversity;

¹⁶⁷ World Commission on Environment and Development *Our Common Future* (1987) 8.

¹⁶⁸ *Ibid* at 62.

- (iv) setting and monitoring of environment standards;
- (v) obligations to co-operate internationally, to exchange information and consult; and
- (vi) transboundary obligations.

In terms of the Strategic Framework for Advancing Sustainability, Articles 3 and 7 are relevant.¹⁶⁹

Article 3:

'States shall maintain ecosystems and ecological processes essential for the functioning of the biosphere and shall observe the principle of optimum sustainable yield in the use of natural living resources and ecosystems.'

Article 7:

'States shall ensure that conservation is treated as an integral part of the planning and implementation of development activities and provide assistance to other states, especially to developing countries in support of environmental protection and sustainable development.'

The concept of sustainability, therefore, requires a fundamental shift in approach. The existing resource management regimes in most countries were not structured in a way which would accommodate this concept. Resource use laws developed over the years, with different statutes addressing specific areas. In most cases these statutes reflect the country's history with the earliest legislation addressing mining, then soil erosion due to population growth, development of ports and cities and laws which address special problems caused by urban development. These would then be followed by statutes regulating particular problems such as noise and air

¹⁶⁹ G Palmer 'Sustainability : New Zealand's Resource Management Legislation' in M Ross and JO Saunders (eds) *Growing Demands on a Shrinking Heritage: Managing Resource - Use Conflicts* (1992) 410.

pollution.¹⁷⁰ There was in most countries no unifying principle or approach. Most systems were characterised by lack of uniform standards, variety of institutional structures and different mechanisms for settling disputes. Resource management laws were to a large extent uncoordinated and unintegrated.

Examples can be drawn from former British colonies in Africa, most of which still have legal and regulatory mechanisms which date back to the colonial era.¹⁷¹ The resource management laws are sector specific, based on the exploitation and expropriatory goals of colonialists to ensure longer lasting exploitation.¹⁷² In South Africa, seven different government departments have got environmental responsibilities.¹⁷³ Further, current laws, policies, and practices on environmental management do not reflect a common goal.¹⁷⁴

Developing integrated resource use laws which effectively codify the concept of sustainability is a challenging undertaking. This is in view of the fact that sustainable use or management is a broad concept that includes aspects of use, development and protection. New Zealand is one of the first countries to adopt sustainability as the key to its resource management laws by enacting the Resource Management Act in 1991.¹⁷⁵ In this Act, sustainability is reflected in the purpose clause as follows:-

Section 5: Purpose

- (1) *'The purpose of this Act is to promote the sustainable management of natural and physical resources.'*

¹⁷⁰ Ibid at 428.

¹⁷¹ See generally country reports from Common Law Africa contained in Part II of Biological Diversity : International and National Law Aspects (1991) Unpublished papers submitted at a seminar held in Harare, Zimbabwe and compiled by UNEP.

¹⁷² See generally United Nations Environmental Programme *Conservation of Biological Diversity and International Law* (1990).

¹⁷³ See generally 'Towards a new Environmental Policy for South Africa' (1996) A discussion document prepared by the Department of Environmental Affairs and Tourism.

¹⁷⁴ The different approaches are reflected in programmes adopted which include Integrated Environmental Impact Assessment and Environmental Management Programmes.

¹⁷⁵ The Resource Management Act came into effect on 1 October 1991.

- (2) *In this Act "Sustainable Management" means managing the use, and development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well being and their health and safety while -*
- (a) *Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonable foreseeable needs of future generations; and*
 - (b) *safeguarding the life-supporting capacity of future generations; and*
 - (c) *avoiding, remedying or mitigating any adverse effects of activities on the environment.'*

This provision received widespread criticism in New Zealand. It was argued that most of the words used in this provision are not easy to analyse or apply; and that the word 'manage' itself is used in its widest sense thus rendering it neutral and incapable of importing any particular values or priorities to the provision.¹⁷⁶ The government on the other hand, argued that section 5 is all about balancing socio-economic aspirations with environmental outcomes, and that its usefulness can only be felt if a broader view, encompassing the whole Act is taken.¹⁷⁷

Despite these criticisms, the Act has already been tested in practice with the safeguards embodied in section 5 being achieved.¹⁷⁸ Drafters of the Act also argued that the Act's purpose was not to inquire into what constitutes peoples' social, economic and cultural well-being or how they should achieve it. The main purpose of the Act is sustainable management of natural and

¹⁷⁶ D Fisher 'Clarity in a Little While' in *Terra Nova* (1991) 50.

¹⁷⁷ Hon. Simon Upton Keynote Speech to the Second RMLA Annual Conference Wellington. *Resource Management News* (November/December 1994).

¹⁷⁸ *Idem*.

The cases referred to include:

- (a) *Shell Oil New Zealand Limited v Auckland City Council* (w 8/94);
- (b) *Foxley Engineering Limited v Wellington City Council* (W 12/93);

physical resources. This amounts to managing the use of those resources in a way that secures the matters in section 5 (a) (b) and (c) of the Act.¹⁷⁹ This is further elaborated by the Hon Upton in a decision concerning air discharge permit as follows:¹⁸⁰

"The Act's purpose is to allow people and communities to provide for their well being however they may view that, while ensuring that certain environmental bottom lines or constraints spelt out in section 5 (a) (b) and (c) are observed. The appropriate test to apply is whether the discharge permit sought meets the tests of sustainable management. This will allow a weighing of the positive and negative environmental effects if mitigation (as against avoidance or remediation) is considered to be appropriate."

In the case of Royal Forest and Bird Protection of New Zealand Incorporated v Manawatu Wanganni Regional Council application of this section was analysed.¹⁸¹ The case involved an application for consent for selective logging of native bush. Previous owners of the property had milled some trees from part of the bush area. Present owners wished to carry out further logging in order to use the proceeds for fencing the forest to keep livestock out. Consent was granted on the basis that the adverse effects of the activity could be avoided or investigated and that logging would not be inconsistent

(c) *Plastic and Leathergoods Company Limited and Others v Horowhema District Council* (W 27/94).

¹⁷⁹ Hon SD Upton 'Purpose and Principle in the Resource Management Act.' Waikato Law Review (1995)3 at 40.

¹⁸⁰ Decision of Hon Simon Upton, Minister for the Environment, Air Discharge Permit Taranaki Combined Cycle Power Station (Wellington, Ministry for the Environment, March 1995 para 66) as quoted in Hon SD Upton *ibid* at 43

¹⁸¹ Decision No. AO86/95 (1995)4 New Zealand Planning Tribunal Digest 658

with the purpose of the Act. Eleven conditions were imposed to ensure this. Forest and Bird argued that consent be refused on the ground that the sight was a significant area of indigenous vegetation, that the decision did not promote sustainable management, and that the relevant plan did not provide sufficient protection of the area. The tribunal, in its ruling, accepted that there would be some adverse effects on the forest by direct damage and removal of seed bearing trees, and by reducing habitats. Members of the Tribunal agreed, however, that grant of the resource consent would promote the sustainable management of the forest resource provided such consent is coupled with revised conditions and a logging plan. In an elaborate ruling, the Tribunal made the following observations:¹⁸²

- (a) Unless the effects on the forest by direct damage were restricted by controlling the selection of trees for logging, the proposal would not represent managing the resource while sustaining the potential of natural resources to meet the reasonably foreseeable needs of future generations as required by section 5 (2) (9) of the Resource Management Act 1991.
- (b) The logging proposal would only safeguard the life-supporting capacity of water, soil and ecosystems if the proposal was carefully carried out in compliance with conditions and in accordance with a logging plan for the selection of trees to be felled on the basis of avoiding, remedying and mitigating effects on those media and ecosystems. This would ensure compliance with section 5 (2) (b) of the Act.
- (c) There was an opportunity to further avoid or mitigate adverse effects by additional conditions coupled with a logging plan prescribing principles for the selection of trees to be felled so as to immunise the

¹⁸² Ibid at 659

adverse effects on the environment and on the forest ecosystem.
Such measures would ensure compliance with S 5 (2) (c) of the Act.

The Act gives tribunals the discretion to grant or refuse consent. Section 104 (1) of the Act prescribes the method for considering applications for resource consent. It has been decided in *Minister of Conservation v Kapiti Coast District Council*⁵ that the exercise of such discretion must be guided by s 5.⁶ This was an appeal against a decision by the Kapiti Coast District Council granting land use consent for rural lifestyle subdivision in the coastal environment. The subdivision was to be situated on sand dunes and would have been controlled by a code of practice and restrictive covenants. The proposed subdivision was a non-complying activity. In its ruling denying the appeal, the tribunal took into consideration the provision of s 5 of the Act.

Section 5 is also taken into consideration in evaluating plans submitted in support of applications for consent. In the case of *Wyatt v Auckland City Council*⁷ the tribunal stated that in deciding the weight to be given to plans and in the exercise of the discretion in each individual case it was important to keep in mind that the provisions of a plan

*".... may have to be given a value which reflects the extent that they do not accord with the fundamental principles and philosophies of the Resource Management Act as set out in ss 5 to 9 inclusive."*⁸

This view was also supported in the case of *Wilbow Corporation NZ Ltd v North Shore City Council and Auckland Regional Council* where the appellant lodged applications for a soil conservation consent, resource consents permitting subdivision, a water permit and a discharge permit.⁹ The land involved was steep gully country. In a plan, the appellant proposed to reduce the gradient of the slopes using some of the fill in some of the valley floors to achieve more manageable residential sections. The reduction would

however result in the destruction of a substantial portion of the existing tree and scrub cover in the central area of the proposed subdivision, and would also require the filling in and piping of an existing stream flowing through the property. Consent was opposed by the Council and 500 residents. Their opposition was based on the belief that the plan would result in loss of important collection of trees and loss of habitat for skinks and lizards. Further, the plan did not include guarantees that there would be no sediment outfall from the boundaries of the property and during the construction period. In allowing the appeal the tribunal stated that although the proposal would result in changes to the environment, it contained sufficient safeguards for the important parts of the ecosystem existing on the land. It was also the view of the tribunal that the proposal had, to a substantial extent, avoided any adverse effects on the environment thus complying with s 5 of the Act.

The cases discussed in this part are used as examples of situations where s 5 has been applied in practice. This is not meant as an exhaustive examination of relevant cases. There are to date numerous cases where the principles elaborated in this section have been applied.¹⁰

The lesson to be learned from the New Zealand experience is that any legislation encompassing sustainability should have three main characteristics,

- (i) its purpose, which should be reinforced by other provisions which capture specific values,
- (ii) its process, included in provisions which sets out minimum conditions for decision making and,
- (iii) its instruments, including policy statements, regulations and plans.

Such legislation must be able to meet competing demands arising from economic political and social aspirations. A central element of the concept of 'sustainable development' is the commitment to integrate environmental considerations into economics and other social development; and to take into

account development needs in drafting, applying and interpreting environmental obligations. Formal application of the concept requires the collection of appropriate environmental information and its dissemination as well as the conduct of appropriate environmental impact assessment. This may also serve as the basis for requiring 'green conditionality' in bilateral and multilateral transactions.

The European Community has taken steps to integrate the environment and economic development by the progressive amendment of the European Community Constitution. In 1986 the Single European Act (SEA) transformed a body of environment policy and law, bringing environmental considerations to bear on areas of law such as corporations, tax, financial services, broadcasting and even civil procedures.¹⁸³

Article 25 of the 1986 Act added a new Title VII on "Environment" to the EEC Treaty, consisting of Article 130 R, 130 S, 130 T.

Sands aptly describes the importance of Article 25 as follows:-

*'It went beyond mere codification of existing environmental law, and established a formal legal basis for the future development of EC environmental law, in effect bringing the whole of the EC's extensive range of economic activities within the scope of environmental lawmaking.'*¹⁸⁴

Article 130 R of the amended Treaty of Rome provides that community action related to the environment has the following objectives.¹⁸⁵

- (i) to preserve, protect and improve the quality of the environment;
- (ii) to contribute towards protecting human health; and

¹⁸³ P Sands 'The Greening of International Law : Emerging Principles and Rules' (1994) Issue No. 2 *Indiana Journal of Global Legal Studies*
<http://www.law.indiana.edu/glsj/vol1/sands/html>.
¹⁸⁴ Idem.

(iii) to ensure a prudent and rational utilisation of natural resources.

In addition, the amended EEC Treaty provides that EC action is to be preventive, that environmental damage should as a priority be rectified at its source; that the polluter should pay for damage; environmental protection should be a component of the other EC policies and that the EC may participate in international environmental agreements.¹⁸⁶

The Maastricht Treaty on European Union introduces further amendments to the EEC Treaty. This treaty establishes a European Community whose main task is to promote a harmonious and balanced development of economic activities throughout the region. This is achieved through the establishment of a common market and monetary union coupled with the implementation of common policies and activities. Sustainable and non-inflationary growth taking into consideration environmental issues is emphasised.¹⁸⁷ Environmental protection is consequently elevated to one of the fundamental objectives of the community. Environmental protection is also included as one of the EC's fundamental activities in terms of Article 3 of the EEC Treaty.

Developments in the EC indicate how a treaty developed to further regional and international economic integration and development can be amended to introduce and apply environmental policies. These are policies whose objectives include environmental protection as well as sustainable utilization of natural resources.

Other efforts at international level towards an integrated approach include the establishment of an Environment Department by the World Bank together with the formal adoption of environment assessment procedures and the convergence of trade with environment at the GATT. Others include integration of environmental considerations into the North American Free Trade Agreement (NAFTA); the elaboration of language on sustainable development in the Articles of Agreement of the European Bank for

¹⁸⁵

Single European Act, February 17 1986 tit. vii Article 130 R(2), 25 I. L.M. 503, 515.

¹⁸⁶

Ibid, Article 130 R (5).

Reconstruction and Development (EBRD) and the development of environmental jurisprudence on matters such as competition, subsidy and intellectual property law.¹⁸⁸

Countries of the Southern Africa region can introduce environmental policies in their regional bodies such as the Southern African Development Committee (SADC). SADC provides an excellent framework for integrated economic development and environmental policies. Member countries can therefore follow this trend and introduce environmentally sound policies. This will, to a great extent, supplement national efforts in sustainable utilisation of resources.

(b) Control Over Access To Resources

As indicated earlier, until recently, genetic resources have not been subject to property rights. They were considered to be open access resources and could therefore be collected and utilised freely through the application of the principle of common heritage. This principle which advocates access to resources without restrictions was reaffirmed in a number of international instruments.¹⁸⁹

One of the first international instruments to replace the principle of common heritage with one of national sovereignty is the International Undertaking of the Food and Agriculture Organisation. Annex III to this undertaking was adopted to the FAO Conference in 1991 as a resolution which clearly stated that all resources are subject to the control of the state.¹⁹⁰

Article 15 of the Convention on Biodiversity dealing with genetic resources recognises sovereign rights over their natural resources with the resultant authority to determine access to such resources. Paragraph 2 of this article however balances the sovereignty principle indicating that these states shall endeavour to create conditions to facilitate access to genetic resources for

¹⁸⁷

Treaty of European Union and Final Act, February 7 1992, 31 I. L.M. 247.

¹⁸⁸

Op cit note 29.

¹⁸⁹

Idem.

environmentally sound uses by other parties and not to impose restrictions that run counter to the objectives of the Convention. This implies that access should not be on arbitrary, unacceptable terms. Paragraphs 4 and 5 express how access is to be granted:-

Article 15

4. *'Access, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.'*
5. *'Access to genetic resources shall be subject to prior informed consent of the contracting party providing such resources, unless otherwise determined by that party.'*

Paragraphs 6 and 7 provide for participation of the countries providing genetic resources in scientific research and the sharing of results of research and benefits accruing from genetic resource utilisation.

Article 15 should be read together with Article 2 in which genetic resources are defined as genetic material of actual or potential value; while genetic material means any material of plant, animal, microbiological or other origin containing functional units of heredity. It has, quite correctly been pointed out that the definition of genetic material and genetic resources does not exclude material that has been modified by genetic engineering or other biotechnological techniques. Article 15 of the Convention therefore, applies equally to the flow of genetic resources from either direction. This implies that the direct commercial use of those genetic resources that are the result of biotechnology by another contracting party or by a private party under its jurisdiction requires compliance with the provisions of Article 15.¹⁹¹

¹⁹⁰ F Hendrick, V Koester and C Prip 'Access to Genetic Resources : A Legal Analysis' in Sanchers and Juma (eds) op cit note 9 at 139.

¹⁹¹ J Duesing 'The Convention on Biological Diversity : Its Impact on Biotechnology Research' (1992) 4 *Agrofood - Industry Hi-tech* 19-23.

C Prior Informed Consent

The prior informed consent (PIC) principle was applied for the first time in environmental instruments in the 1987 UNEP London Guidelines for the exchange of Information on Chemicals in International Trade. It was later incorporated in the 1989 Basel Convention on the Control of Transboundary Movements of Wastes and Their Disposals and the FAO International Code of Conduct on the Distribution and Use of Pesticides.¹⁹² In these cases, the PIC procedure emphasises the shared responsibility of importing and exporting countries. States are required to ensure that PIC is obtained before any export in potentially harmful products. Sovereignty over their territory is exercised by making the import or transit of chemicals and hazardous waste dependent on their giving consent in advance.

PIC can also contain provisions or conditions making access dependent on the sharing of benefits. The purchaser would therefore get permission from the providing country before any genetic material can be collected and taken out of the country. In return for this permission, the providing country is entitled to demand compensation from the exporter. Such compensation may take the form of a financial settlement, transfer of technology or participation in research activities and distribution of benefits.¹⁹³ The providing country retains the discretion to decide whether or not permission should be granted and the conditions under which access will be granted. The only limit to these rights is contained in paragraph 2 of Article 15 of the Convention on Biodiversity which indicates that access may not be unreasonably restricted.

The provision of all relevant information is an important condition for granting access. Such information is vital if the providing country is to enter the negotiations on equal terms with the purchaser. Information concerning, inter alia, the quantity of genetic material to be acquired, its future possible use

¹⁹²

Op cit note 36.

¹⁹³

MA Collin 'An Intellectual Property Rights Framework for Biodiversity Prospecting' in W Reid et al (eds) *Biodiversity Prospecting Using Genetic Resources for Sustainable Development* (1993) 159 - 197.

and its value must all be disclosed prior to granting access. Parties would be effectively, negotiating a trade agreement.¹⁹⁴

In order for a PIC agreement to offer adequate protection to the providing country, it should contain provisions which address the following matters:

- (i) the scope of the PIC. This should specify the resources to be collected, the area from which they are to be collected and the time limits;
- (ii) information on the quantity, use and value of resources;
- (iii) general conditions, including minimum requirements and rights of local communities;
- (iv) fees for access, collecting and use; form of payment. Provision may be made for lump sum payment, payment by instalments, payment in kind and royalties;
- (v) provisions for the future, for example restrictions on providing material to third parties; and
- (f) miscellaneous provisions such as dispute resolution.

Control over access to genetic resources is a crucial issue which is addressed extensively in chapter five dealing with intellectual property rights provisions in the Convention.

In 1992 the United Nations Conference on Environment and Development made recommendations for the conclusion of a legally binding instrument on Prior Informed Consent.¹⁹⁵ In 1994, both the International Conference on

¹⁹⁴ Idem.

¹⁹⁵ Op cit note 1 chapter 1 paragraph 19.39d states 'governments and relevant international organizations with the cooperation of industry should implement the PIC procedure as soon as possible and, in the light of experience gained, invite relevant international organizations such as UNEP, GATT, FAO, WHO and others in their respective area of competence to consider working expeditiously

Chemical Safety (ICCS) and the Commission on Sustainable Development (CSD) recommended that UNEP, together with FAO in close co-operation with other international organisations, continue to evaluate and address problems with the implementation of voluntary PIC procedures with a view to developing effective legally-binding instruments.¹⁹⁶

In November 1994, the FAO Council at its 107th session agreed that the secretariat should proceed with the preparation of a draft legally-binding instrument on the operation of the PIC procedure as part of the joint FAO/UNEP Programme on Prior Informed Consent. UNEP and FAO convened an informal consultative meeting of government-designated experts to discuss the development of the legally-binding instrument in December 1994. The meeting identified several major issues that would be addressed during negotiations and considered the time frame required for the task.¹⁹⁷ In 1995, the Governing Council of UNEP authorized the Executive Director to prepare for and convene, together with FAO, an inter-governmental negotiating committee, with a mandate to prepare the instrument for the application of the PIC procedure¹⁹⁸.

At the invitation of the government of Belgium, UNEP and FAO convened the First Session of the Committee in Brussels in March 1996. More than 181 delegates from 81 governments, 5 inter-governmental organizations and 7 non-governmental organizations attended the first negotiating session. A Second Session was held in Nairobi in September 1996. At this meeting, the scope of the Convention was discussed. Participants debated on whether to negotiate a broad framework with the possibility of adding protocols on other issues related to chemicals management or a more restricted Convention

towards the conclusion of legally-binding instruments.'

¹⁹⁶ FAO Report on the Progress of Negotiations of an International Legally-binding Instrument for the application of the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. July 1997 C 997/6 paragraph 2 at 2.

¹⁹⁷ Idem paragraph 5 at 12.

limited to PIC.¹⁹⁹ Third and Fourth Sessions were held in 1997 in preparation for a Diplomatic Conference for the adoption of the Convention.²⁰⁰

After two years of negotiations, in March 1998, representatives of 95 governments reached an agreement on the Convention on the Prior Informed Consent Procedure for certain Hazardous Chemicals and Pesticides in International Trade. The PIC Convention was opened for signature in Rotterdam, 9-11 September 1998. The Convention was signed by 61 states and comes into force after 50 states have ratified it.²⁰¹

Prior informed consent in terms of the Convention is aimed at assisting contracting parties to acquire relevant information about the characteristics of potentially hazardous chemicals that may be shipped to them. The Convention further puts in place a decision making process enabling parties to make decisions concerning future imports of chemicals themselves thus preventing unwanted imports. This has been described as an important step towards ensuring the protection of citizens and the environment in all countries from the possible dangers resulting from trade in highly dangerous pesticides and chemicals. It is expected to save lives and protect the environment from the adverse effects of toxic pesticides and other chemicals.²⁰²

The Prior Informed Consent Procedure is a means for formally obtaining and disseminating the decisions of importing countries as to whether they wish to receive future shipments of a certain chemical and for ensuring compliance to these decisions by exporting countries.²⁰³ The main objective of the Convention is to promote a shared responsibility between exporting and

¹⁹⁸ Decision GC. 18/12 1995.

¹⁹⁹ Op cit note 2 paragraph 9 at 3.

²⁰⁰ Idem

²⁰¹ UNEP 'The Convention on the Prior Informed Consent Procedure for certain Hazardous chemicals and Pesticides in International Trade' (1998) <http://irptc/unep.ch/pic/incs/dipcon/convsumm.htm>

²⁰² Idem.

importing countries in protecting human health and the environment from the harmful effects of chemicals.

Efforts by FAO and UNEP to promote chemical safety were based on the 1985 International Code of Conduct on the Distribution and the Use of Pesticides and the 1987 London Guidelines for the Exchange of Information on Chemicals in International Trade. These are however voluntary systems. Some pesticides and other chemicals that are banned and severely restricted in certain developed countries are still widely used elsewhere, especially in developing countries.²⁰⁴ There is need, therefore, for the adoption of mandatory controls in hazardous chemicals and pesticides. Although the Convention does not deal with access, its impact on the environment in general; and biodiversity specifically will be significant.

2.3 Farmers Rights

Biodiversity has been highly valued in traditional societies for generations through cultural and social mechanisms which have allowed its simultaneous conservation and utilisation. The situation in most African communities can best be described by the following statement:-

'.... living in balance with the environment was an integral component of African culture. The individual was taught to co-exist with the natural world around him and to see himself as part and parcel of the system..... The communal land ownership system was also designed to enhance living in balance with nature. In pastoral societies, wildlife was regarded as "second cattle" and was especially used during droughts, when domestic

²⁰³

Idem

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Environment and Sustainable Development Research Centre 'Pollution : Prior Informed Consent' (1998) <http://www.unb.ca/web/enviro/sstep/I-3 pic.htm>

*cattle was scarce. Through the years African communities evolved a form of coexistence with wildlife around them which permitted both to survive. The neglect of these survival strategies is a tragic loss which should be redressed in future.*²⁰⁵

The impact of development and colonial administration was felt through the breakdown of the relationship between local communities and biological resources. The creation of protected areas with the attendant prohibitions and penalties is the primary cause of alienation of communities from their biological resources.²⁰⁶

Local communities in many countries, through similar resource management systems lost their rights of tenure and the responsibility towards management of resources. Indigenous knowledge and practices, which allow a greater understanding of local conditions are not taken into consideration in decision making. Protected areas from which local communities are alienated are instead used as sources of income to governments through tourism, hunting and exploitation of resources such as timber and fisheries.²⁰⁷

The concept of 'farmer's rights' was introduced as a recognition of the contributions of the traditional farmer, who by selecting seeds over generations has seen its adaptation to local conditions. Farmers Rights as defined in the International Undertaking on Plant and Genetic Resources of the FAO means,

'rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity.

²⁰⁵ W Lusigi 'Future Directions for Afrotropical Realm' in JCI Dodge et al *National Parks, Conservation and Development: The Role of Protected Areas in Sustaining Society* (1982) at 140.

²⁰⁶ Op cit note 13.

²⁰⁷ Idem.

*Those rights are vested in International Community as trustee for present and future generations of farmers and supporting the continuation of their contributions as well as the attainment of overall purposes of the International Undertaking.*²⁰⁸

This right, however, does not belong to the individual farmer or his dependants, but to the State of which he/she is a national. The State is entitled to receive assistance in the maintenance of genetic resources. Consequently, these are not property rights and do not accord the farmer the right to decide upon access and utilisation of genetic resources.²⁰⁹

The FAO has sought to reinforce farmers rights through the creation of an international gene fund for the conservation and utilisation of plant genetic resources. Apart from the fact that the farmers cannot benefit directly from this fund, contributions to the gene fund are voluntary.²¹⁰ Further, farmers are not given a forum for negotiating rights over access and utilisation of resources. The concept of farmers rights simply implies a very general obligation of the international community to provide assistance in the conservation of genetic resources. The position of local communities, as far as access to resources is concerned, can hardly be improved by a right which is not a property right.

In the Convention on Biodiversity, farmers rights are implied firstly in the Preamble where it is stated:

'The Contracting Parties recognising the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising

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Farmer's Rights Resolution 5/89 of the 25th Session of the FAO Conference 1989.
Idem.

from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.'

These sentiments expressed in the Preamble are reproduced in Article 8(j) of the Convention. However, the rest of the provisions in Article 8, dealing with in situ conservation concentrate on protected areas. Parties are called upon to establish a system of protected areas to conserve biological diversity; to develop guidelines for the selection establishment and management of protected areas and promote environmentally sound and sustainable development in areas adjacent to protected areas.²¹¹

The element of exclusion of local communities who live around areas which may be selected for special measures comes out very strongly in these provisions. Recognition of knowledge of local communities is however embodied in Article 10(c) and (d) which call on states to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements. This recognition by itself does not provide protection against exclusion of local communities, especially to protected areas. The Convention on Biological Diversity therefore, has failed to offer substantive improvement on Farmers Rights. The issue of traditional knowledge and innovations is examined more exhaustively in the chapter dealing with intellectual property rights provisions in the Convention.

2.4 Conclusion

Evidence of loss of biological diversity and its consequences necessitated global initiatives towards its conservation. However, since communities depend on resources for livelihood and development of new products, issues of conservation must be balanced against the necessity of access.

²¹⁰

V Shiva "Farmer's Rights and the Convention on Biological Diversity" in Sanchers and Juma (eds) op cit note 9 at 113.

Imbalances in systems governing access to resources resulting into changes embodied in the Convention have been highlighted in this chapter. It is noted however, that recognition of the sovereign rights of states has not necessarily resulted in equitable access to biological resources; neither is it a guarantee of equity in property rights. Although questions relating to sustainability, safety and control over access by states appear to be addressed by the Convention, an evaluation of the effectiveness of provisions guaranteeing intellectual property rights to knowledge adding value to resources needs to be undertaken.

CHAPTER THREE

Intellectual Property Rights Relevant To Biological Diversity

3.1 Introduction

The Convention on biological diversity recognises that both access to and transfer of technology amongst parties are essential elements for the attainment of its objectives. In terms of Article 16, technology for--the purposes of the Convention includes technologies that are relevant to the conservation and sustainable use of biodiversity; and technologies that make use of genetic resources and do not cause significant damage to the environment. The Convention further provides that access to and transfer of technology which is subject to patents and other intellectual property rights (IPR) is to be provided on terms which recognise and are consistent with intellectual property rights. Since intellectual property rights are likely to influence technology transfer with the attendant failure to comply with the Convention, parties are called upon to co-operate subject to national legislation and international law.

IPRs have traditionally been used to encourage innovation.²¹² Their potential role in providing an incentive for conservation was recognised with the rise in the biotechnology industry. Developments in biotechnology increased awareness of the value of biological diversity and the importance of genetic resources. Increase in biodiversity prospecting which followed, correspondingly increased the threat to the resource base. At the same time, the value of genetic resources gave rise to pressure on nations to extend IPR systems to cover these resources.²¹³

²¹² J Hughes 'The Philosophy of Intellectual Property' (1988) 77 *Georgetown LJ* 287 - 366.

²¹³ MH Khalil, WV Reid and C Juma 'Property Rights, Biotechnology and Genetic Resources' (1992) Series No 7 *Biodiplomacy International Series* African Centre for Technology Studies, Nairobi at 6.

Changes in IPR regimes are therefore necessitated by the following factors:²¹⁴

- (a) emergence of new biotechnologies;
- (b) threat to the resource base;
- (c) inequities to existing legal regimes;
- (d) issues in technology transfer.

Existing IPR regimes are not supportive of the objectives of the Convention on biological diversity. In most countries IPR are deemed to be inapplicable to animate inventions involving plant and animal germplasm.²¹⁵ Genetic resources are different from other resources covered by IPR since they undergo evolutionary change. Consequently granting patent protection to genetic resources implies extending the property right to cover not only the invention, but also the subsequent natural evolutionary changes that may occur.²¹⁶

Further, the conditions for patent protection namely novelty, industrial applicability, inventive step have resulted in protection of a small portion of genetic resource innovations. The knowledge of farmers, traditional healers and other indigenous communities does not qualify for protection or compensation.

The global nature of environmental issues require equitable access to both biotechnologies and environmentally sound technologies. IPR regimes are expected to complement global efforts.

In this chapter we examine the conditions of IPR protection and their impact on biological diversity. We further explore the possibility of using IPR to

²¹⁴ Idem.

²¹⁵ W Lesser 'An overview of Intellectual Property System' in WE Siebeck (ed) *Strengthening Protection of Intellectual Property in Developing Countries: A survey of Literature* (1990) World Bank Discussion Papers.

²¹⁶ Op cit note 2 at 17.

provide an incentive for conservation of the resource base. In order to do so, there is a need to discuss briefly the two main types of technologies which are relevant to biodiversity and which are protected by IPRs. The legal nature of IPR has been extensively dealt with by other scholars. For example substantive law on patents has been covered by Burrell, Chisum and Steyn²¹⁷. Intellectual property rights in general are discussed in works by Brown and Grant ; Rushing and Carole who focus on international comparisons as well as Siebeck whose focus is on strengthening protection of intellectual property rights in developing countries. Amato and Ling's anthology on intellectual property is an important contribution especially on the development and nature of these rights²¹⁸.

Also relevant are articles by Hughes who embarks on an analysis of the philosophy of intellectual property²¹⁹. The controversial area of intellectual property rights and biotechnology is the focus of articles by Sagoff ; Johnson and Ben-Ami ; OTA; Seide and Smith.²²⁰ Other contributions in this area include works by Dorumus who addresses the crucial issue of intellectual property reform and Peterson who highlights recent trends in developing countries on issue of intellectual property rights.²²¹ Other works worth mentioning in this regard include Juma and Ojwang focusing on policy options for scientific and technological capacity building. The patent debate in African development is analysed by several scholars in this publication.²²²

This chapter will therefore address those aspects which are relevant to the issues raised in this work.

²¹⁷ See notes 228, 232, 235 and 240.

²¹⁸ Notes 213, 247

²¹⁹ Note 110

²²⁰ Notes 218, 281, 286, 302

²²¹ Notes 316, 370

²²² C Juma and J B Ojwang (eds) "Policy Options for Scientific and Technological Capacity-Building. In Innovation and Sovereignty: The Patent Debate in African Development. Nairobi ACTS, (1979)

3.2 Technologies That Are Relevant To Biological Diversity

3.2.1 Environmentally sound technologies

The relationship between societal needs, economic growth and natural resources calls for integrated strategies to address population growth, poverty and conservation of the environment. Environmentally Sound Technologies (ESTs) are those technologies that ensure best the maintenance of natural resources used in production. Such production is assessed within concrete socio-economic environmental and cultural conditions. The time within which production takes place is also crucial. The proper choice application and management of technologies is central to the issue of sustainable development.²²³

ESTs offer the possibility of superior efficiency and productivity and the potential for reduced environmental impact. This can be achieved through reduction of consumption of raw materials or substitution of more for less abundant raw materials, thereby enhancing sustainability.²²⁴ The resources based exploitation and environmental degradation are minimised or reversed through material, energetic and technological inputs which are collectively referred to as ESTs.

Bizri describes three main categories of ESTs.²²⁵

- (a) 'Processes and materials that are developed for neutralising the environmentally harmful effects of a given operation without necessarily introducing fundamental modifications in the original process.'
- (b) 'Process, modifications, including the introduction of novel monitoring and control techniques, and/or changes in the raw or intermediate

²²³ Environmentally Sound Technology Assessment Centre for Science and Technology for Development publications (1991) 9.

²²⁴ H Brooks 'The Concept of Sustainable Development' in (ESTA) op cit note 6 at 27.

²²⁵ OF Bizri 'ESTs: Their Status and Prospects'. Ibid at 159.

materials, which may be incorporated into existing technologies to eliminate or minimise their negative environmental impact.'

- (c) 'Novel and traditional technologies that are inherently sound from the environmental point of view e.g. solar energy technologies.'

Concerns over the utilisation of ESTs are also reflected in international agreements including the 1979 Long Range Transboundary Air Pollution Convention dealing with acid precipitation in Europe; the 1987 Montreal Protocol on Substances that deplete the Ozone Layer; and the 1989 Basel Convention on the Transboundary Movement of Hazardous Wastes and their disposal.

As mentioned earlier, ESTs must be viewed in relation to the socio-economic and cultural conditions in which they operate. They must also be reviewed on a regular basis to ensure that new developments are taken into consideration. Further, the effectiveness of ESTs depends on the level of information and knowledge available.

3.2.2 Biotechnology

Biotechnology has been defined to include²²⁶

'any process in which organisms, tissues, cells, organelles, or isolated enzymes are used to convert biological or other raw materials to products of greater value, as well as the design and use of reactors, fermenters, downstream processing, analytical and control equipment associated with biological manufacturing processes.'

Biotechnology is therefore a set of techniques that uses living organisms or substances from these organisms to make commercially valuable products

and processes.²²⁷ The scientific disciplines involved include genetic engineering, molecular biology, biochemistry, enzymology, neurobiology immunology, receptor biology and fermentation technologies.²²⁸ The potential usefulness of individual organisms, even if they have no economic value themselves is significant.²²⁹

The scope of biotechnology was broadened especially after the development of re-combinant DNA technology in the 1970's.²³⁰ Modern biotechnology has multiple application in different sectors such as industry, health care, agriculture energy and environmental protection. Biotechnology therefore, offers the potential to invent sustainable systems of benefit to future generations.²³¹

In agriculture, developments in biotechnology have improved production both qualitatively and quantitatively. For example, the introduction of genes conferring disease resistance and stress tolerance to crops can improve yields significantly. In health care DNA technology is said to offer endless possibilities for the design and production of new drugs, vaccines and diagnostic tools. Biotechnology has also made possible the production of biomass as an alternative source of energy used for the production of fuels such as ethanol. Energy from biomass is renewable and has reduced negative impacts on the environment since ethanol produces less carbon

²²⁶ R Seide and F Smith 'Intellectual Property Protection and Biotechnology' (1995) *New York Bar Journal* May/June 1995 <http://www.ipcounsel.com/protection.html>.

²²⁷ Idem.

²²⁸ (a) Idem.

(b) See also a discussion in C Juma and E Mneney 'Environmentally-Sound Technology Transfer and Capacity Building in Africa' Paper presented at a seminar on 'The Convention on Climate Change : The New Regime and the Agenda for Research' 29 January 1992, Oslo, Norway.

²²⁹ K Arroyo, P Raven and J Sarukha 'Biodiversity' in JCI Dodge et al (eds) op cit note 1 at 213.
²³⁰ Op cit note 1.

²³¹ UNEP 'Measures to promote and advance the distribution of benefits from biotechnologies in accordance with Article 19' (1998). Conference of the Parties to the Convention on Biological Diversity.

Fourth Meeting Bratislava 4 - 15 May 1998.

Item 16.1 of the Provisional Agenda UNEP/CBD/COP/4/21.

dioxide. In this way, atmospheric pollution brought about by the burning of fossil fuels with the resultant consequences for climate change is reduced.²³²

Modern molecular biology techniques provide new methods for the assessment of biological diversity thus enhancing understanding of biological diversity. Such understanding is a necessary pre-requisite to the development of new and practical approaches to conservation. Also made possible through knowledge of biological diversity is environmental remediation. Microbial diversity offers an invaluable resource for the rehabilitation and remediation of degraded and contaminated ecosystems.

There are however, serious concerns in relation to safety, socio-economic and environmental effects of biotechnology. Calls for the establishment of a binding international biosafety protocol are based on scientific evidence on potential harm arising from genetic engineering.²³³ For example, crops engineered to tolerate harmful pesticides may increase the use of these chemicals resulting in pollution of water supplies and soils, thus indirectly poisoning human beings, animals and plants. Further, fish and crops engineered to tolerate heavy metals may result in an accumulation of these substances in the food chain and harm human health.²³⁴ Socio-economic effects include loss of income sources by developing countries through genetic engineering. Genetic engineering makes it possible for important cash crops grown in developing countries to be grown in colder climates in developed countries. Further, other important income producing products such as vanilla can now be produced in laboratories. Genetic engineering is also used to develop hybrids of all types of plants, including vegetables and fruits. Widespread distribution of these hybrids is likely to force farmers to purchase seeds each year.²³⁵

²³² Idem.

²³³ C Fogel and I Meister 'Biotechnology and the Convention on Biological Diversity' (1994) Biotechnology Information Centre Publication, Geneva, Switzerland at 20.

²³⁴ Idem.

²³⁵ Idem.

Environmental effects result from genetic engineering techniques which make available all genetic material of all species for manipulation. New organisms with unpredictable metabolic processes are created and released into nature; such organisms cannot at a later stage be removed from ecosystems. The series of negative effects triggered by these developments may take decades to become apparent. At that stage some original species could be significantly replaced or driven to extinction.²³⁶

Some of these concerns were addressed at the 4th Conference of the Parties on the Convention on Biological Diversity held in May 1998.

3.3 Intellectual Property Rights

Common Law did not develop property rights in products of the mind; there is no common law concept of ownership of the intellectual content of a product.²³⁷ The intangible nature of rights involved make it possible for others to reproduce, reprint or otherwise use the end product without paying anything to the innovator or author. Protection of intellectual property rights could only be guaranteed through legislation.

There are five main forms of intellectual property rights: copyrights; patents; trade marks; trade secrets; and industrial designs. Patents and trade secrets are discussed in greater detail since they are more relevant in the area of biological diversity as compared to the other forms of intellectual property rights.

Copyrights are a form of protection provided by a national government to authors of original works of art including literary, dramatic, musical, artistic and certain other intellectual works. Copyright generally includes within its scope of protected subject matter works of artistic and literary expression, including books, poems, other writings, musical compositions, drawings,

²³⁶

Idem.

paintings, photographic works, illustrations and maps. The holder of copyright has exclusive right to reproduce work, disseminate to the public, adapt and translate it.²³⁸

A trademark may be defined as any word, name, symbol or device or any combination thereof adopted and used by a manufacturer or merchant to identify his goods and distinguish them from those manufactured or sold by others. The scope of protectable subject matter includes any sign or combination of signs which is capable of distinguishing the goods or services of one undertaking from those of another. Among the signs protected are words, figures, symbols, drawings numbers or letters. A trademark gives the holder exclusive rights to use the mark in connection with those goods or services for which the mark has been registered or on which the mark is used.²³⁹

Industrial designs are used to protect design elements which are not subject to patent protection but have some degree of novelty and/or originality that warrants protection against unauthorised use. The rights arising under this form of intellectual property rights differ based on whether protection is linked to patents, trade marks or copyrights.²⁴⁰

3.3.1 Patents

3.3.2 Background

A patent is a legally binding monopoly awarded by governments to investors to exclude others from manufacturing, selling or using the patented invention

²³⁷ AD Amato and DE Ling (eds) *International Intellectual Property Anthology* (1996) 3-22.
²³⁸ Idem.
²³⁹ Idem.
²⁴⁰ Idem.

without the patentees consent, for a defined period of time.²⁴¹ This legalised monopoly represents a quid pro quo or a trade off between the state and the inventor. In order to encourage inventions and disclosure of such inventions, the inventor is granted a monopoly in exchange for disclosure.²⁴² A patentee is thus expected to provide a full description of the invention for public benefit. The grant of a monopoly to an inventor expresses his right to the knowledge and financial reward to be obtained from exclusive exploitation of the patented invention.²⁴³

A patentee can use the patent to make profit by selling, licensing or mortgaging it. The prospective financial returns act as incentives for creative work. This in turn encourages and maintains the innovation process which is part of all industrial activities. In return for prompt disclosure of new inventions which may assist in the generation of industrial development inventors are granted limited exclusionary rights.²⁴⁴

A patent therefore, describes an invention and the legal terms governing its exploitation. It protects the rights of the inventor and discloses useful information to the public. A patent may be granted by designated public authorities in a country on "any new and useful process, machine, manufacture, composition of matter, improvement and plant as well as to new, original and incremental design for an article of manufacture."²⁴⁵

3.3.3 The legal nature of a patent

(a) Definition of Invention

²⁴¹ PG Kamei Mbote 'Industrial Property Rights and Environmentally Sound Technologies: Issues in Technology Transfer' (1990) African Centre for Technology Studies Policy Outlook Paper.

²⁴² TD Burrell *South African Patent Law and Practice* 2 ed. (1986) at 1. See also *Pope Appliance Corporation v Spanish River Pulp and Paper Mills Ltd* 1929 AC 269 at 281.

²⁴³ Op cit note 13.

²⁴⁴ WIPO and UN definition in UNCTAD 1975 (i).

²⁴⁵ D Chisum *Patents* (1989) at 161.

An invention is a novel idea which permits in practice the solution of a specific problem in the field of technology.²⁴⁶ In most countries a patent may be granted for any new (novel) invention which involves an inventive step and which is capable of being used or applied in trade, industry or agriculture.²⁴⁷

(b) Novelty

The policy behind novelty is that a patent is issued in exchange for the inventor's disclosure to the public of the details of his invention. If the inventor's work is not novel, the inventor is not adding to the public knowledge.

An invention is new if it does not form the state of the art constituted by everything made available anywhere. The state of the art comprises all matter, whether a product or process which has been made available to the public by written or oral description, by use or in any other way, at any time before the filing date.²⁴⁸ Such product or process must however, be capable of being used or applied in trade or industry.²⁴⁹

Absolute novelty places no limitations regarding the locality of prior disclosure its form or period covered.²⁵⁰

Characteristics of novelty:

(i) Priority Date

A person who has filed an application for a patent will enjoy priority over any application for a patent for the same invention filed by other persons from the date on which the application was lodged at the

²⁴⁶ WIPO Publication No. 433 (E).

²⁴⁷ See section 25 of the South African Patents Act No 57 1978.

²⁴⁸ Ibid. Section 25 (6).

²⁴⁹ Op cit note 14 at 14.

²⁵⁰ JR Steyn 'Patents and Inventions' in WA Joubert and TJ Scott (eds) *The Law of South Africa* Vol 20 (1984) at 4.

patent office.²⁵¹ This applies where a claim for priority is not fairly based on any earlier application.

- (ii) The matter in question must have been made available to the public. At the priority date in question, it must be possible for members of the public to gain access to the knowledge contained in the patent. This also implies that no restrictions such as confidentiality act as limitations to the use or dissemination of such knowledge.²⁵² Since a matter becomes part of the state of the art only if it has been made available to the public, any invention which is used secretly does not form the state of the art.
- (iii) Where the disclosure was a written or oral description, then such prior description must set forth or recite all the essential integers of the invention in question. The description should make it possible for members of the public to identify the invention. Further, it should be possible to make the same thing from the description.²⁵³
- (iv) Where the invention in question consists of substance or composition for use in a method of treatment of the human or animal body by surgery or therapy; or for diagnostic practice on the human or animal body, the fact that the substance or composition formed part of the state of the art immediately before the priority date of any claim to the invention will not prevent a patent being granted for the invention if the use of the substance or composition in any such method and does not form part of the state of the art at that date.²⁵⁴

(c) Inventive Step

Section 25(10) of the South African Patents Act No 57 of 1978 provides that an invention is deemed to involve an inventive step if it is not obvious to a person in the art. This means it would not have occurred to any person skilled in that particular field who is asked to find a solution to the particular

²⁵¹ Op cit note 19 section 33 (5).

²⁵² Guidelines for Examination in the European Patent Office, par 21 part C11.

²⁵³ *Gentinico AG v Firestone SA (Pty) Ltd* 1972 1 SA 589.

²⁵⁴ Op cit note 22 at 6.

problem.²⁵⁵ The rationale behind the rule against obviousness is that patents should only be granted for real advances; not for tampering or modification of existing inventions.²⁵⁶ Obviousness is assessed against the same state of the art as novelty.

The courts have been called upon on many occasions to determine whether an invention constituted an inventive step or not. Some of the principles which have developed include the fact that there is no inventive step in cases where ingenuity was required to adapt or apply commonly, known apparatus or processes to a specific purpose.²⁵⁷ Further, a step 'sideways' may be an inventive step; step is not limited to a step 'forward'.²⁵⁸ While a combination of old ideas not involving ingenuity to put them together is not an inventive step, the combination of the individually known elements into a new functional combination is recognised as an inventive step.²⁵⁹

Furthermore, production of a practical result does not by itself render the means of achieving it non-obvious.²⁶⁰ Consequently, disclosure of additional, unknown advantages in a known article or process is not an inventive step.²⁶¹ Lastly, an invention usually involves three stages i.e. definition of the problem to be solved or difficulty to be overcome, the choice of the general principle to be applied and the choice of the particular means to be used.²⁶² Any one of these steps, or a combination may form an inventive step.²⁶³

²⁵⁵ In *Testrup v Crosfiel and Sons Ltd* 1913 AD 1 14 it was held that where the claimed subject matter is such that persons skilled in the art would naturally try, there is no inventive step.

²⁵⁶ Op cit note 18.

²⁵⁷ *Marine Construction and Design Co. v Chanson's Marine Equipment (Pty) Ltd* 1972 2 SA 181 (A) 196 G - H.

²⁵⁸ *BM Group (Pty) Ltd v Beech Group Ltd* 1980 4 SA 536.

²⁵⁹ *Ransby and Covell v Wandberg* 1907 24 SC 91, 98.

²⁶⁰ Op cit note 22 at 8.

See also *Levin v Number Plates and Signs (Pty) Ltd* 1942 CPD 412, 423.

²⁶¹ *TVC and OFC Chamber of Mines v Hukki* 1964 2 SA 518 J 528 - 529 A.

²⁶² Op cit note 22 at 8.

²⁶³ Also relevant is the decision in *Miller v Boxes and Sharks (Pty) Ltd* 1945 AD 561, 584 - 585 Op cit note 32.

(d) Infringement

A patent specification is a unilateral statement by the patentee, in words of his own choosing, addressed to those likely to have a practical interest in the subject matter of his invention. He informs them what he claims to be the essential features of the new product or process for which the patent grants him a monopoly. It is those novel features only he claims to be essential that constitute the so called 'pith and marrow' of the claim.²⁶⁴ It is the duty of the patentee to formulate his claim in such a way as to define clearly the area of monopoly.

In order to determine whether an act of infringement has been committed or not, the patent specification and, in particular, its claim must be construed so as to determine its essential integers. In construing the specification, most courts apply a purposive construction rather than a purely literal one. Purposive construction is described by Lord Diplock in *Catmic Components Ltd and Another v Hill and Smith Ltd* as follows:-²⁶⁵

' The question in each case is : whether persons with practical knowledge and experience of the kind of work in which the invention was intended to be used, would understand that strict compliance with a particular descriptive word or phrase appearing in a claim was intended by the patentee to be an essential requirement of the invention so that any variant would fall outside the monopoly claimed even though it could have no material effect upon the way the invention worked.....'

If therefore, on a purposive construction, the alleged infringement falls entirely within the words of a claim, the patent is infringed. Other guidelines which are useful in determining whether there is an infringement or not

²⁶⁴

A Brown and A Grant *The Law of Intellectual Property in New Zealand* (1989) at 54.

include the fact that there is no infringement of the equity of a patent implying that what is claimed is what the patentee has actually claimed and not what he might have claimed; that what is not claimed specifically is to be regarded as disclaimed; and that in the process of construing a claim, words must be given their reasonable and sensible meaning as words in a document to be read by those conversant in the subject and skilled in the prior art.²⁶⁶

Infringement only exists if the 'pith and marrow' of invention is taken by either making, using, exercising or disposing of such invention.²⁶⁷ An analysis of the 'pith and marrow' doctrine was well articulated in the case of *Frank and Hirsch (Pty) Ltd v Rodi and Weinberger Aktiengesellschaft*.²⁶⁸

'... assume that A, B and C are essential features of an invention as claimed and that D, though mentioned in the claim, is in fact not an essential feature. If the alleged infringer omits A or B or C in his apparatus (whether or not he substitutes something else for what is omitted) he does not infringe the patentee. To infringe he must take the whole of the essentials of the invention. So far as D is concerned it does not matter what he does. If he has taken A and B and C out entirely or keeps it in or substitutes a mechanical equivalent for it.'

Consequently, if the 'pith and marrow' of an invention is taken, any addition or omission cannot be accepted as an excuse, even if the addition or omission turns out to be valuable.

Remedies for infringement include damages and injunctions. An injunction is usually the primary remedy against a defendant who is continuing to infringe

²⁶⁵ [1982] RPC 183 (HL.) at 242.

²⁶⁶ *Monsanto Co. v Stauffer Chemical Co.* (No 1) 1984 1 NZIPR.

²⁶⁷ For a detailed discussion of acts of infringement, see TD Burrell op cit note 14 at 59.

²⁶⁸ 1960 3 SA 747 (A) 756 C.

a patent. If the plaintiff would have granted a license, the measure of damages for infringement will be equal to royalties payable under the license which would have been granted. If no licence would have been granted the measure of damages may be the amount which the plaintiff would have made if it had secured the sales which were made by the defendant. Delivery and destruction is another remedy which is available to the patentee in cases where the defendant retains infringing items.²⁶⁹

3.4 Trade Secrets

Trade secrets consist of information of any sort that is valuable to its owner, is not generally known and which has been kept secret by the owner. Trade secrets derive economic value from not being generally known and not being readily ascertainable.²⁷⁰ It is also information which is the subject of reasonable efforts to maintain its secrecy.²⁷¹

The type of information falling under this category of IPR usually includes specific commercial information such as a formula, pattern , programme or process that derives actual or potential economic value from not being disclosed.²⁷² Inventions and processes that are not patentable due to lack of novelty can be protected under trade secret law since commercial value is the main criterion for protection as a trade secret.

Six main factors are taken into consideration in determining whether information is a trade secret.²⁷³

- (a) The extent to which information is known outside the claimant's business.

²⁶⁹ Op cit note 36.

²⁷⁰ Op cit note 18.

²⁷¹ US Uniform Trade Secrets Act 1979.

²⁷² A Achanta and P Ghosh, 'Technology Transfer and Environment' in Sanches and Juma (eds) op cit note 9 at 162.

²⁷³ Op cit note 18.

- (b) The extent to which the information is known by the claimant's employees
- (c) Measures taken by the claimant to guard the secrecy of the information.
- (d) The value of the information to the claimant and claimant's competitors.
- (e) The amount of money expended by the claimant in developing information.
- (f) The ease with which such information could be acquired by others.

Trade secret owners have the right to keep others from using or misappropriating the trade secret. Misappropriation may take the form of improper disclosure, theft, bribery, industrial espionage as well as other wrongful acts falling outside trade secret law.²⁷⁴ Relief against improper disclosure includes damages and injunctions. There is however no relief against discovery of protected information through independent research or reverse engineering.

Trade secrets law is, in certain circumstances, the preferred method of protection since its duration is indefinite, limited only by independent discovery or improper disclosure. Further, specifications required by patent applications may be sufficient to enable rivals to produce similar goods, processes or methods.

3.5 Plant Breeder's Rights

3.5.1 Background

Plant breeders use classical breeding methods in crop improvement and production of plant varieties with greater nutritional value, higher yields, less resistance to diseases and pests which are easily adaptable to particular

²⁷⁴ Op cit note 36.

soils and climatic conditions.²⁷⁵ In spite of the fact that these breeders expended time, effort and resources in these methods, they were denied protection under IPR regimes for years.

The main argument against extending patent protection to plant breeders was that they do not satisfy the conditions of patentability especially non-obviousness which is one of the characteristics of novelty.²⁷⁶ It was argued that since the starting point of breeders' inventive activities is the use of genetic materials put in place by nature, there was no invention or innovation as defined in patent legislations. Further, most of the methods used by plant breeders did not constitute an inventive step since breeders had been applying them for generations. There was consequently, no addition to the knowledge which already existed and was known to the public.

Plant breeders on the other hand argued that their techniques for creating new varieties were innovations which deserved protection on the following grounds:²⁷⁷

- (a) Their extensive knowledge of biological organisms coupled with skilled understanding of plant and animal genetic processes permitted problem resolutions beyond the ordinary experimentation with nature. Since innovation entails the application of human ingenuity their creative efforts in this area satisfy the condition of patentability.
- (b) Although their starting point were genetic materials endowed by nature, the products that resulted from the application of developed processes had sufficient novelty in them to qualify being classified as innovations. In any case, inanimate innovations which qualify for patent protection start off with raw materials possessing natural physical and chemical properties. The distinction between the two was seen as superficial.

²⁷⁵ Op cit note 2.

²⁷⁶ Op cit note 36.

²⁷⁷ Op cit note 44.

Changes in this area were brought about in response to economic developments which saw the increase in agro-industrial firms which removed some of the boundaries which separated the two sectors of economic activity.²⁷⁸ These firms developed an interest in plant genetic engineering, they acquired seed firms and increased participation in industrial processing using biotechnological techniques. Due to promising financial prospects in this area, there was increased involvement of private companies. Pressure for the recognition of plant breeders' rights was no longer coming from farmers and public institutions; private companies joined this group.²⁷⁹ Their efforts resulted into the International Convention for the Protection of New Varieties of Plants (UPOV) signed in 1961. UPOV is an intergovernmental organisation established by this Convention; its headquarters are in Geneva.

3.5.2. Conditions for plant breeders rights

In order to obtain protection, the applicant must establish the following:²⁸⁰

- (a) the submitted plant variety is stable in that it reproduces true to form over repeated propagations;
- (b) the plant variety is homogenous; important characteristics are uniform across a single planting;
- (c) the plant variety is distinctive, it must be clearly distinguishable from existing varieties; and
- (d) the plant variety is stable and can be reproduced.

Protection is usually granted for a minimum of 15 years. A farmer's exemption allows farmers the right to retain seeds harvested from a plant variety to be used for the next planting season. A research exemption permits breeders to use a protected variety in subsequent breeding and to

²⁷⁸ UNCTAD 1991. 'Trade and Development Aspects and Implication of New and Emerging Technologies: The case of Biotechnologies' Geneva 23-28.

²⁷⁹ Idem.

²⁸⁰ Op cit note 36 at 162.

apply for protection of the outcome as long as repeated use of the protected variety is not required.²⁸¹

Plant Breeders Rights are different from patents since they were meant to take into consideration the nature of genetic resources. In doing so, however, the protection granted to a plant breeder is reduced. Farmer's exemption does not provide for any payments of royalties or licensing fees which are provided for under patent protection. The lack of legally binding link between the user and the original invention denies the breeder the benefits which could emanate from a commercial relationship. Patented inventions benefit since they are subject to grant - back clauses. These are discussed in detail in chapter four of this thesis.

It is submitted that as long as the plant variety is a result of human ingenuity, and can be distinguished from existing varieties which could qualify it as an inventive step, such variety possesses sufficient novelty and is therefore an innovation. There is therefore, room for applying some aspects of patent protection to this category of rights. This will not only enhance economic incentives to breeders; it may also be used as an incentive for conservation. One must guard, however, against protection which is contrary to the objectives of the Convention on Biodiversity.

3.2.6 Intellectual Property Rights And Biotechnology

The main difference between biotechnology and other technologies is that biotechnology is a knowledge intensive sector which requires high degrees of training in specific fields. Biotechnology is also easy to market due to the possibility of applying the techniques in a wide range of economic sectors. The generic nature of biotechnology makes it possible to develop products that are unique to local markets.²⁸²

²⁸¹

Idem.

²⁸²

C Juma and E Mneney 'Access to and Transfer of Biotechnology : Blind Alleys and Windows of Opportunity' in Sanchers and Juma (eds) op cit note 9 at 180-181.

In the context of the Convention on Biological Diversity, biotechnology is defined as

*'Any technological application that uses biological systems, living organisms or derivatives thereof, or make or modify products or processes for specific use.'*²⁸³

Developments in biotechnology brought into the market new products and processes which required intellectual property protection.

The general requirements for patentable inventions, i.e. novelty, utility, non-obviousness and disclosure, present some unique issues for biotechnology inventions. Developments of patent protection for biotechnology in the United States are going to be examined in view of the significant developments in biotechnology industry which have been made after years in that country.. Issues which have been dealt with by American courts are likely to arise in other IPR jurisdictions elsewhere.

3.6.1 Patentable subject matter

United States legislation on patents states that one can only obtain a patent for statutory subject matter which may be a process, machine, manufacture or composition of matter. Granting of patents based on discoveries of things which exist in nature has not been encouraged.²⁸⁴ Many reservations concerning the patentability of biotechnology result from uncertainty about the extent of contribution of producers or authors to the product and to knowledge. IPR claims in organisms were allowed for use of ideas that are not found in nature to design new products. The scope of IPR was therefore extended only to what someone designs, what he/she devises and constructs

²⁸³

See the definition in Article 2 of the Convention.

²⁸⁴

Op cit note 69.

from simpler materials, resulting from a plan or principle which that person invents.²⁸⁵

In *Diamond v Chakrabarty*, the US Supreme Court held that living organisms can constitute patentable subject matter.²⁸⁶ The discovery in question in this case was a bacterium which Chakrabarty had hybridised by inserting plasmids from other bacteria. The Court decided that an hybridised micro-organism could be patented because it was not found in nature but was the result of human ingenuity and research.

Following the Supreme Court's holding in this case broad patent protection was extended to plants and animals. Examples of these patents include the decision in *ex parte Hibberd* where it was held that multicellular animals also constituted patentable subject matter.²⁸⁷ In *ex parte Allen*, non-naturally occurring oyster induced into polyploidy so that it would be available year long was held to be patentable.²⁸⁸ One of the broadest patents was granted to a company known as Agracetus of Middletown Wisconsin in 1992.²⁸⁹ The company received a patent covering

*'all cotton seeds and plants which contain recombinant gene construction (are genetically engineered).'*²⁹⁰

By using a well known process to introduce foreign genes into a cotton plant, the company gained the right to exclude other companies from introducing any other genes into cotton without its consent. In other words, all transgenic cotton products have to be commercially licenced by the company.²⁹¹ This patent was challenged in 1996.

²⁸⁵ M Sagoff 'Animals as Inventions : Biotechnology and Intellectual Property Rights' (1996) Institute for Philosophy and Public Policy, Vol. 16 No. 1 (Winter 1996) <http://epn.org/ipp/sagoffl.html>.

²⁸⁶ 447 U.S. 303 (1990).

²⁸⁷ 227 U.S. P.Q. 443 (Bd. Pat. App. 1985).

²⁸⁸ 2 U.S. P.Q. 2d. 1425 (Bd. Pat. App. 1985).

²⁸⁹ Op cit note 57.

²⁹⁰ As quoted in Sagoff, Idem.

3.6.2 Novelty

In biotechnology, absolute novelty is not required. What is required is that the claimed invention should not be in the hands of the public as of the filing date of the application.²⁹² Information regarding the invention is said not to be in the hands of the public if it has not been published, publicly sold or used or previously invented; such information should also not have been suppressed or concealed.²⁹³

One of the special circumstances in biotechnology is the fact that the recombinant DNA method is the only practical way of isolating protein in small quantities from vast amounts of harvested tissue. Inventors who discover ways of making new products using this method may be denied patent protection for lack of novelty since the purified protein is known.

3.6.3 Obviousness

Obviousness will be found when the differences between prior art and the claimed invention would have been obvious at the time the invention was made. Obviousness requires the following criteria:²⁹⁴

- (i) the scope and content of prior art;
- (ii) the difference between prior art and the claims in issue;
- (iii) the level of ordinary skill in the pertinent art; and
- (iv) secondary considerations and their effect.

One issue in biotechnology is whether prior art disclosing general methods of genetic cloning may be cited against claims to DNA sequences for specific proteins. This issue is still subject to much debate in U.S. courts.

²⁹¹ Idem.

²⁹² Op cit note 56.

²⁹³ Idem.

²⁹⁴ Idem.

3.6.4 Utility

United States' patent legislation also requires that an invention must be useful in order to be patentable. Any use is sufficient as long as it is not for mere scientific curiosity. There must be some provision in the application that provides a definite utility in currently available form. The usefulness of the invention must be practical and apparent to others knowledgeable in the field; commercial use is not required.²⁹⁵ The U.S. Patents Office placed high standards of utility on biotechnology and exercised a policy of rejecting claims to pioneering biotechnology inventions; especially those aimed at curing diseases for which no cure has been found e.g. AIDS and cancer. Utilities under this category of inventions were considered incredible or unbelievable. Human clinical data to show proof of efficacy of a claimed invention was required before a patent was issued.²⁹⁶ This policy generated criticisms and protests from inventors who argued that definitive clinical trials were usually not conducted until much later in the process of developing a biotechnology invention. The patents office responded by formulating new guidelines on utility for biotechnology as follows:²⁹⁷

- (a) an examiner should accept any reasonable use that can be viewed as providing a public benefit;
- (b) evidence of a pharmacological activity of a compound which has reasonable correlation to an asserted therapeutic use is sufficient; and
- (c) data from human clinical trials or evidence of safety for treatment in humans is not required.

These guidelines were applied in *re Brana*²⁹⁸ where the Federal Circuit Court held that human testing of pharmacologically active compounds was not

²⁹⁵

Idem.

²⁹⁶

Idem.

²⁹⁷

60 Fed. Reg. 97 (1995).

²⁹⁸

No 93 - 1393, slip op. (Fed. Cir. March 30, 1995).

required to establish utility of the compounds for the purposes of patentability.

3.6.5 Adequate disclosure²⁹⁹

In order for biotechnology invention to be adequately disclosed, a patent specification must meet three requirements, namely:

- (a) written description;
- (b) enablement; and
- (c) best mode.

(a) Written Description

The inventor is expected to describe with sufficient details the claimed features of an invention. In *Fiers v Sugana*³⁰⁰ the Court of Appeals for the Federal Circuit held that an adequate written description of a DNA molecule requires more than bare reference to the DNA coupled with a statement that it can be obtained by reverse transcription. It was stated in court;

*'..... an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it;.....'*³⁰¹

In cases where a claimed biotechnology invention cannot be adequately described in words, the written description requirement may be met by depositing a cell line in an internationally recognised public depository.

(b) Enablement

Enablement provisions require that the specification provide sufficient information to permit one skilled in the art to make and use the invention

²⁹⁹

Op cit note 56.

³⁰⁰

984 F. 2d 1164 (Fed. Cir. 1993).

³⁰¹

Ibid at 1170 - 71.

without undue experimentation.³⁰² In *ex parte Forman*,³⁰³ a case involving the patentability of recombinant oral vaccines against diseases such as dysentery, the Board formulated factors to be taken into consideration in determining enablement issues, particularly for biotechnology inventions. In its decision the Board emphasised the fact that there is no explicit quantitative limit on experimentation. The Board noted however, that permissible experimentation must be evaluated in the facts of each case:

*'The factors to be considered have been summarised as the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the predictability or unpredictability of the art and the breadth of the claims.'*³⁰⁴

Enablement is thus analysed by considering whether or not the disclosure in the specification is extensive enough to support the breadth of the claims.³⁰⁵ Biotechnology is considered as being highly unpredictable since the activity of life forms such as viruses is difficult to predict.³⁰⁶ The Courts have consequently been forced to consider different factors including whether the methods described would work predictably in various hosts; or whether the products claimed generically were likely to have the described biological activity.³⁰⁷

In *re Wands* the Court considered a claim to a method of detecting surface antigen using high-affinity monoclonal antibodies which were well known. The extensive screening work involved was expected to lead to obtaining a

³⁰² Op cit note 56.

³⁰³ 230 U.S. P.Q. 546 (Bd. Pat. App. 1986).

³⁰⁴ Ibid at 547.

³⁰⁵ Op cit note 56.

³⁰⁶ Sean Johnson and Leera Ben-Ami 'Unpredictability factor Narrows Biotech Patents' (1997) *National Law Journal* June 1997, at 202.

³⁰⁷ Idem.

useful antibody.³⁰⁸ The factors considered to determine whether the patent is enabled are as follows:-³⁰⁹

- (i) the quantity of experimentation required;
- (ii) the amount of direction or guidance presented;
- (iii) the presence or absence of working examples;
- (iv) the nature of the invention;
- (v) the state of the prior art;
- (vi) the relative skill of those in the art;
- (vii) the predictability or unpredictability of the art; and
- (viii) the breadth of claims.

Although the court found that the claimed invention was enabled, *Wands* is considered unusual since it is one of the few biotechnology cases in which a broad generic claim was upheld.³¹⁰

In the 1990s, the Federal Circuit found various biotechnology inventions nonenabled due to unpredictability. In *re Vaeck*³¹¹ the claim involved a hybrid gene made in part from a gene that codes for the toxic protein in combination with DNA fragment called a promoter, which works in cyano bacteria or blue-green algae. In reviewing a patent office decision of nonenablement, the Federal Circuit agreed with the decision of the patent office. Their decision was based on the relatively incomplete understanding of the biology of cyano bacteria.³¹²

In *Amgen Inc. v Chugai Pharmaceutical Co.*³¹³ unpredictability of protein function in the body was addressed by the Federal Circuit. *Amgen's* patent claim was characterised by the court as covering³¹⁴

³⁰⁸ 858 F. 2d 731, 737 (Fed. Cir. 1988).

³⁰⁹ *Idem.*

³¹⁰ *Op cit* note 69.

³¹¹ 947 F. 2d 488, 495 (Fed. Cir. 1991).

³¹² *Ibid.* at 495.

³¹³ 927 F. 2d 1200, 1212 (Fed. Cir. 1991).

'..... all possible DNA sequences that will enable any polypeptide having an amino acid sequence sufficiently duplicative of Erythropoietin (EPO) (a cell growth factor) to possess the property of increasing production of red blood cells.'

The Court found nonenablement and held,³¹⁵

'considering the structural complexity of the EPO gene, the manifold possibilities for change in its structure, with attendant uncertainty as to what utility will be possessed by these analogs, we consider that more is needed.'

Finally in *Genetic Inc. v Novo Nordisk A/S*³¹⁶ unpredictability was one of the factors taken into consideration in the court's finding of nonenablement. It was stated in the decision that the claimed invention was the application of an unpredictable technology in the stages of development. The claim involved the use of cleavable fusion expression to make a human growth hormone.³¹⁷

(c) Best Mode

The best mode requirement states that an applicant cannot obtain both patent and trade secret protection by intentionally concealing the best way to practice the invention, if it is known to inventors at the time of filing the application.³¹⁸

³¹⁴ Ibid at 1214 as quoted in S Johnson and L Ben-Ami op cit note 69.

³¹⁵ Idem.

³¹⁶ 108 F. 3d 1361, 1365 (Fed. Cir. 1997).

³¹⁷ Ibid at 1367-68.

³¹⁸ Op cit note 56.

3.7 Conclusion

Although IPR are designed to stimulate innovation, their potential role in providing an incentive for conservation of biological diversity is now recognised. One way of utilising this potential is through the extension of protection to genetic resources, and to the contribution of local communities. IPR can provide an incentive for conservation only if benefits from some species and protection of indigenous knowledge are guaranteed. Despite the limitations which have been highlighted in this chapter, IPR can admittedly with some modifications be used to support the objectives of conservation, development and equity. What needs to be done is the creation of the correct balance between sustainable use on the one hand and benefits or rewards on the other. Sustainable use implies access to environmentally sound technologies which are protected by IPR. It also implies a closer look at developments in biotechnology.

Formulation of an intellectual property rights regime that stimulates communities to explore, discover, conserve and sustainably use biological resources within its reach is the real challenge. It is submitted, however, that if it is possible to adjust intellectual property rights systems in order to accommodate developments in biotechnology, similar adjustments can be made in the case of indigenous knowledge.

CHAPTER FOUR

The International Intellectual Property Regime

4.1 Introduction

While territoriality is an important principle of intellectual property rights, the imperatives of international trade led to the establishment of international arrangements to streamline the various forms of national patent laws.³¹⁹ The situation is aptly described as follows:-³²⁰

'The globalization of Commerce and capital has redefined the concept and practice of trade to include international transactions in services as well as the global exchange of knowledge and technology. Many of those new forms of global economic exchange have internationalised the scope and impact of domestic policy. The international flow of goods, services, technology and capital are increasingly entwined with fundamental domestic regulatory policies in areas such as IPR. It is consequently imperative to understand the relationship between technological change, international competition and domestic regulatory policy. For investors, obtaining adequate IPR protection becomes increasingly important. More importantly, the co-ordination of

³¹⁹ PG Kameri Mbote 'Patents and development'. Unpublished paper presented at an International Conference on Law and Development (1992) Nakuru, Kenya.

³²⁰ PN Dorumus 'The externalization of Domestic Regulation. Intellectual Property Reform in a Global Era' (1996) Vol. 3 No.2 *Indiana Journal of Global Legal Studies* <http://www.law.indiana.edu/glsj/vol3/no2/doremus.html>.

domestic and foreign IPR rules is necessary, yet difficult to achieve, through traditional methods.'

Industrialised countries have maintained that differences in IPR regimes should be viewed as potential barriers to free trade and should be dealt with in an international trade forum.³²¹ It has been suggested that free trade is undermined by inadequate protection of intellectual property rights since such protection leads to trade distortions. If investors cannot be assured of recovering the costs of their investment the result would be lower production, fewer trading opportunities and higher costs to the consumer.³²² Further, lack of adequate protection creates a group of 'free riders' who are able to thrive on the reputations of other companies which have been granted IPR.³²³ This serves as a world-wide disincentive to inventors.

On the other hand, intellectual property protection provides incentives for the technological advances necessary for economic growth and development. Inventors usually incur significant costs in research and development, administration and actual production of innovative technology. Protection guarantees inventors the exclusive right to an invention's economic rewards.³²⁴ Also, without adequate protection, consumers may be exposed to low quality, unsafe pirate goods which may in certain circumstances entail risks to lives.

Developing countries have different perspectives. Many of these countries have established their technological expertise through the adaptation of existing technologies to meet local needs and new markets, therefore strict patent protection can undermine this ability. Further, it has been contended

³²¹ MH Khalil, WV Reid and C Juma 'Property Rights, Biotechnology and Genetic Resources' (1992) Series No 7 Biodiplomacy International Series, African Centre for Technology Studies, Nairobi.

³²² MA Leafer 'Protecting United States Intellectual Property Abroad : Towards a new Multilateralism' (1991) 76 *Iowa LR* 273, 281

³²³ JH Jackson et al *International Economic Relations* 3rd ed. (1995) 858.

³²⁴ K Peterson 'Recent Intellectual Property Trends in Developing Countries' (1992) 33 *Harvard International Law Journal* 277, 278.



that uniform patent standards paid little or no attention to the unique, ethical and economic attributes of genetic resources.³²⁵ These countries supported the approach of allowing countries to adopt IPR protection consistent with their development needs.³²⁶

Despite these reservations, other forces including the development of new products such as biotechnology created the need for harmonisation of IPR regimes. This chapter examines international agreements and arrangements formulated in order to achieve this goal. The three main categories i.e. multilateral, regional and bilateral agreements are going to be analysed. Issues on whether such international regimes have considered some of the concerns on genetic resources and indigenous knowledge will be explored. This is expected to build up the necessary background for chapter five of this thesis which will address the crucial issue of implementation of IPR provisions embodied in an environmental Convention.

4.2 Multilateral IPR Agreements

4.2.1 Background

International IPR agreements fall into three main categories- global, regional and bilateral. These agreements provide different standards of protection, and confer upon the parties different rights and obligations. The most important agreements on IPR are the Paris Convention and the Agreement on Trade Related Intellectual Property Rights (TRIPS). Others include the Council of Europe Convention on the Unification of Certain Points of Substantive Law on Patents for Invention of 1963 (the Strasbourg Convention); the Patent co-operation Treaty of 1970; the European Patent Convention of 1973 and the Community Patent Convention of 1975.³²⁷

³²⁵ Office of Technology Assessment 'New Developments in Biotechnology; Patenting life' (1989) Washington DC Office of Technology Assessment.

³²⁶ Op cit note 164.

³²⁷ A Domanski 'Multilateral Patent Conventions and their Role in South African Law' (1993) 110 *South African Law Journal* at 309.

4.2.2 The International Convention for the Protection of Industrial Property of 1883 (the Paris Convention)

4.2.3 General

Following the industrial revolution it was necessary to devise minimum rules applicable to patents. Protection of an inventor's rights was dependant on reciprocity between the home country of the inventor and the foreign country in which he desired protection.³²⁸ This led to the establishment of an international patent regime which is the Paris Convention for the Protection of Industrial Property signed in 1883. The Convention has been revised various times. At the 1878 Conference on preparation of the Convention it was agreed that metropolitan countries should extend their patent laws and systems to the colonies. Some ex-colonies have maintained these laws after independence while others elected to ratify the Paris Convention. Most Developing Countries joined the Paris Union years after its rules had been formulated; their role in shaping these rules is therefore insignificant.³²⁹

The Paris Convention makes provision for the protection of industrial property rights. Such rights include patents, trade names, industrial designs, trade marks, utility models and the repression of unfair competition.³³⁰ The Convention in theory presents enforceable provisions to protect IPR. In practice however, it has been described as a set of guiding principles which member countries may or may not adopt.³³¹ One weakness of the Convention is that it is not self-executing; consequently each country must implement the treaty through its own legislation. Enforcement has not been carried out in a consistent manner. Over the last 70 years, member countries

³²⁸ See note 162.

³²⁹ Idem

³³⁰ The Paris Convention Article 1 (2).

³³¹ MM Squyres 'New Treaties adds Protection for well-known Marks' (1997) May / June Intellectual Property World Wide 1-3.

have established different standards of protection with different enforcement rules and regulations.³³²

4.2.4 The main provisions of the Paris Convention

(a) National Treatment

Article 2 of the Convention places an obligation on members of the Union to apply the same treatment to nationals of other member countries as they give to their own nationals. This implies that they should be accorded the same rights, privileges and remedies.

Article 2 (1)

'Nationals of any country of the Union shall, as regards the protection of industrial property, enjoy in all the other countries of the Union the advantages that their respective laws now grant, or may hereafter grant, to nationals; all without prejudice to the rights especially provided for by this Convention. Consequently, they shall have the same protection as the latter, and the same legal remedy against any infringement of their rights, provided that the conditions and formalities imposed upon nationals are complied with.'

This principle has been criticised as being incompatible with the interests of developing countries especially since most patents granted by these countries are foreign owned. The principle exposes the small number of national patent holders in developing countries to competition from foreigners thus affording them no protection.³³³ It has been argued that equality of treatment would only operate fairly and to the mutual advantage of all parties if all countries were at the same level of technical and economic development. Since this is not the case, developed countries are given more

³³²

Idem

leverage as compared to developing countries. Further, the majority of patents in developing countries are owned by individual inventors while foreign owned patents for the most part involve trans-national corporations. These two groups are obviously different; protection and incentives for inventions raise different issues demanding different approaches.³³⁴ Distinctions between these two groups exist in investment activities, capital flows, currency regulations and technology contracts. The call for the introduction of distinct regulations applicable to IPR for foreigners and nationals, must however be weighed against the possibility of retaliatory measures by the developed countries blocking trade and the flow of technology.³³⁵

(b) The right of priority

Article 4 of the Convention entitles any inventor who duly filed an application for a patent in a Convention country to have a priority of 12 months within which to file a similar application in other Convention countries. The rationale for this is that it is usually not possible for an inventor to file applications in all countries at the same time due to practical reasons including conformity with different formalities prescribed by these countries.³³⁶ All later applications will be deemed to have been filed on the date of the first application.³³⁷ These priority rights are maintained under conditions of regular national filing which is defined as:

*'..... any filing that is adequate to establish the date on which the application was filed in the country concerned whatever may be the outcome of the application.'*³³⁸

³³³ Op cit note 9.

³³⁴ Idem.

³³⁵ Idem.

³³⁶ Op cit note 170.

³³⁷ Op cit note 12, Article 4 C (4).

³³⁸ Ibid. Article 4 A (3).

Priority rights protect patent applicants from losing novelty of inventions in cases of non-concurrent applications. Further protection is accorded by Article 4B which states that the novelty of an invention will not be disturbed by reason of any act done in the course of the priority periods. Such acts are specified as follows:-

Article 4 B

'Consequently, any subsequent filing in any other countries of the Union before the expiration of the periods referred to above shall not be invalidated by reason of any acts accomplished in the interval, in particular, another filing, the publication or exploitation of the invention, the putting on sale of copies of design, or the use of the mark, and such acts cannot give rise to any third-party right or any right of personal possession. Rights acquired by third parties before the date of the first application that serves as the basis for the right of priority are reserved in accordance with the domestic legislation of each country of the Union.'

In practice priority rights as embodied in the Paris Convention can only be effectively exercised by the applicants who have the necessary capital to set the machinery for claiming these rights in motion in different countries. Transnational corporations are therefore more likely to enforce these rights as compared to individual inventors.

(c) Compulsory licences

A patent holder has the power and freedom to produce his invention in any country in which he holds patents for his invention. Some of the patents granted therefore, are never directly worked within the country granting the patent. In the interests of maximum profits, the patentee would manufacture his invention in a country with lower production costs and sell them in the country offering the best prices.³³⁹

³³⁹

Op cit note 170 at 312.

On the other hand, most countries, in granting patents to foreigners are eager to see the invention being used in productive activities taking place within their own national boundaries. In order to address this problem, compulsory licences are usually introduced into IPR systems. A compulsory licence is a licence which is issued to a party other than the patentee. The licence enables the licensee to produce patented goods without seeking permission of the owner. Such licensee in effect takes away the temporary monopoly granted to the patentee.

Article 5 (2) gives members of the Union the right to take legislative measures providing for the grant of compulsory licences to prevent the abuses which might result from the exercise of the exclusive rights granted by the patent, for example failure to work.

Article 5 A (4) specifies that compulsory licences may not be applied for on the ground of failure to work or insufficient working before the expiration of a period of four years from the date of filing of the patent or three years from the grant of the patent, whichever period expires first. This article further stipulates that compulsory licences shall be refused if the patentee justifies his inaction by legitimate reason.

Article 5 A (3) makes forfeiture due to non-working a subsidiary remedial measure exercisable only after one or more compulsory licences have been granted and have been proved insufficient to prevent non-working. The minimum time required for forfeiture is two years after the grant of the first compulsory licence and after adequate proof in the courts or otherwise of the insufficiency of such a licence to correct the abuses involved.

Article 5 A (2) leaves countries free to decide whether or not to apply provisions on compulsory licences. However, minimum time requirement must be adhered to.

Article 5 A (1) provides that the importation of the patented products by a patentee in any of the countries of the Union shall not on itself entail forfeiture of the patent. This creates a situation whereby the patentee has the monopoly to import patented products and therefore rules out competition.

(d) Outstanding issues

The following issues have been debated for years; the Paris Convention does not effectively provide for them.

- (i) The promotion of actual working of inventions in each country.
- (ii) Encouragement of inventive activity in developing countries.
- (iii) Increasing of the potential of developing countries in judging the real value of inventions for which protection is sought.
- (iv) Proper balancing of the needs for economic and social development of countries on the one hand and the rights of the patentee on the other.
- (v) Environmental concerns.

Environmentally sound technologies and biotechnology fall within categories of technologies which are covered by this Convention. Genetic resources are however, not included.

4.2.5 The agreement on Trade Related Aspects of Intellectual Property Rights (Trips)

4.2.6 Background

The General Agreement on Tariffs and Trade (GATT) was the first global trade liberalisation treaty. A machinery was created leaning towards lower tariffs and trade liberalisation as opposed to the previous policies of high tariffs.³⁴⁰ The liberalisation which was encouraged by GATT has for years, stimulated growth in international trade and economic development. The

³⁴⁰

CR Fletcher 'Greening World Trade : Reconciling GATT and Multilateral Environmental Agreements within the Existing World Trade Regime' (1996) 5 *Journal of Transnational Law and Policy* <http://www.law.fsu.edu/transnat/5-2/fletcher.html>.

most recently negotiated agreement, the Uruguay Round extended free trade principles to new economic sectors including IPR. The Agreement of Trade-Related Aspects of Intellectual Property Rights (TRIPS) was adopted in 1995 mainly as a response to the enforcement problems of the Paris Convention and the growing global problems of IP piracy.³⁴¹

TRIPS is one of the Multilateral Trade Agreements referred to in Annexes to the Marrakesh Agreement Establishing the WTO. The multilateral trade agreements on trade in goods in Annex 1A, include GATT 1994. Annex 1B refers to the agreement on services, GATS. The TRIPS Agreement is one of the agreements addressing new trade issues appearing in Annex C. Every new member of the WTO must comply with the provisions of the TRIPS.

TRIPS expects to expand and harmonise international IPR rules through the GATT/WTO. The advantage which TRIPS has over the Paris Convention is that it is self executing. It is one of the few international agreement which provides enforcement provisions and procedures which owners of IPR may use irrespective of national legislative procedures.³⁴²

The preamble of TRIPS highlights the desire of members to reduce distortions and impediments to international trade, taking into account the need to promote effective and adequate protection of IPR, and to ensure that measures and procedures to enforce IPR do not themselves become barriers to legitimate trade. The agreement sets out to formulate new rules for the following:

- (i) adequate standards and principles concerning the availability, scope and use of IPR;
- (ii) appropriate means for enforcement of IPR;
- (iii) multilateral prevention and settlement of dispute;
- (iv) transitional arrangements aiming at the fullest participation in the results of negotiations.

³⁴¹ Op cit note 174.

The TRIPS Agreement incorporates some principles of international law. For example, international co operation and differentiated responsibility are both important especially in enforcement. The same rules are applied differently through transitional arrangements which make it possible for developing countries to delay implementation of its provisions. In recognition of the fact that IPR are private rights which cannot be enforced without taking into consideration the underlying public policy objectives, the objectives of the Agreement are stated in Article 7 as follows:-

'The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.'

Negotiations on Trade-Related Aspects of Intellectual Property Rights including Trade in Counterfeit goods were launched with a section of the Ministerial Declaration of Punta del Este on 20 September 1986.³⁴³ Much of the debate in the first two years related to the identification of what were the trade problems arising in the field of intellectual property rights that should be the subject of negotiation in the Negotiating Group. Agreement on the agenda for negotiations was reached in reviews which took place between 1988 and April 1989.³⁴⁴ The text that was adopted included all the main issues raised by representatives of states; including substantive standards,

³⁴² Idem.

³⁴³ Op cit note (mtholyoke)

The declaration stated 'In order to reduce the distortions and impediments to international trade, and taking into account the need to promote the effective and adequate protection of intellectual property rights do not themselves become barriers to legitimate trade, the negotiations shall aim to clarify GATT provisions and elaborate as appropriate new rules and disciplines. Negotiations shall aim to develop a multilateral framework of principles, rules and disciplines dealing with international trade in counterfeit goods, taking into account work already undertaken in the GATT.'

enforcement, dispute settlement, transitional arrangements and underlying public policy.

Serious negotiations began in 1990 with five legal texts tabled by the EC, the United States, 12 Developing countries, Switzerland and Japan.³⁴⁵ The texts were later combined into a single composite draft text which became the subject of detailed consultations and successive revisions before a Draft Final Act was tabled in December 1991.³⁴⁶ The following are some of the issues debated during negotiations:

(a) Patentable Subject Matter

Patentable subject matter is provided for under Article 27 of the TRIPS agreement. There was basically no dispute on the criteria for patentability, that is, novelty, inventive step and industrial applicability. The debate surrounded the question of exceptions with three main positions emerging.³⁴⁷

- (i) there should be no permissible exceptions;
- (ii) plant and animal varieties and essentially biological processes for the production of plants or animals, other than microbiological processes or the products thereof could be excluded from patentability. Plant varieties would have to be protected by either patents or an effective sui generis system; and
- (iii) there should be a broad exception covering any plant or animal or processes for the production of plants or animals; limitations as regards biotechnological inventions would also be covered.

³⁴⁴ Ibid at 17

³⁴⁵ Idem

³⁴⁶ See a discussion of contentions issues in AD Amato, DE Long (eds) *International Intellectual Property Anthology* (1996) at 29.

³⁴⁷ Op cit note 1 at 17

The final outcome of negotiations on this issue combines elements of (i) and (ii) above. Wide support was expressed for the notion that there should be provisions allowing inventions to be excluded from patentability on grounds of public order. Reference to the environment was included towards the end of 1991.³⁴⁸ These provisions are discussed in detail in this chapter.

(b) Compulsory Licensing

Two issues raised concerns on this subject. The first issue was whether the grounds for the grant of compulsory licences should be limited as well as certain conditions imposed, aimed at protecting the legitimate interests of the right holder. The second issue was whether equivalent rules should apply to compulsory licensing and government use. On the first issue numerous discussions resulted in a text reflecting the approach that would put conditions on the grant of compulsory licences without constraining the underlying grounds for their grant. This was the approach which was adopted in the final draft after agreement on specific conditions to be imposed.³⁴⁹

On the second issue concerns were raised on the distinction between government use practices and compulsory licensing since there were a set of conditions common to both. This matter was resolved by the inclusion of a phrase referring to "other use without the authorization of the right holder" in place of government use.³⁵⁰

(c) Control of Anti-Competitive Practices and Contractual Licences

This issue was addressed in the draft tabled by 12 developing countries in 1990. Developing countries sought recognition of the right

³⁴⁸ Idem

³⁴⁹ Idem

³⁵⁰ Op cit note 4

of members to specify in their national legislation practices deemed to constitute an abuse of intellectual property rights or to have an adverse effect on competition. Each member would also be committed to consult and cooperate with any other Member with a view to ensuring that the IPR owners of the first Member complied with the national legislation in this respect of the second Member. Suggestions during negotiations included the recognition of practices which may be deemed per se anti-competitive; specifying practices which could be deemed anti-competitive or abusive; and measures to remedy such practices would have to be consistent with other provisions of the TRIPS agreement. The outcome is contained in section 8 of Part III of the TRIPs Agreement.³⁵¹

4.2.7 The main provisions of TRIPS

(a) National treatment

Article 3 of TRIPS places an obligation on members to accord nationals of other members treatment no less favourable than what it accords to its own nationals with regard to the protection of IPR, subject to exceptions provided for in other international agreements including the Paris Convention. The concerns raised by developing countries in respect of similar obligations under the Paris Convention are bound to come up again.

TRIPS goes a step further by providing for Most Favoured Nation Treatment. Thus with regard to protection of intellectual property, any advantage, favour, privilege or immunity granted by a member to the nationals of any other country shall be accorded immediately and unconditionally to the nationals of all other members.³⁵²

³⁵¹ Op cit note 1 at 19

³⁵² Agreement on Trade - Related Aspects of Intellectual Property rights (TRIPS) Article 4.

(b) Standards concerning the availability, scope and use of IPR

Separate standards are set for copyrights and related rights, trademarks, geographical indications, industrial designs, patents, layout designs of integrated circuits and undisclosed information. Our discussion is going to be confined to patents in view of their relevance to both environmentally sound technologies and biotechnology.

Article 27 provides that 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. Members may exclude from patentability the following:-³⁵³

- (i) inventions the commercial exploitation of which is contrary to public order or morality;
- (ii) invention the prevention of which is necessary to protect human, animal or plant life or health or to avoid serious prejudice to the environment.
- (iii) diagnostic, therapeutic and surgical methods for the treatment of humans or animals.
- (iv) 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 are to provide protection of plant varieties either by patents or by an effective sui generis system or by any combination.

As we have seen in chapter two of this thesis most developing countries exclude genetic resources from patent protection. Plant varieties are now accorded stronger protection as compared to the limited Plant Breeders Rights and Farmers Rights. However, the problems facing holders of indigenous knowledge in developing countries remain unresolved. The usual rights conferred on the patent holder (i.e. exclusive rights; rights to assign or

³⁵³

Ibid. Article 27 (2) and (3).

transfer; conditions on patent applicants and exceptions to the rights confined) are dealt with in brief under Article 28. TRIPS however deals more extensively with other use without authorisation of the right holder; in other words, compulsory licences.³⁵⁴ It is provided that where the law of a member allows for other use of the subject matter of a patent without the authorisation of the right holder, including use by the government, the following provisions have to be respected:-

- (i) Authorisation of use shall be considered on its individual merits;
- (ii) Prior to such use, efforts must be made to obtain authorisation from right holder on reasonable commercial terms and that such efforts have not been successful within a reasonable time. This requirement may be waived in cases of national emergency or other circumstances of extreme urgency or public non-commercial use. In either case the right holder has to be notified as soon as reasonably practicable;
- (iii) The scope and duration of such use shall be limited to the purpose for which it was authorised;
- (iv) Such use be non-exclusive;
- (v) Such use shall be non-assignable;
- (vi) Use shall be authorised for the supply of the domestic market of the member authorising such use;
- (vii) The competent authority shall have the authority to review its decision. Such use may therefore be terminated when the circumstances which led to the decision cease to exist and are unlikely to recur. However, legitimate interests of the persons authorised to use must be adequately protected;
- (viii) The right holder shall be paid adequate remuneration, taking into account the economic value of the authorisation;
- (ix) Legal validity of any decision relating to authorisation and remuneration shall be subject to judicial review or other independent review.

³⁵⁴ Ibid. Article 31.

Although these conditions appear to balance the interests of the patent holder and those of the public, they aim mainly at providing maximum protection to the holder. The requirement of efforts to require authorisation; notice; limits on scope; time; assignment; use; review and remuneration all seem to be addressing unfair practices prejudicing the interests of patent holders. In order for proper balance to exist, provisions should have made specific remedies in cases of abuse by patent holders.

(c) Enforcement of intellectual property rights

Enforcement procedures specified in TRIPS make provision for effective action against any act of infringement of IPR including expeditious remedies to prevent infringement and remedies which constitute a deterrent to further infringements. The procedures are however to be applied in such a manner as to avoid the creation of barriers to legitimate trade and to provide for safeguards against their abuse.³⁵⁵ The manner in which these procedures may create trade barriers will be dealt with in detail in chapter four of this thesis. General obligations under the agreement calls upon members to ensure that procedures for enforcement are fair and equitable, that they are not unnecessarily complicated or costly, and that they do not entail unreasonable time-limits or unwarranted delays.³⁵⁶ Further, decisions shall be on the merits of the case based on evidence in respect of which the parties were accorded the right to be heard; they should also be in writing and reasoned. Decisions must also be subject to review by a judicial authority.³⁵⁷

Specific civil and administrative procedures include the following:-

(I) Fair and Equitable Procedures³⁵⁸

³⁵⁵ Ibid. Article 41 (1).

³⁵⁶ Ibid. Article 41 (2).

³⁵⁷ Ibid. Article 41 (3) and (4).

³⁵⁸ Ibid. Article 42.

Under this heading defendants have to be given written and timely notice containing sufficient detail including the basis of the claims. Parties are entitled to legal representation. Procedures are also not expected to impose strict requirements concerning mandatory personal appearances. This is aimed at addressing the practical problems of entering appearance in another country especially since it is almost impossible to finalise such matters in a single hearing. Adjournments are bound to create problems for foreigners; for example, the costs of taking action are likely to be prohibitive to the majority of individual inventors.

(II) Evidence³⁵⁹

Judicial authorities are given the authority to order the opposing party to produce evidence within his control where such evidence is relevant to substantiation of other party's claim. The party must however, have presented reasonably available evidence sufficient to support its claim; and conditions which ensure the protection of confidential information must be set out. The two main remedies provided for infringement are injunctions and damages. Judicial authorities are given authority to order a party to desist from an infringement, to prevent the entry into the channels of commerce in their jurisdiction of imported goods that involve the infringement of an intellectual property right, immediately after customs clearance of such goods.³⁶⁰ Authorities also have the power to order the infringer to pay the right holder damages adequate to compensate for the injury the right holder has suffered due to an infringement of that person's intellectual property right by an infringer who knowingly, or with reasonable grounds to know, engaged in infringing activity.³⁶¹

Prompt and effective provisional measures which may be ordered by judicial authorities are elaborated in Article 50. These measures are expected to achieve the following:-

³⁵⁹ Ibid. Article 43.

³⁶⁰ Ibid. Article 44.

³⁶¹ Ibid. Article 45.

- (i) prevent an infringement of any intellectual property right from occurring;
- (ii) preserve relevant evidence in regard to alleged infringement;
- (iii) prevent irreparable harm to the right holder or demonstrated risk of evidence being destroyed due to delay;
- (iv) call for any reasonably available evidence to prove that the applicant is a right holder and that the applicants right is being infringed or that such infringement is imminent;
- (v) supply of additional information necessary for the identification of the goods concerned.

These provisional measures may however be revoked if proceeding to deal with the merits of the case are not initiated within a reasonable period.³⁶²

4.2.8 Evaluation of TRIPS

Greater enforcement procedures are evident in TRIPS. What is also evident is greater protection to individual holders of IPR. Such protection completely outweighs public interest considerations. Fair and equitable procedures include all the elements of a fair hearing, inter alia, the right to be heard, notice, representation and the right of appeal are all expressly provided for. Procedures are also expected to be simple, inexpensive and fast.

However, the effectiveness of these enforcement procedures must be measured against certain factors. Firstly, members have no obligation to put in place a special judicial system for enforcement of IPR. Members will therefore have to utilise existing systems which are in some cases faced by serious problems caused by different factors such as lack of staff, financial constraints, a lack of access to information and in certain cases ignorance of law itself.

³⁶²

Ibid. Article 50 (6). Such reasonable time is to be determined by the judicial authority ordering the measures where a member's law permits. In the absence of such law this period may not exceed 20 working days or 31 calendar days, whichever is the longer.

Secondly, TRIPS makes an attempt to take into consideration some of the concerns of developing countries which were not addressed by the Paris Convention, especially the whole question of applying the same rules to members whose levels of development are unequal. Transitional arrangements entitles developing country members to delay implementation of the Agreement for a period of 4 years from the date of application.³⁶³ Exempted from these provisions are Articles 3, 4, and 5 which deal with the National Treatment and the Most Favoured Nation Treatment. Members in the process of transformation from a centrally planned into a market free-enterprise economy are also allowed to delay implementation as long as they are undertaking structural reform of its IPR system. They must further be facing special problems in preparation and implementation laws and regulations in order to qualify for postponement.³⁶⁴ The last category falling under Article 65 are those developing country members who are required to extend product patent protection to areas of technology not so protectable in their territories. These members may delay application of the provision on product patents of section 5 of part II for an additional period of five years.³⁶⁵

Thirdly, Article 66 (1) addresses the special problems faced by least developed country members. The article provides in part as follows:-

'In view of the special needs and requirements of least developed country members, their economic, financial and administrative constraints, and their need for flexibility to create a viable technological base, such members shall not be required to apply the provisions of this agreement, other than Article 3, 4, and 5 for a period of 10 years from the date of application

³⁶³ Ibid. Part VI Article 65.

³⁶⁴ Idem.

³⁶⁵ This section makes provision for the standards concerning the availability, scope and use of patents.

This period may be extended by the Council for TRIPS on receipt of a duly motivated request.

No matter how comprehensive these enforcement procedures may be, harmonisation of procedures is far from being achieved. The procedures will not apply to all those members who decide to take advantage of the transitional measures and delay implementation for up to ten years. The procedures will also not apply to countries that are not members. All this implies that bilateral discussions and agreements will still play an important role in the establishment of IPR regimes. Unilateral retaliatory action is also not excluded especially for those matters which are not covered by TRIPS.³⁶⁶

TRIPS has however handled the issue of encouragement of inventive activity in developing countries by providing for incentives to be provided by developed country members to enterprises and institutions in their countries. Such incentives should have the purpose of promoting and encouraging technology transfer to least-developed country members in order to enable them to create sound and viable technological base.³⁶⁷ Further, in order to facilitate the implementation of TRIPS developed country members are called upon to provide, on request and on mutually agreed terms and conditions, technical and financial co-operation in favour of developing and least developed countries. Co-operation is expected to include assistance in preparation of laws and regulations on IPR protection and enforcement, establishment of domestic offices and agencies and training of personnel.³⁶⁸

However, TRIPS has effectively strengthened IPR protection in an effort to stop 'piracy' of the intellectual property of developing countries' nationals. The scope of IPR systems has been expanded; geographical spread where privileges and rights can be exercised extended; restrictions on the use of

³⁶⁶ See a discussion on trade marks and copyright in AJ Hartnick 'Intellectual Property Benefits of WTO, NAFTA' (1996) December *The New York LJ* <http://www.ljx.com/pract...ationalip/1213ipwto.html>.

³⁶⁷ Op cit note 156, Article 66 (2).

³⁶⁸ Ibid. Article 67.

rights conferred reduced; and compulsory licensing has been severely restricted by Article 31. The burden of proof in suits for violation has been reversed with the onus on the alleged infringer.³⁶⁹ Developing countries resisted the inclusion of these provisions arguing that essential technologies may become unaffordable; the emergence of domestic and technological capacity may be reduced; technology transfer may be retarded and restrictive business practices may increase.³⁷⁰ Further, uniform patent standards have not paid attention to the unique ethical and economic attributes of genetic resources or the morality of patenting life.³⁷¹

On the other hand some have argued that strengthened IPR would provide incentives for the establishment of private sector research and development even in developing countries and would even facilitate technology transfer.³⁷²

4.3 Regional Arrangements

4.3.1 Background

Since the beginning of the Uruguay Round of GATT many countries have attempted to address issues surrounding adequate IPR protection by incorporating IPR into their trade agreements with other countries.³⁷³ The need to take action became critical with new technological developments with

³⁶⁹

Article 34 of TRIPS on process patents provides as follows:-

'For the purposes of civil proceedings in respect of the infringement of the rights of the owner referred to in paragraph 1 (b) of Article 28, if the subject matter of a patent is a process for obtaining a product, the judicial authorities shall have the authority to order the defendant to prove that the process to obtain an identical product is different from the patented process

³⁷⁰

AN Anchanta and P Ghosh 'Technology Transfer in the Context of Global Environmental Issues' Paper presented at an International Conference on the Convention on Biological Diversity: National Interests and Global Imperatives. Nairobi, 26 - 29 January 1993.

³⁷¹

Op cit note 168.

³⁷²

EW Siebeck (ed). 'Strengthening Protection of Intellectual Property in Developing Countries : A Survey of Literature' (1990) 112 World Bank Discussion Papers, Washington DC The World Bank.

³⁷³

LM Berg 'The North American Free Trade Agreement and Protection of Intellectual Property: A Converging View' (1995) 5 *Journal of Transnational Law and Policy* <http://www.law.fsu.edu/transnat/issues/berg.html>.

the resultant introduction of new products such as computers, semiconductors, software and biotechnology into international markets. Regional agreements are usually tailored to meet the needs of nations within a specific region. These agreements do not exclude multilateral agreements; most countries opt to use specific regional agreements in conjunction with multilateral agreements.³⁷⁴ Regional agreements are used to supplement and strengthen multilateral agreements.

The following are examples of regional agreements which have incorporated IPR protection in trade agreements.³⁷⁵

- (a) The North American Free Trade Agreement (NAFTA), 1992.
- (b) The Cartagena Agreement which created the Andean Pact, 1993. This regional free trade association includes the countries of Bolivia, Columbia, Ecuador, Peru and Venezuela. Common intellectual property rules were embodied in Decision 3 44 of the Agreement in 1993.
- (c) Mercosur (Mercado Common del sur or Southern Common Market). This common market established in 1991 includes Argentina, Brazil, Chile, Paraguay and Uruguay. The parties agreed to a harmonised intellectual property rights regime.³⁷⁶
- (d) African Union (OAPI) includes Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Djibouti, Gabon, Guinea, Ivory Coast, Mali Mauritania, Niger, Senegal and Togo. The union is governed by the Bangui Agreement of 1977. Harmonised IPR forms one of the Protocols agreed to by members.
- (e) European Union (formerly the European Community) also harmonised IPR rules which are incorporated into the trade and economic agreements.

³⁷⁴

Idem.

³⁷⁵

Op cit note 174.

³⁷⁶

IPR are provided for in the Intellectual Property Rights Protocol, Article 9. Most of the provisions in this protocol are parallel to TRIPS.

We are going to examine NAFTA in greater detail since it is a union between two developed and one developing country; its IPR rules are also very comprehensive and have taken into consideration recent developments in this area.

4.3.2 The North American Free Trade Area (NAFTA)

NAFTA was established in 1992 and it currently includes the United States, Canada and Mexico.³⁷⁷ The parties primarily agreed to create an expanded and secure market for the goods and services produced in their territories.³⁷⁸ The objectives of the agreement include the elimination of barriers to trade, promotion of conditions of fair competition, increasing investment opportunities and the provision of adequate and effective protection and enforcement of intellectual property rights.³⁷⁹

Chapter 17 of NAFTA was designed to ensure more adequate acknowledgement and protection for IPR. The agreement sets minimum guidelines for IPR protection but allows the parties to sustain their own systems. Parties are also called upon to give effect to the substantive provisions of some multilateral agreements including the Paris Convention.³⁸⁰ Articles 1702 and 1703 provide that NAFTA's signatories may pass intellectual property laws which are more extensive than is required under NAFTA, so long as such protection is not inconsistent with NAFTA. Each party is also expected to accord to nationals of another party treatment no less favourable than that it accords its own nationals with regard to the protection and enforcement of all IPR. These provisions reflect deference to the National Treatment provisions in both the Paris Convention and TRIPS. Other provisions on IPR seem to put into effect substantive provisions of the Paris Convention and TRIPS for example, Article 1709 dealing with patents is

³⁷⁷ North American Free Trade Agreement December 17 1992, Can - Mex - US (1993) 32 I.L.M. 289/605.

³⁷⁸ Ibid. See the preamble.

³⁷⁹ Ibid. Article 102.

³⁸⁰ Ibid. Article 1701.

almost identical to Article 28 of TRIPS. Provisions on the scope of protection, exclusions, revocation and use of the subject matter of a patent without authorisation of the right holder are similar to their counterparts in TRIPS.

On the whole NAFTA's provisions reflect strengthened IPR protection. For example, Mexico's new patent protection has been extended to cover a new range of products and processes including micro-organisms, plant varieties and biotechnological processes for the first time.³⁸¹ Process patent protection is deemed to be vital in preventing unscrupulous inventors from copying a patented process, thus disclosed process to get a new or similar invention at a lower cost.

Although some of NAFTA's provisions are said to be narrower than TRIPS provisions; NAFTA has been praised as an improvement over TRIPS in service areas including;

*'broader national treatment obligations, more explicit and effective computer software, database and sound recording protection; pipeline protection for pharmaceutical and agrochemical; limitations on dependent patent compulsory licences; and the immediate entry into force of the intellectual property provisions.'*³⁸²

4.4. Bilateral Agreements

Bilateral treaties are mainly executed amongst trade partners who do not belong to the same or any multilateral treaties protecting IPR. Bilateral agreements are less complex and may therefore be more effectively implemented. The advantages of bilateral strategies are said to be generally

³⁸¹ FJ Garcia 'Protection of Intellectual Property Rights in the North American Free Trade Agreement: A successful case of Regional Trade Regulation. (1993) *Journal of Transnational Law and Policy* 817, 818.

³⁸² Op cit note 211. See in particular articles 1703, 1705, 1709 and 1701 respectively.

short term. But in the long run they are inadequate in protecting technologies that are financially sustainable only in global markets.³⁸³ Further, policy inconsistencies and differential standards and procedures may be created by being part of different bilateral as well as multilateral agreements.

The United States has used bilateral strategies in order to force individual countries to establish IPR rules consonant with its own regime. The U.S. has been able to force through bilateral agreements, IPR revisions in Korea, Taiwan, Singapore, Indonesia, Malaysia, Mexico, Thailand, China and Brazil.³⁸⁴

Countries getting into bilateral arrangements need to safeguard themselves against protection which results in technological dependency or that which would raise transaction costs.³⁸⁵ In general bilateral agreements on IPR protection for all information intensive products should be used to put into effect multilateral agreements; and to address specific situations not covered by the same.

4.5 Conclusion

International IPR systems have evolved over the years to address specific problems. The effectiveness of these international regimes is however limited due to different factors. For example, some of the rights under the Paris Convention such as priority rights cannot easily be enforced by individual inventors especially in developing countries. Further, provisions aimed at increasing the potential of developing countries to engage in inventive activity

³⁸³ Op cit note 183.

³⁸⁴ Idem.

³⁸⁵ CR Frishtak 'The Protection of Intellectual Property rights and Industrial Technology Development in Brazil' in FW Rushing and CG Brown eds. *Intellectual Property Rights in Science Technology and Economic Performance : International Comparisons* (1990) 61 - 98. Brazil denied IPR protection for US pharmaceutical products on the grounds that doing so would lock Brazil into technological dependency and would make pharmaceutical products prohibitively expensive thus creating a public health problem.

are still missing despite attempts in TRIPS to provide incentives. More importantly, there are no provisions for holders of indigenous knowledge.

IPR related issues feature prominently in the Convention on Biological Diversity. Implementation of these provisions will have to take into consideration international, regional and bilateral IPR systems. The need to reconcile environmental agreements and other IPR agreements is crucial; joint strategies to address outstanding issues are also required. The relationship between TRIPs and the Convention on Biological Diversity is dealt with in chapter five of this thesis.

CHAPTER FIVE

Intellectual Property Rights And Technology Transfer

5.1 Introduction

Article 16 of the Rio Convention recognises that access to and transfer of technology among members are essential elements for the attainment of the objectives of the Convention. It is however stated in this article, that in case of technology subject to patents and other intellectual property rights³⁸⁶, such access and transfer shall be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights. Members are also called upon to take appropriate measures to ensure that developing countries which provide genetic resources are provided access to and transfer of technology which makes use of those resources, including technology protected by patents and other intellectual property rights³⁸⁷. Further, members are called upon to co-operate in order to ensure that patents and other intellectual property rights are supportive of and do not run counter to its objectives.³⁸⁸ These provisions basically reflect concerns about possible threats to IPR posed by technology transfer obligations.³⁸⁹

Protection offered to technologies by the various forms of IPR influences the extent and manner in which technology is transferred.³⁹⁰ This may in turn, contribute to global environmental degradation. Some of the key aspects of the Convention in this regard are the emphasis on equity, protection of IPR and co-operation. These issues have been addressed by all the main

³⁸⁶ United Nations Convention on Biological Diversity, 1992, Article 16(2).

³⁸⁷ Ibid. Article 16(3).

³⁸⁸ Ibid. Article 16(5).

³⁸⁹ Op cit note 29.

³⁹⁰ AN Anchanta and P Ghosh 'Technology Transfer in the Context of Global Environmental Issues'. Paper presented at an international Conference on the Convention on Biological Diversity: National Interests and Global Imperatives. Nairobi, 26-29 January 1993.

international IPR instruments.³⁹¹ For example, specific provision is made for the promotion of technological innovation and transfer of technology in TRIPS³⁹² as well as compulsory licences.³⁹³

This chapter examines the extent to which IPR limit access to and transfer of technology. Issues on whether a proper balance is maintained between IPR protection and equity, rights and obligations and private rights and social and economic welfare are also addressed.

5.2 Definition And Modes Of Technology Transfer

5.2.1 Background

Technology transfers are essential as a way of enabling developing countries to meet their obligations in abating environmental degradation. The ability of developing countries to participate fully in global efforts towards sustainable development is limited by the extent to which they can have access to environmentally sound technologies and biotechnology.³⁹⁴ Developing countries are thus compelled to consolidate their internal technological base, expand technological investment and at the same time depend on the importation or acquisition of technologies from other countries. Factors which affect the capacity of these countries to improve their own technological base or to import technology inevitably influences their ability to participate in global activities.³⁹⁵

Factors which impact on the ability of developing countries' access to technology include the following:-

³⁹¹ See a discussion of this in chapter three of this thesis.

³⁹² Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Article 7.

³⁹³ Ibid. Article 31. See also Art. 5(2) of the Paris Convention.

³⁹⁴ Ominde and Juma, 'Africa Braces for the Gathering Storm.' (1991) *Innovation* Vol. 1, No. 2, at 4.

³⁹⁵ UNCTAD 'Transfer and Development of Technology in Developing Countries : A Compendium of Policy Issues.' New York 1990.

- (a) The low level of technological development which makes these countries more prone to technological dependence.³⁹⁶

This may be caused by limited resources. For example, the biotechnology industry depends on the development of high value-added products. The industry is also shaped by very high expenditure in Research and Development.³⁹⁷ Thus, extensive research, human capacity and organisational competence is required before a product is released to the market. It takes an average of twelve years to develop a new drug at the cost of over US \$231 million. These costs include the screening of candidate compounds, identifying and isolating active compounds, testing for toxicity and doing clinical trials. Also included are costs incurred in research which does not result in successful products.³⁹⁸ This sector is one of the most profitable industries despite the high costs involved and it is dominated by large multinational firms in developed countries.³⁹⁹

From the 1980's, as a result of economic crises, developing countries have been less able to invest in technological development or utilise foreign exchange to purchase their technological needs.⁴⁰⁰

- (b) Import capacity have been declining due to the economic crises referred to.⁴⁰¹

³⁹⁶ Ibid. Final Review and Appraisal of the United Nations Programme of Action for African Economic Recovery and Development. 1986-1990. New York 1991.

³⁹⁷ C Juma 'Trading in Genes - The Industrial Use of Medicinal Plants' ACTS Research Memorandum No. 6, October 1992. African Centre for Technology Studies, Nairobi, Kenya. e.g. US R & D expenditure on biotechnology based pharmaceuticals in 109 firms increased by 71% during 1991-92 period at 16.

³⁹⁸ JA Dimasi et al 'Cost of Innovation in the Pharmaceutical Industry' (1991) *Journal of Health Economics* Vol. 10 107-142.

³⁹⁹ (a) Op cit note 109 at 6.
(b) Total Sales in 1990

Western Europe	30%
U.S.	25%
Japan	30%
Others	less than 30%

⁴⁰⁰ Op cit note 1978.

- (c) Decline of foreign direct commercial investment.⁴⁰² The decline as far as transfer of technology is concerned is caused by firstly, reduced expectations of profits from environmentally sound technologies due to lack of markets, legal requirements or market information. Secondly, difficulties in implementing high capital intensive environmental protection technology due to lack of adequate technological and/or social infrastructure. Thirdly, possessors of technologies are faced with problems associated with unfair competition due to lack of comparable environmental regulations and standards in developing countries or internationally.⁴⁰³

Developing countries on the other hand, have argued that intellectual property rights holders prevent environmentally sound technologies from being used in developing countries by refusing to licence the technology or by setting costs too high.⁴⁰⁴ Developed or industrialised countries possess the resources for technological development as well as the institutional means to monitor and mitigate environmental damage. They dominate research and development of environmentally sound technologies; they have the power to control the transfer of such technologies coupled with the capacity to maximise the use of technologies according to their needs.⁴⁰⁵

Policies for technology transfer in developing countries must be formulated on realistic terms; taking into account affordability and the extent of endogenous capacity; thereby enabling them to manage the global environmental obligations without sacrificing their legitimate rights for

⁴⁰¹ Idem.

⁴⁰² United Nations Intergovernmental Committee on Science and Technology for Development. 'Ways and Means of ensuring the Participation of Developing Countries in International Co-operation for Research and Development of Environmentally Sound Technologies, and the Rapid and Effective Transfer of such technologies to the Developing Countries' March 1991.

⁴⁰³ Idem.

⁴⁰⁴ Idem.

⁴⁰⁵ Centre for Science and Technology for Development 'Environmentally Sound Technology Assessment' (ESTA) New York 1991 at 7.

economic growth.⁴⁰⁶ To this end developing countries may pursue inter alia, the following objectives:-⁴⁰⁷

- (a) Promotion of fiscal and monetary policies that encourage innovation and make capital readily available for technological development and its embodiment in productivity improvement.
- (b) Maintenance of a legal system that protects intellectual property and adopts changes which accommodate equitable allocation of rights as an incentive for meaning.
- (c) Support of a trade policy that ensures an open multilateral trading system.
- (d) Maintenance of a regulatory climate that stimulates innovation while promoting social and economic benefits to the public.

In this chapter focus is going to be on intellectual property rights and their impact on technology transfer.

5.2.2 Definition

Technology transfer can be defined as follows:-⁴⁰⁸

'The transfer of systematic knowledge for the manufacture of a product, for the application of process or for the rendering of a service and does not extend to the transactions involving the mere sale of goods.'

Technology transfer is therefore, not only the introduction of technology; it also involves the necessary knowledge and skills for continual management of such technology.⁴⁰⁹ Effective technology transfer including environmentally

⁴⁰⁶ Carnegie Commission Report 'Technology and Economic Performance : Organising the Executive Branch for Stronger National Technology Base'. September 1991, at 17.

⁴⁰⁷ (a) Op. cit. note 197 at 48.

(b) See also JC Dodge et al (eds) op cit note 1 at 271.

⁴⁰⁸ Op cit note 191.

⁴⁰⁹ Op cit note 1 at 268.

sound technologies and biotechnology depends on efforts to improve the capacity of a country to choose, recreate, adapt and assimilate knowledge to meet their own patterns and needs.⁴¹⁰ It is a two pronged process with strategies aimed at addressing simultaneously inflows of foreign technology and the development of local technological capacity.⁴¹¹

Capacity refers to the possession of a basic infrastructure, while the possession of a capability implies the active use of that capacity for the pursuit of some recognised objective. The primary functions of endogenous capacity are firstly enabling the efficient use of imported technology. Secondly, capacity should stimulate the creation of technology with appropriate characteristics.⁴¹²

Technology transfer is an interactive process whose success depends on the institutional, economic, social and ecological context within which it works. It is consequently not sufficient for new technology to pass the tests of efficiency and environmental soundness. Sustainability also depends on the extent to which a transfer is practical; given local experience, institutional capacity, economic structures and knowledge. Ecological criteria can be applied at a later stage as the new technology continues to develop in terms of use, adaptation or modification.⁴¹³

5.2.3 Categories of transferable technology

Bell aptly describes the categories as follows:-⁴¹⁴

⁴¹⁰ Op cit note 191.

⁴¹¹ (a) PF Schwengels and BD Solomon 'Energy Technologies for Reducing Greenhouse Gas Emissions in Developing Countries and Eastern Europe in Environmentally Sound Technology Assessment (ESTA). Centre for Science and Technology for Development New York 1991 at 89.

(b) MBE Fayed 'Technological Transformation for Developing Countries. Some factors and Pre-requisites in Technical Selection, Acquisition and Negotiation'. UNCTAD New York, 1991, at 4.

⁴¹² Op cit note 211.

⁴¹³ M Bell 'Continuing Industrialization Climate Change and International Technology Transfer' (1990) 75-97.

⁴¹⁴ Idem.

1. Capital goods, services and design specifications

This category includes a variety of technological and managerial services. These services may be required for the execution of projects, feasibility studies or planning. Project management and commissioning services are also included in this category. Design specifications are necessary for equipment and process control systems.

2. Skills and know how for production

- (a) Paper embodied technology in the form of manuals, schedules and flow charts. It includes operating and maintenance procedures and routines, repair and quality control.
- (b) People embodied knowledge and expertise.

This is provided through training with the aim of equipping the importing country with the appropriate knowledge on the tasks and skills involved.

3. Knowledge and expertise for generating and managing technical change

This category consists mainly of information and people embodied knowledge and expertise. The information and expertise in this case enables the recipient to change technical systems, develop or introduce new systems. It is not limited to skills for using technologies as they are.

The Rio Convention identifies categories of technologies including the following:

- (a) results of technical, scientific and socio-economic research;⁴¹⁵
- (b) information on training and surveying programmes, specialised knowledge;⁴¹⁶
- (c) technical and scientific expertise in the field of conservation and sustainable use of biological diversity;⁴¹⁷

⁴¹⁵ Op cit note 188. Art. 17(2).

- (d) training of personnel and institution building, and exchange of experts⁴¹⁸ and
- (e) establishment of joint research programmes and joint ventures for the development of technologies.⁴¹⁹

5.2.4 Modes of technology transfer

Principal modes of technology transfer may be classified as commercial or non-commercial. Commercial mechanisms include the following:-⁴²⁰

- (a) Foreign direct investment in a host country subsidiary or joint venture.
- (b) Licensing of intellectual property rights.
- (c) Technical assistance.
- (d) Sale, importation, installation and servicing of machinery and other capital goods.
- (e) Franchising of consumer goods and services.

Non-commercial mechanisms include advisory groups, personnel exchanges, information dissemination and education. Effective technology transfers often involve the combination of several mechanisms from both the commercial and non-commercial classifications.⁴²¹

This chapter is going to concentrate on licensing of intellectual property rights as a mechanism for technology transfer.

⁴¹⁶ Idem.
⁴¹⁷ Ibid Art. 18(1).
⁴¹⁸ Ibid Art. 18(2) and (4).
⁴¹⁹ Ibid Art. 18(5).
⁴¹⁹ Op cit note 192.
⁴¹⁹ Idem.

5.3 Technology Licensing Agreements

5.3.1 Background

Although intellectual property laws give the property owner the right to exclusive use, social benefits from technological innovation flow from its application and widespread diffusion.⁴²² There is, in existence an inherent conflict of interest between the owners of IRP who have the right to exclude competition and the anti-trust laws which are formulated with the promotion of competition as their primary goal. On the one hand users and new companies favour stringent antitrust laws. They benefit most from exchange of information which is inexpensive and uncomplicated procedurally. These users would also favour the production of hardware and software which is compatible to as many product choices as possible. On the other hand IPR owners are more likely to favour the protection of information in order to preserve the IPR granted. Owners tend to guard against displacement of its products with new, competing products.⁴²³

However, intellectual property is one of the many components in a production process and it derives its value from being combined with other, complementary components. They include, inter alia manufacturing and distribution facilities, workforces and advertisement. In order to realise the maximum commercial value of intellectual property, the owner has to ensure that the necessary complementary components are available. In most cases owners prefer to enter into agreements with others rather than supplying these complementary inputs themselves. Licensing of intellectual property rights is one way through which integration with complementary components of production can be achieved.⁴²⁴

⁴²² M Borrus and J Stowsky 'Technology Policy and Economic Growth' (April 1997). *Berkely Roundtable on the International Economy*
<http://brie.berkeley.edu...bs/wp/wp97.html#Heading1>.

⁴²³ Idem.

⁴²⁴ U.S. Department of Justice Antitrust Guidelines for the Licensing and Acquisition of Intellectual Property, August 8, 1994.

The benefit of integration outweigh the need for strict exercise of exclusive rights. Integration has over the years, proven to result in more efficient exploitation of the IP which in turn facilitate the reduction of costs and introduction of new products. These agreements or arrangements thus increase both the value of intellectual property to consumers and expected returns to owners. Incentives for greater investments in research and development will also increase under these circumstances.⁴²⁵

In analysing IP licensing, the following critical issues need to be addressed:⁴²⁶

- (a) Whether the licence will foreclose access to competitors' technologies;
- (b) Whether licensees will be prevented from developing their own competing technologies or using other competitors technologies;
- (c) Whether the licensing agreement results into facilitation of other restrictions which restrict competition; and
- (d) Whether restraints in a licensing arrangement are reasonably necessary to promote efficiency-enhancing integration.

Analysis of these issues is a pre-requisite to the proper evaluation of the extent to which IPR limit access to and transfer of technology.

5.3.2 Definition

Technology licensing is a contractual arrangement in which the licensor's patents, trademarks, copyrights or other IP may be sold or made available to a licensee for compensation (royalty) agreed in advance by the parties. A technology licensing agreement enables the licensor to exploit the IP both locally and internationally. Such an agreement can therefore, enable an owner to enter foreign markets without facing all the legal and financial risks associated with owning and operating a foreign manufacturing firm.⁴²⁷

⁴²⁵

Idem.

⁴²⁶

SR Miller and BB Nguyen 'Enterprise and Enforcement' op cit note 224.

⁴²⁷

Op cit note 226.

Further, licensing enables owners to avoid tariff and non-tariff barriers put in place to control the export of foreign manufactured products. Foreign technology may also be acquired through cross-licensing agreements or grant back clauses granting rights to improvement on technology developed by a licensee.⁴²⁸

A licensing agreement has a horizontal component with respect to a technology market if it involves the acquisition of rights to technologies which are economic substitutes for technologies that the licensee owns or controls. In the absence of the licence, the licensor and licensees would be actual or likely competitors in that market.⁴²⁹

An arrangement has a vertical component when it affects activities that are in complementary relationship. Such a relationship exists when the licensor and its licensees have a seller buyer relationship, or operate at different levels of the chain of production and distribution.⁴³⁰ An example of this type of relationship is where the licensor is primarily involved in research and development while the licencees are manufacturers buying the rights to use technology developed by the licensor. Most licensing arrangements have a vertical component.

5.3.3 Restrictive clauses in licensing agreements

a) Background

Restrictions in licenses of IP are often essential to ensure that new technology realises its maximum legitimate return and benefits to consumers as quickly and efficiently as possible. Consequently, restrictive clauses are

⁴²⁸ Grantback Clauses will be discussed in detail under restrictive clauses in licensing agreements.

⁴²⁹ Op cit note 226.

⁴³⁰ Idem.

included in licensing agreements to protect owners against amongst other drawbacks, the following:- ⁴³¹

- (i) Free-riding on the licensors investments by unauthorised third parties.
- (ii) Unauthorised use by licensees. Some licensees may use licensed technology to manufacture products that are subsequently marketed in direct competition with the licensor or even other licensees.
- (iii) Complete loss of control over the technology once it has been licensed, especially in cases where the licensee is a powerful company or firm. Loss of control may, in certain circumstances result in significant loss of profit to the owner of IP, with the bulk of profit going to the licensee. The incentive to the owner in this case is thus rendered insignificant.

Despite the existence of legitimate concerns, some of the restrictions imposed place unreasonable restraint on domestic or international competition. Licensing arrangements that raise concerns include restrictions on goods or technologies other than the licensed technology, contractual provisions that penalise licensees for dealing with supplier of substitute technologies, and acquisitions of intellectual property that lessen competition in a relevant market. For example, a licensing agreement that transfers IP with little value, but imposes restraints on firms that would otherwise compete using alternative technologies may have adverse effects in other goods markets; an arrangement that effectively merges the research and development activities of two of only a few bodies that could engage in research and development in the relevant field may harm the competition for development of new IP; IP licensing between actual or likely potential competitors may result in the reduction or elimination of competition in the market in which they compete. ⁴³²

⁴³¹ Idem.
⁴³² Idem.

Intervention on the issue of licencing restrictions was also necessitated by the effects of licensing arrangements on the following markets:- ⁴³³

(i) Technology Markets

Technology markets are made up of the IP that is licensed transferred or acquired, including technologies that are close substitutes for it.

(ii) Goods Markets

These are markets for final or intermediate goods made using the IP. Also included are markets for goods that are used as inputs, along with the IP to the production of other goods.

(iii) Innovation Markets

Firms compete in research and development that may result in new or improved products or processes. When a licensor and its licensees compete in a technology or goods markets, a restraint in a licensing agreement may increase the risk of co-ordinated pricing, output restrictions, or the acquisition or maintenance of monopoly power. Competitive harm increases where restrictions lead to difficulty of entry into markets where the licensor and licensee are in a horizontal relationship. When they are in a vertical relationship harm to competition will occur if a restraint forecloses access to important inputs.

It is against this background that a discussion on restrictive clauses in licensing agreements, their effect in suppressing the operation of free market and measures which have been undertaken internationally is going to be undertaken in this chapter.

b) Restrictive Clauses

(i) Exclusive Dealing

Exclusive dealing arises when a license prevents or restrains the licensee from using competing technologies. ⁴³⁴ Such restraints may have the effect of denying competitors sufficient markets or outlets for exploiting their

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Idem.

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Treaty Establishing the European Community as amended by subsequent Treaties, Rome 25 March 1957. Common Rules on Competition, Taxation and Approximation of Laws.

technologies. Exclusivity may be expressly required by the licensor, or it could be implied through economic incentives. For example, a royalty arrangement based on total sales of a licenced product regardless of whether it is made using the licenced technology, may increase the cost to a licensee of substituting alternative technologies. Such an arrangement has been held to have similar effects to an exclusive dealing arrangement.⁴³⁵

An exclusive dealing arrangement may have competitive or anticompetitive effects, depending on the availability of other outlets for viable exploitation of rival technologies. For example, a licensing arrangement that prevents the licensee from dealing in other technologies may encourage the licensee to develop and market the licensed technology. This is said to have pro-competitive effect.

(ii) Resale Price Maintenance

Resale price maintenance occurs when a licensor of an IPR in a product fixes the licensee's resale price of that product. In most countries this practice is illegal when commodities have passed into the channels of trade and are owned by dealers.⁴³⁶ However, it has been held in U.S. cases that it is per se illegal for a licensor to fix a licensee's resale price of that product.⁴³⁷

(iii) Tying Arrangements

A transaction is said to involve tying if there are two separate products and the sale of one product is conditional upon the purchase of the other. Therefore, effectively a seller requires that the buyer of a product purchase a second, distinct product as a condition for purchasing the first. The first product is referred to as the "tying" product and the second product is referred to as the "tied" product.⁴³⁸

⁴³⁵ *United States v Microsoft, Inc.*, Civ. No. 94 - 1564 (DD.C., filed July 15, 1994).
⁴³⁶ *See Dr Miles Medical Co. v John D Park & Sons Co.*, 220 U.S. 373 (1911).
⁴³⁷ *United States v Univis Lens Co.* 316 U.S. 241, 243-45, 249-51 1942 and
Ethyl Gasoline Corp. v United States 309 U.S. 436, 446-48, 452, 457.
⁴³⁸ Op cit note 236.

Typing arrangements may have pro-competition effect. One such effect is the protection of the integrity or reputation of a product. Manufacturers may ensure that the purchaser maintains desired standards by tying the sale of a product to a maintenance contract or to sales of approved parts and reduce the risk of inferior service to distributors.⁴³⁹

Tying arrangements generally do not have anticompetitive effect since the supplier of the tying product cannot deprive its rivals' customers of access to other sellers of the tied product. Consequently, rival producers of the tying product will not be precluded from competing for customers with the firm employing the tie. One of the exceptions is where the seller has sufficient economic power in the market for the tying product to enable it to restrain trade in the market for the tied product.⁴⁴⁰ Package licensing, the licensing of multiple items of IP in a single license or in a group of related licenses may be a form of tying arrangement. This is only if the items licensed constitute separate products and the licensing of one product issued to force the acceptance of a licence of another. A package license may be efficiency enhancing where multiple licenses are needed to utilise any single item of IP.⁴⁴¹

iv) Cross-licensing and Pooling Arrangements

These are agreements of two or more owners of different items of IP to license one another or a third party. These arrangements may be pro-competitive by integrating complementary technologies and reducing transaction costs.⁴⁴² The arrangements may be anti-competitive where they

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Idem.

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Op cit note 226. Market power is defined as the ability to maintain prices above, or output below, competitive levels for a significant period of time. In *Jefferson Parish Hospital District No. 2 v Hyde*, 104 S.Ct. 155 1 (1984) the Supreme Court held that tying arrangements are illegal per se when

(a) the seller has market powers in the tying market;
(b) the tying and tied products are separate;
(c) there is a substantial adverse effect in the tied product market.

⁴⁴¹

Op cit note 236.

⁴⁴²

Idem.

are used as mechanisms to accomplish price fixing or market or customer allocation.⁴⁴³

(v) Grantbacks

A licence agreement is usually negotiated in the early stages of an invention. Consequently, both parties to the agreement, the licensor and licensee cannot be sure of how the product will perform in the market. It is also not possible at these initial stages to foresee any future developments on the innovation itself. This is more so in complicated devices with different patents covering different components. Grantbacks make provision for the licensor's sharing in any future, unforeseen developments.

A grantback is an arrangement under which a licensee agrees to extend to the licensor the right to use the licensee's improvements to the licensed technology. Procompetitive effects of grantback include provision for ways enabling the licensee and licensor to share risks. It also makes it possible for the licensor to benefit for making possible further innovation based on the licensed technology. Such arrangements can promote innovation. They may, however, reduce the licensee's incentives to engage in research and development.⁴⁴⁴

c) Acceptable Vertical Restraints

It has been argued that restrictions in licenses of IP are in most cases essential as a means of ensuring maximum returns to the owner as well as access to consumers. Most of the restrictions falling under this category are vertical restrictions. This part deals with some of vertical restrictions which have been held by the courts to be legal as they pose negligible anticompetitive risks and have significant potential to enhance efficiency.

(i) Selective distribution (refusal to deal)

⁴⁴³ In *United States v New Wrinkle, Inc.*, 342 U.S.371 (1952) it was held that such arrangements can lead to a significant lessening of competition and are therefore illegal.

⁴⁴⁴ Op cit note 236.

An owner of IP, or manufacturer is free to deal, or not to deal with anybody. Thus, there is the freedom to choose a limited number of outlets and a refusal to use other outlets is not illegal as long as there is no intention to create or maintain a monopoly.⁴⁴⁵ There are however, exceptions to this freedom. In *Aspen Skiing Co. v Aspen Highlands Skiing Corp.*⁴⁴⁶ refusal to deal was held to be illegal when a monopolist terminated a long-standing joint marketing agreement with a competitor. The decision was based on the grounds that there was no valid business reasons for the refusal to deal with the competitor. In *Eastman-Kodak Co. v Image Technical Services Inc.*⁴⁴⁷ the court held that Kodak's change in policy to stop selling parts to independent service organisations for repair of Kodak copiers and alleged pressure by Kodak on parts' brokers and other intermediaries not to sell Kodak parts to the independent organisations could be the basis of an anti monopoly claim.

(ii) Primary Responsibility

These are arrangements under which a manufacturer assigns areas of primary responsibility to a dealer without imposing absolute territorial limits.⁴⁴⁸ These arrangements are generally endorsed by courts.⁴⁴⁹

(iii) Profit passover arrangements

Here a dealer is required to compensate other dealers for sales made in their territories. This is acceptable especially where the arrangements are reasonably related to reimbursing dealers for their advertising promotional and post-sale servicing efforts.⁴⁵⁰

⁴⁴⁵ *Monsanto Co. v Spray-Rite Service Corp.*, 104, S. CT. 1464 (1984) and *U.S. v Colgate*, 25 U.S. 300 (1919).

⁴⁴⁶ 472 U.S. 585 (1985).

⁴⁴⁷ 112 S. CT. 2072 (1992).

⁴⁴⁸ Op. cit. note 236.

⁴⁴⁹ (a) *Kestenbaum v Folstaff Brewing Corp.*, 575 f. 2d 564, 572-73 (5th Cir. 1978).
(b) *Santa Clara Valley Distrib. Co. v Pabst Brewing Co.*, 556 f. 2d 942 (9th Cir 1977).

d) Effects of Acceptable Vertical Restraints

Procompetitive Effects

Procompetitive effects of vertical restraints may not be felt as soon as the restraint is executed. Given time, vertical restraints that limit the number of outlets may lower distribution costs enabling each distribution to spread fixed costs incurred in facilities and training of personnel over a higher volume of sales, thus bringing down the cost of distribution of a product. This may also ensure the provision of presale demonstration which may be necessary.

Exclusive distribution on the other hand may facilitate entry of a new produce into a market by enabling distributors to recover initial market development costs. By the time other distributors join the specific market, the question of free-riding will not arise. Protection of investment in services provided to dealers is guaranteed through exclusive dealership. Dealers are prevented from using services such as advertising to sell products of other suppliers.

In general, vertical restraints have the capability to improve product quality and safety, reduce transactions costs and maximise benefits to the owner at the same time.⁴⁵¹

e) Anticompetitive Effects of Vertical Restraints

Vertical restraints may be used to facilitate collusion among dealers of different suppliers. The number of dealers may be limited and this could easily lead to other practices such as price fixing or output restriction. In most cases the tendency is to create exclusive territories thus protecting colluding dealers within a geographic market from the threat of outside competition.

Further, restraints such as exclusive dealing may have the effect of excluding rivals by raising the costs of a vital input or distribution prohibitively. However, an exclusive dealing arrangement may be used to exclude rivals if it has two main characteristics. Firstly, it must raise the rival's costs of gaining access to

⁴⁵⁰ *United States v Arnold, Schwinn & Co.* 291 f. Supp 564 (N.D. ILL. 1968).

an input or distribution significantly. Secondly, the firm employing the restraint must be able to collect a substantial return from the practice to offset any increase in the firm's own costs.⁴⁵²

For exclusive dealing to have anticompetitive effects, the following market conditions must exist:-⁴⁵³

- (i) The non-foreclosed market is concentrated and leading firms in the market use the restraint.
- (ii) The firms subject to the restraint control a large share of the foreclosed market.
- (iii) Entry into the foreclosed market is difficult.

Absence of these conditions implies that the market is accessible to competitors, consequently any restraints in existence cannot effectively be challenged.

Restraints are recognised as a tool used by monopolies to suppress the operation of free markets. Such restraints in most cases result in higher prices for goods and services or limited availability or both. To counter the negative effects of restraints, both national and international strategies have been formulated. Examples from USA, South Africa and EU are going to be used to analyse national and international strategies. The European Community has comprehensive rules with regard to restrictions; technology licensing agreements receive specific attention.

⁴⁵¹ Op cit note 226.

⁴⁵² Idem.

⁴⁵³ Idem.

5.4 Limitations on licensing practices

5.4.1 United States Sherman Antitrust Act 1890

The Sherman Antitrust Act was enacted with the aim of controlling monopolies, conspiracies and agreements which have the effect of restraining the operation of a free market.⁴⁵⁴ Section 2 of the Act prohibits conduct by a single firm if that firm has monopoly, power and if that conduct is used to restrict competition. Monopolisation requires the possession of market power and some misuse of that power. Monopoly means the power to control prices or to exclude competitors. In most cases violation of Section 2 takes the form of misuse or abuse of existing economic power through use of large size, financial resources or patent position.

The Act can be enforced by the federal government, state governments as well as private parties.⁴⁵⁵

In determining the lawfulness of conduct under the Act, two primary issues are considered:

- (i) whether conduct will be judged under the per se rule or the rule of reason.
- (ii) whether conduct involve a horizontal or a vertical restraint.

Under the per se rule, a restraint is prohibited once it is found to exist. The practice is presumed anticompetitive irrespective of any justifications for its existence. However, this rule governs only conduct that is always or almost always has the effect of restricting competition and decreasing output.⁴⁵⁶ In

⁴⁵⁴ KR Terry 'Antitrust and Technology Licensing'. Ladas and Parry, Intellectual Property Bulletins and Newsletters, August 1997 1, 2.

⁴⁵⁵ One of the two Federal antitrust enforcement agencies is the Antitrust Division of the Justice Department which has powers to institute civil and criminal actions.

⁴⁵⁶ (a) *Northwest Wholesale Stationers, Inc. v Pacific Stationery and Printing Co.*, 472 U.S. 284, 289-90 (1985).

(b) *Broadcast Music Inc. v Columbia Broadcasting System Inc.*, 441 U.S. 1 (1979).

general, the per se rule applies to price-fixing and horizontal market divisions; it no longer applies to non-price vertical restraints.⁴⁵⁷

In 1968 the U.S. Attorney General's office announced a list of technology licensing practices which were considered per se anti trust violations. They include, inter alia, the following:⁴⁵⁸

- (i) Requiring a patent licensee to purchase an unpatented material from the licensor.
- (ii) Grantback of title to the licensor of the licensee's improvements to the patented technology.
- (iii) Attempting to impose restrictions after sale of patented product.
- (iv) Tie-in and tie out; tying of products or services outside the scope of the patent claims, or restricting the licensee's freedom to deal with other suppliers.
- (v) An agreement outside the license not to grant other licenses (concealing the exclusive nature of the agreement).
- (vi) Mandatory package licenses.
- (vii) Any broadening of the royalty base.
- (viii) Restriction on sale of products made with the patented process.
- (ix) Price fixing.

The rule of reason on the other hand involves a broad inquiry into the effects of and reasons for the restraint. The factors to be considered in assessing the lawfulness of the restraint include

"the facts peculiar to the business to which the restraint is applied; its condition before and after the restraint was imposed; the nature of the restraint and its effect, actual or probable. The history of the restraint, the evil believed to exist,

⁴⁵⁷ *Continental TV v GTE Syrania*, 433, U.S. 36 (1977).
⁴⁵⁸ Op cit note 256.

the reason of adopting the particular remedy, the purpose, or end sought to be attained,⁴⁵⁹

Later a more flexible approach was adopted but effective antitrust enforcement was still considered an important tool for the promotion of innovation by reducing artificial barriers to entry. In *US v. Pilkington*⁴⁶⁰ the Antitrust Division challenged licensing restraints involving the manufacturing process used to manufacture 90% or more of the float glass sold world-wide. It was alleged that Pilkington, a British company, entered into patent and know-how licensing agreements over thirty years ago with most of the manufacturers of glass throughout the world. The licenses restricted licensees to manufacture glass in specified territories, restricted shipments by each licensee outside the designated territory, imposed field-of-use and sub-licensing restrictions and provided for grantbacks to Pilkington of improvements developed by the licensees. Further, even though the company's patents on the float glass process expired in 1980, licensees were still subject to the restrictions in the licenses unless the licensees could prove that all of the licensed technology was publicly known.

As a result of these restrictions, US companies were prohibited from exporting their own glass manufacturing technology. These restrictions were eliminated in view of the fact that they had been imposed and maintained long after such restraints could be reasonably necessary to the advancement of innovation.

In *U.S. v S.C. Johnson & Son*⁴⁶¹ the Antitrust Division challenged a licensing arrangement by alleging that the license reduced the incentives of the licensor to enter the U.S. market for insecticides and to become a horizontal competitor of the licensor. Bayer was not a supplier in the household insecticides market in the U.S. but decided to commercialise its technology

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Chicago Board of Trade v United States, 246 U.S. 231, 238 (1918).

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Civ. No. 94-345 (D.Ariz. filed May 25, 1994), 59 Fed. Reg. 30, 604 (June 14, 1994).

⁴⁶¹

Civ. No. 4089 (N.D. ILL. filed August 4, 1994) 59 Fed. Reg. 43, 859 (Aug. 25, 1994).

by licensing S.C. Johnson a market leader in the American household pesticide market. The transaction was challenged on the basis that it reduced incentives for Bayer to compete with Johnson in the manufacture and sale of household insecticides. Through the agreement with Johnson, Bayer ensured Johnson's continued dominance of the U.S. household insecticides market.

This arrangement was viewed as a de facto exclusive license. Bayer was required to offer the patented ingredient to other household pesticide manufacturers on reasonable and equitable terms. Access by Johnson's competitors to the market was in this way ensured.

The Sherman Act has also been used to address the following problematic issues:-

Duty to license technology

The owner of a IP has the right to deal in it in any way. However, there are circumstances where refusal to license technology was challenged. There are cases where a monopolist refusal to license technology was held to constitute a violation of the Sherman Act. This was only in cases where the evidence indicated that there was no legitimate business justification for the refusal , instead there was evidence of harm to consumers.⁴⁶²

New Products and incompatibilities

The introduction of new products by a monopoly may exclude smaller firms from competing in the same market. However, introduction of new products are deemed anti-competitive under very limited circumstances. It is generally accepted that any firm may bring its products to the market whenever it chooses.⁴⁶³

It would however, be illegal to introduce a new product with the intention of creating incompatibility in order to injure competitors without enhancing

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See *Data General Corp. v Grumman Systems Support Corp.*, 36f. 3d 1147 (1st Cir. 1994).

performance or reducing costs. For example, in *Transamerica Computer Co. v IBM*⁴⁶⁴ it was held that frequent interface changes that precluded competitors from connecting with IBM equipment were anticompetitive since they had no purpose and effect other than the exclusion of competitors.

Vapourware

This practice involves issuing statements before a product is available in the market describing the features of such product or the expected date of release. There is usually no violation of antitrust laws unless the statements are knowingly false and have a negative impact on the market. In *Xerox Corp*⁴⁶⁵ Xerox's practice of announcing new copier models and taking orders before such copiers were available was challenged. The announcement had the effect of limiting access to the market by competing copiers. A decree was passed prohibiting Xerox from taking orders or promoting the sale of new copiers more than 3 months prior to the time it "reasonably" expected such copiers to be "commercially" available.

Most of the consent decrees arrived at after certain practices have been challenged demonstrates the need to create a proper balance between the maintenance of competitive markets and protection of IPR.

5.4.2 South African Position

The South African Maintenance and Promotion of Competition Act⁴⁶⁶ defines "restrictive practices" in a manner which incorporates most of the practices which have been discussed in this chapter.

⁴⁶³ *Berkely Photo Inc. v Eastman Kodak Co.*, 603 f. 2d 263, 286 (2d Cir. 1979).
⁴⁶⁴ 698 f. 2d 1377 (9th Cir. 1983).
⁴⁶⁵ 86 F.T.C. 364 (1975).
⁴⁶⁶ No. 96 of 1979.

Restrictive practice is thus defined to include any agreement, arrangement, practice, act or omission which restricts competition directly or indirectly by having any of the following effects:-

- S. 1
- (i) restricting the production or distribution of any commodity;
 - (ii) limiting the facilities available for the production of any commodity;
 - (iii) enhancing or maintaining the price of or any other consideration for any commodity;
 - (iv) preventing the production or distribution of any commodity by the most efficient and economical means;
 - (v) preventing and retarding the development or introduction of technical improvements or the expansion of existing markets or the opening up of new markets.

Practices which could have the effects listed in section 1 of this Act may include tying arrangements, price fixing, exclusive dealing, cross-licensing and pooling arrangements amongst others.⁴⁶⁷

Section 90 of the Patents Act⁴⁶⁸ provides specifically for practices relating to licensing of technology. It is provided that

'Any condition in a contract relating to the sale of a patented article or to a licence under a patent of which the effect will be

- (a) to prohibit or restrict the purchaser or licensee from purchasing or using any article or class of articles, whether patented or not, supplied or owned by any person other than the seller or licensor or his nominee;*
- (b) to prohibit or restrict the licensee from using any article or process not protected by the patent;*

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These have been discussed in detail earlier in this chapter.

⁴⁶⁸

No. 57 of 1978.

- (c) *to require the purchaser or licensee to acquire from the seller, licensor or his nominee any article or class of articles not protected by the patent;*
- (d) *to require or induce the purchaser to observe a specified minimum resale price in respect of any article or class of articles protected by the patent;*
- (e) *to prohibit or restrict the making, using, exercising or disposing of the invention concerned in any country in which the invention is not patented;*

shall be null and void.'

Again, this provision targets common practices such as tying arrangements and resale price maintenance. Thus a license to make a patented article carries with it the right to use or dispose of the article; and a licence to use or exercise a patented process gives the licensor the right to use the process.⁴⁶⁹ These rights are however not unlimited, with the various limitations some of which being too restrictive, included in licensing agreements. While section 90(1) provides protection to licensees, s90(2) brings to bear the necessary balance between prevention of unnecessary restriction and protection of IPR. This is done by including two circumstances where restrictive terms in a licence agreement are considered permissible. The first one is where the term or condition prohibits the licensee from selling any goods other than those of the patentee (exclusive dealing). The second is a term of a condition where the licensor reserves the right to supply new parts for the patented article.

5.4.3 The Treaty of Rome

Article 85 of the Treaty of Rome prohibits anti-competitive agreements based on the same reasons as the Sherman Act and South African legislation

⁴⁶⁹ Ibid at 58.

discussed earlier.⁴⁷⁰ Article 85 sets out anticompetitive agreements as follows:-

Article 85

1. *The following shall be prohibited as incompatible with the common market; all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention restriction or distortion of competition within the common market and in particular those which:*
 - (a) *directly or indirectly fix purchase or selling prices or any other trading conditions;*
 - (b) *limit or control production, markets, technical development, or investment;*
 - (c) *share markets or sources of supply;*
 - (d) *apply dissimilar conditions to equivalent transactions with other trading parties thereby placing them at a competitive disadvantage;*
 - (e) *make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.*
2. *Any agreement or decisions prohibited pursuant to this article shall be automatically void.*
3. *The provisions of para 1 may be inapplicable in the case of any agreement, decision or concerted practice which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit; and which does not*

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Treaty of Rome Establishing the European Economic Community of 1957, 4 Eur YB (1958).

- (a) *impose on undertakings concerned restrictions which are not indispensable to the attainment of these objectives;*
- (b) *afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question.*

Article 86 specifies prohibited practices to include practices which

- (a) directly or indirectly impose unfair purchase or selling prices or unfair trading conditions;
- (b) limit production, markets or technical development to the prejudice of consumers;
- (c) applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;
- (d) make the conclusion of contracts subject to acceptance by the other party of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

The effectiveness of Article 85 has been experienced in several situations such as the Assurpol Decision.⁴⁷¹ In the case of *U.K. Agricultural Tractor Registration Exchange*⁴⁷² an information agreement between the members of a trade association of a trade association of U.K. manufacturers and importers of agricultural machinery had been in force since 1975. The agreement provided for exchange of information concerning aggregate industry data and data identifying sales of individual competitors as well as data on each company's dealers sales. This agreement was challenged. The Commission decided that the tractor market in the U.K. showed a high degree of concentration and presented high barriers to entry. Consequently, the exchange of information would lead to the prevention of hidden competition and the increase of barriers to entry for non-members of the Association.

⁴⁷¹ Decision of February 17, 1992 (OJ L68, 13.3.92).

Exclusive technology agreements have certain anti-competitive effects prohibited by section 85.⁴⁷³ However, the European Commission has power to grant exemption to patent and know-how licence agreement that confer a certain measure of exclusivity; as long as certain prohibited clauses are not present. An exemption may be granted making permissible clauses that impose the following obligations:-

- (a) an obligation on the licensor not to grant other licenses in the licensed territory or to exploit the invention himself in the licensed territory so long as at least one of the licensed patents remains in force or in the case of know-how element for a period of ten years from the date on which the market in the European Union by a licensee;
- (b) an obligation for the same periods as above on the licensee not to exploit the licensed technology nor the manufacture or use the licensed product or process in other countries within the European Union where exploitation in such other countries is reserved to the licensor or other licensees;
- (c) an obligation on the licensee not to sell at all in any European Union territory licensed to another licensee for a period of five years from the date of first sale of product within the European Union;
- (d) an obligation by the licensee not to establish an active sales policy (for example by advertising or establishing branches or distribution depots) in other European Union territories that are licensed to other licensees;
- (e) an obligation on the licensee to use the licensors trademark (although the licensee must be allowed to identify itself as the manufacturer of the licensed product;
- (f) an obligation on the licensee that it shall limit production of the licensed product to what it requires for its own use only and to sell the licensed product only as an integral part of some other product or as a replacement part for that other product.

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Decision of January 14, 1992 (OJ L 37, 14.2.92).

Ladas & Parry Intellectual Property Bulletins and Newsletters, August 1997 - 'E.U. Group Exemption for Technology Licensing' 2-5.

The exemption will not apply if certain prohibited clauses are present in the license.

Prohibited clauses set out in Article 3 include,

- (i) restrictions on the ability of either party to determine the price at which it will sell licensed products;
- (ii) non-competitive clauses in respect of research and development, manufacture, use or distribution of competing products;
- (iii) any requirement on either party to refuse, without any objectively justified reason, to meet demand from users or resellers who might sell in other areas of the EU or requirement to make it difficult for such users or resellers to act in this way;
- (iv) if the parties were already competing manufacturers and one of them is restricted in choosing the customers that may be served within the same technical field or product market;
- (v) limitations on the maximum amount of use the licensee may make of the licensed technology;
- (vi) requiring the licensee to assess improvements to the licensor;
- (vii) clauses prolonging the duration of the exclusivity periods agreement beyond those set out in the general exemption.

4.5 Conclusion

In order for concerns of developing countries to be addressed effectively, a proper balance between IPR protection, private rights and social and economic welfare need to be established. Restrictive clauses in technology licensing agreements are used to offer protection to owners so as to ensure maximum returns for innovation. It is evident however, that some restrictions place unreasonable restraint on domestic or international competition. Such restrictions lead to difficulty of entry into markets where the licensor and licensee are in a horizontal relationship. They also foreclose access to technology and generally suppress the operation of free market.

Unreasonable restraints have the effect of raising the costs of vital inputs, goods and services, which in turn lead to limited availability.

Some of the vertical restraints have the capability to improve product quality and safety, reduce transactions costs and maximise benefits to the owner at the same time. It is submitted however, that the exercise of existing economic power by developing countries impacts negatively on access to technology by developing countries.

Also valid is the argument that IPR do not constitute the main barrier to access; that even technology which is available in the public domain cannot be applied in some countries due to lack of institutional structure that is designed to turn knowledge into products for which markets exist. The focus for developing countries should therefore be on the accumulation of technological capacity involving in part the improvement of the institutional environment for innovation and scientific enquiry.

Since IPR are recognised in the Convention, enabling legal provisions in technology transfer need to be put in place. To create the necessary balance, access to technology should be seen in a broader context of the acquisition of knowledge and expertise.

CHAPTER SIX

Implementation of Intellectual Property Related Provisions of The Convention on Biological Diversity

6.1 Introduction

The Convention on Biological Diversity recognises that intellectual property rights are relevant to and may have implications for the implementation of the Convention. It is noted however, that IPR are the main focus in other international agreements and organisations.⁴⁷⁴ There is need therefore, to implement IPR related provisions of the Convention on biological diversity and of other international agreements in a mutually supportive way. Article 16(5) of the Convention provides that IPR may have an influence on the implementation of the Convention; and calls on parties to co-operate subject to national legislation and international law in order to ensure that such rights are supportive of the Convention's objectives.

This chapter examines the interrelationships between IPR and other aspects of the Convention's implementation. The role of existing IPR systems in achieving the objectives of the Convention and the relationship between the Convention and TRIPS are examined. Findings from this chapter form the basis for recommendations contained in chapter six of this thesis.

6.2 IPR Related Provisions in the Convention

The first relevant provision relating to IPR is Article 16(5) referred to above. The term 'may' in this article has been interpreted to imply that negotiators could not agree on whether IPR have a positive, negative or no effect on the achievement of the Conventions objectives. It is further implied by this article that any impact on the Convention's objects is likely to occur in the context of

technology transfer rather than in the context of conservation and sustainable use.⁴⁷⁵

Article 8(j) requires each party as far as possible and subject to its national legislation to

“..... respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.”

IPR systems are directly relevant to the implementation of this Article.

Also relevant is Article 11 which requires parties to adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity. Existing or modified IPR could provide such incentives.

Article 12(c) calls on parties to promote and co-operate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources. IPR are commonly used to protect the information supplied to researchers and research findings.

Principles for access to and sharing of the benefits of genetic resources are articulated in Article 15. IPR is an important part in controlling access to genetic resources and equitable sharing of benefits.

⁴⁷⁴ The most important include TRIPS and the Paris Convention as discussed in chapter 3 of this thesis.

⁴⁷⁵ UNEP 'Convention on Biological Diversity: The Impact of Intellectual Property Rights Systems on the Conservation and Sustainable use of Biological Diversity and on the equitable Sharing of Benefits from its use: A Preliminary Study' (1996). UNEP/CBD/COP/3/22, 22 September 1996.

IPR are relevant to the implementation of Article 17 which requires parties to facilitate the exchange of relevant technical scientific and socio-economic research. Specific reference is made to the exchange of indigenous and traditional knowledge; implying that such knowledge is as valuable as biotechnology and other technologies referred to in terms of Article 16.⁴⁷⁶

Article 18 requiring parties to promote international scientific and technical co-operation is relevant in that information exchanged or developed through such co-operation may be subject to IPR.

Effective participation in biotechnological research especially by countries which provide genetic resources is provided for under Article 19. Article 19(2) calls on parties to promote fair and equitable access to the results and benefits arising from biotechnologies based upon genetic resources provided by contracting parties. IPR will play a vital role in the implementation of this article.

Finally, IPR are relevant for the implementation of Article 20 which requires parties to provide financial support and incentives for activities intended to achieve the objectives of the Convention. IPR can provide the required incentive.

A detailed analysis of the impact of IPR systems follows in the next section.

6.3 The Impact of IPR Systems on the Achievement of the Objectives of the Convention

6.3.1 IPR systems and traditional and indigenous knowledge

a) Recognition in the Convention

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In terms of Article 2 of the Convention, technology is defined to include biotechnology. Indigenous knowledge is not included.

As already discussed in chapter one of this thesis, indigenous and local communities have been developing, conserving and sustainably using biological resources on their lands for years. The process began with the earliest domestication of wild species and animals. Local communities possess knowledge of flora and fauna and of the ecological processes of the ecosystems they inhabit. Further, they have developed a wide variety of plants and animals for food, medicine and other purposes. Traditional knowledge has and will continue to make fundamental contributions to scientific research in agricultural medicinal and industrial fields. Such knowledge is also an invaluable source for natural resource use and ecosystem management.⁴⁷⁷

The Convention recognises the importance of indigenous and local communities to the conservation and sustainable use of biological diversity. It also recognises that indigenous and local communities should share in the benefits derived from ideas and innovations they have developed and that prove useful to others. Recognition is embodied in the preamble to the Convention in the following paragraph:

"Recognising the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the

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(a) F Berkes, C Folke and M Gadgil 'Traditional Ecological Knowledge, Biodiversity, Resilience and Sustainability' in CA Perrings et al *Biodiversity Conservation : Problems and Policies* (1995) at 140.

(b) SR King 'Conservation and Tropical Medicinal Plant Research' in MJ Bgailick E Elizabetsky SA Laird (eds) *Medicinal Resources of the Tropical Forest : Biodiversity and its Importance to Human Health* (1996).

(c) Farmers in the Andes of Southern Peru depend on both potatoes and maize as basic staples. A study in the area of Paucartambo illustrates the complexity of genetic diversity maintenance for these crops and provides examples of the criteria that farmers use to select their varieties. For example, local potato varieties are classified first by use. This category is divided among those appropriate for boiling, soup making or freeze drying. Further subclassification is done on the basis of morphological differences. Maize is also classified into use categories distinguishing among boiling and parching. (Source: K. Zimmerer 'Managing Diversity in Potato and Maize Fields of the Peruvian Andes' in *The Erosion of Crop Genetic Diversity: Challenges, Strategies and Uncertainties* edited by R Tripp and W van der Heide (1996). Natural Resource Perspectives Number 7 March 1996. (Overseas Development Institute Publication).

conservation of biological diversity and the sustainable use of its components.”

The links between the conservation of biological diversity and of cultural diversity and dependence of these communities and continued access to biological resources is recognised. Also recognised is the fact that such knowledge may have value outside the communities themselves.⁴⁷⁸

The Preamble is translated into an obligation in terms of Article 8(j) referred to in section 5.1 of this chapter. Parties are required to respect preserve and maintain the knowledge, innovations and practices of indigenous and local communities; promote the wider application of such knowledge and encourage the equitable sharing of the benefits arising from the use of such knowledge, innovations and practices.

Implementation of Article 8(j) is subject to national legislation. In other words, the Convention does not prescribe specific measures for implementation and leaves it to individual countries to determine. We are going to focus on those aspects of implementation related to IPR.

b) Indigenous Peoples Initiatives on IPR

The significance of Article 8(j) is reflected in initiatives and sentiments expressed by groups of indigenous people and interested organisations. Article 44 of the Charter of the Indigenous Tribal Peoples of the Tropical Forests articulates IPR concerns as follows:-⁴⁷⁹

“Since we highly value our traditional knowledge and believe that our biotechnologies can make an important contribution to humanity, including developed countries, we demand

⁴⁷⁸ UNEP ‘Knowledge Innovations and Practices of Indigenous and Local Communities: Implementation of Article 8(j) (1996) Conference of the Parties to the Convention on Biological Diversity 3rd Meeting, Buenos Aires, Argentina 4 - 15 November 1996. UNEP/CBD/COP/3/19.

⁴⁷⁹ Charter of Indigenous - Tribal Peoples of the Tropical Forests : Statement of the International Alliance of the Tropical Forest Penang, Malaysia, February 15, 1992 referred to in Sanches and Juma (eds). Op cit note 9 at 123.

guaranteed rights to our intellectual property, and control over the development and manipulation of this knowledge."

The Kari-Oca Declaration echoes these sentiments in Article 26⁴⁸⁰

"Our health rights must include the recognition and respect of traditional knowledge by indigenous healers. This knowledge, including our traditional medicine and their preventive and healing power, must be recognised and protected against exploitation."

Article 102 of this Declaration states,

"As creators and carriers of civilisations which have given and continue to share knowledge, experience and values with humanity, we require that our right to intellectual and cultural properties be guaranteed and that the mechanisms for each implementation be in favour of our peoples and studied in depth and implemented. This respect must include the right over genetic resources, gene banks, biotechnology and knowledge of biodiversity programs."

Direct reference to intellectual property is made in Articles 84 to 109 of the Declaration.

Indigenous peoples of the Pacific met at a regional consultative forum⁴⁸¹ and declared the right of indigenous peoples to self governance, independence and ownership of own land and resources. The forum re-affirmed that imperialism is perpetuated through intellectual property rights systems, science and modern technology to control and exploit the lands, territories

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(a) Kari-Oca Declaration and Indigenous Peoples Earth Charter (May 25-30, 1992) Rio de Janeiro, printed in IWGI A Newsletter, (1992) 57-61.

(b) The Kari-Oca Declaration was an initiative by indigenous groups to counter balance preparations for the UN Rio meeting on the environment and development. Indigenous peoples felt left out of the process and decided to organise their own meeting.

⁴⁸¹

UNDP 'Final statement from the UNDP on Intellectual Property Rights' (1995) Sura, Fiji April 1995.

and resources of indigenous peoples. It is stated clearly in their final statement that indigenous peoples of the Pacific are willing to share knowledge with humanity, provided they determine when, where and how it is used.

It has also been contended that the knowledge base acquired by indigenous peoples over generations through direct contact with their environment is parallel to the scientific disciplines of ecology and environmental studies. Indigenous knowledge is therefore invaluable for understanding of the functioning of natural environment and directing the use of resources in a sustainable manner. Such knowledge consequently deserves recognition similar to that which is accorded other scientific disciplines.⁴⁸²

In recognition of the 1993 United Nations International Year for the World Indigenous People, nine tribes of Mataatua in the Bay of Plenty Region of Aotearoa New Zealand convened the first international Conference on the Cultural and Intellectual Property Rights of Indigenous Peoples. Over 150 delegates from 14 countries attended including indigenous representatives from Japan, Australia, Cook Islands, Fiji, India, Panama, Philippines, Surinam, USA and Aotearoa.⁴⁸³ The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples was formulated during this conference. The Preamble to this declaration reaffirms the undertaking of United Nations member states to "adopt or strengthen appropriate policies and/or legal instruments that will protect indigenous intellectual and cultural property and the right to preserve customary and administrative systems and practices....."⁴⁸⁴

The parties declared that indigenous people of the world have the right to self determination. Exercise of that right necessarily requires recognition that they

⁴⁸² See Union of International Associations. Encyclopedia of World Problems and Human Potential at SJ 68 45.

⁴⁸³ Op cit note 9 at 123.

⁴⁸⁴ The Mataatua Declaration on cultural and Intellectual Property
<http://users.ox.ac.uk/~wgtrr/mataatua.htm>.

existing IPR systems do not satisfy this need. However, a system of reward must be based on the recognition of rights.⁴⁸⁷ It is submitted in this thesis that recognition and granting of some form of intellectual property rights is a viable form of reward. The basis of recognition of IPR to indigenous peoples is discussed in the next section. The development of proprietary interest in society evolved from communal or collective ownership to family or clan ownership and finally to private ownership.⁴⁸⁸ The changes from one phase to the other were not automatic; but were influenced by socio-economic and political factors. The place and role of property rights is a topic which has been addressed by scholars and thinkers over the years. Some of these jurisprudential theories of property may be applied to the narrow area of intellectual property rights.

c) The Basis of Granting of IPR to Indigenous Peoples

(i) Property as the basis of various liberal rights and freedoms.

The theory that property is a pre-requisite of other rights and freedoms is described by Dietze as follows:⁴⁸⁹

"Property is intimately related to life and freedom. It is prerequisite of the freedom to be and to act. It is as old as freedom and also as important. Property rights are thus indistinguishable from such rights as freedom of religion, of speech, of the press, of assembly and association, freedom from arbitrary arrest and so forth"

This theory is relevant as far as it relates property rights to other rights and freedoms. Valued analysis of this study implies that property rights form part of the body of human rights which have been adopted by nations world wide.

⁴⁸⁶ Idem. Recommendations to States, National and International Agencies.

⁴⁸⁷ Op cit note 36 at 162.

⁴⁸⁸ SBO Gutto *Property and Land Reform. Constitutional and Jurisprudential Perspectives* (1995) 4-6.

⁴⁸⁹ G Dietze *In Defence of Property* (1971) at 70.

It implies therefore, that the exploitation of the knowledge of indigenous communities in the area of biological resources amounts to violation of their human rights.

(ii) The Labour Theory

According to this principle, an individual acquires ownership of an object into which he has incorporated his labour.⁴⁹⁰ Locke formulated the theory as follows:-⁴⁹¹

"Though the earth and all inferior creatures be common to all men, yet every man has a 'property' in his own person. Thus nobody has any right to but himself. The Labour of his 'body' and the 'work' of his hands, we may say, are properly his. Whatsoever, then he removes out of the state that nature hath provided and left it in, he hath mixed his labour with it, and joined to it something that is his own, and thereby makes it his property. It being by him removed from common state. Nature hath placed in, it hath by this labour something annexed to it that excludes the common right of other men."

Although labour by itself cannot form a basis of title to property, this theory can be applied to intellectual property rights. The process of 'mixing' labour and what has been provided by nature could involve the use of skills, knowledge and in some cases the exercise of ingenuity. In this theory there is a clear recognition of the rights of individuals who have created an object through the investment of labour. Consequently, if the object produced involves an inventive step and is capable of being used or applied, such object qualifies for patent protection. If on the other hand, the object derives economic value from non-disclosure, then trade secret law should provide protection.

(iii) The Occupation Theory

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SKB Asante *Property Law and Social Goals in Ghana 1844-1966* (1975) 13.

The occupation theory is relevant to establishing original title to property and was a recognised mode of establishing title in Roman Law. According to this theory, a person who occupies an unappropriated object with the intention of appropriating it himself is awarded ownership.⁴⁹² Kant's principle of External Acquisition states:-⁴⁹³

"Whatever I bring under my power according to the law of external freedom, of which as an object of my free activity of Will, I have the capability of making use according to the Postulate of the Practical Reason, and which I will to become mine in conformity with the idea of possible united common will, is mine."

In the area of biological resources, title to property is important; without title to the land on which biological resources are found, issues of intellectual property rights would not arise at all. A theory which is an important basis of title is relevant in explaining the significance of property rights to local communities. The theory is also relevant as a counter to the common heritage practice which enabled nations from the North to have open and free access to genetic resources in the South. In most cases, resources were exploited from land which belonged to a community and could therefore not be classified as 'inappropriate'. The occupation theory cannot be used to support open and free access in these circumstances.

d) Intellectual Property Rights as Human Rights

In practice human rights law operates to prevent a state causing harm to its own nationals. It protects individuals from physical injury as well as economic, social or intellectual wrongdoing by a state. Individuals are now protected though international law ; a state may be held internationally responsible for acts done in its own state.

⁴⁹¹ Idem.

⁴⁹² Ibid at 11.

⁴⁹³ Idem.

A survey of certain international instruments reveal the fact that IPR forms part of the rights referred to as inalienable rights of all members of the human family. The Universal Declaration of Human Rights is the starting point and basis of any study in this area.⁴⁹⁴ Article 7 of this Declaration guarantees equal protection of the law. IPR laws whose protection does not incorporate indigenous peoples fall short of the requirements under this Article and are therefore discriminatory. Article 17 recognises the right to own property collectively and not to be arbitrarily deprived of that property. Article 23 guarantees the right to just and favourable remuneration for work. IPR are usually the result of the exercise of ingenuity, work related to indigenous knowledge may be included in the definition of work in terms of this provision.. Finally, Article 27 provides for the right to culture and recognition of interest in scientific production including the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production.

In 1993, the United Nations Subcommission on Prevention of Discrimination and Protection of Minorities endorsed a study of the protection of cultural and intellectual property of indigenous peoples⁴⁹⁵. A special Rapporteur was mandated to draft principles and guidelines for the protection of indigenous peoples heritage⁴⁹⁶. Paragraph 11 of the Draft Guidelines states that the heritage of indigenous peoples is comprised of all objects, sites, knowledge the nature or use of which has been transmitted from generation to generation, and which is regarded as pertaining to a particular people; it also includes objects, knowledge and literary works which may be created in the future based upon its heritage. Heritage is defined to include⁴⁹⁷

⁴⁹⁴ Universal Declaration of Human Rights was adopted and proclaimed by the UN General Assembly resolution 217 A(111) of 10 December 1948.

⁴⁹⁵ Resolution 1993/44 of 26 August 1993.

⁴⁹⁶ United Nations 'Discrimination Against Indigenous People : final Report of the Special Rapporteur Mrs. Erica-Irene Daes, in Conformity with Subcommission Resolution 1993/44 and Decision 1994/105 of the Commission on Human Rights.' E/C N.4/Sub. 2/1995/26. at 1.

⁴⁹⁷ Ibid. para. 12 at 3.

' . . . all kinds of scientific, agricultural, technical and ecological knowledge including cultigens, medicines and the rational use of flora and fauna. . . . '

Principle one, states that protection of the heritage of the indigenous peoples of the world benefits all humanity. Effective protection of such heritage which is broadly based on the principle of self-determination is, consequently, crucial. Self-determination includes the right and duty of indigenous peoples to develop their own cultures and knowledge systems, and forms of social organisation. Indigenous people should also be recognised as the primary guardians and interpreters of their cultures, arts and sciences.⁴⁹⁸ International recognition and respect for indigenous peoples' own customs rules and practices is said to be essential to these peoples' enjoyment of human rights and human dignity.⁴⁹⁹ Paragraph 5 of the Principles defines the scope of such rights by stating that ownership and custody of heritage by indigenous people must continue to be collective, permanent and inalienable. Other Principles reaffirm indigenous peoples' right to control:

- a) discovery, use and teaching of knowledge arts and cultures;⁵⁰⁰
- b) cultural transmission and education;⁵⁰¹
- c) research conducted within their territories;⁵⁰²
- d) recording, study, use or display of heritage;⁵⁰³
- e) benefits arising from commercial application of such heritage.⁵⁰⁴

Implementation of these Principles is through domestic legislation which should generate prompt, effective and affordable judicial or administrative action.⁵⁰⁵ Specific prohibitions to be incorporated in national laws are elaborated in Paragraph 26 of the Guidelines as follows :-

⁴⁹⁸ Ibid. para. 3 at 2.
⁴⁹⁹ Idem para.4.
⁵⁰⁰ Principle 6.
⁵⁰¹ Principle 8.
⁵⁰² Principle 7.
⁵⁰³ Principle 9.
⁵⁰⁴ Principle 10.
⁵⁰⁵ Paragraph 25.

'National Laws should deny to any person or corporation the right to obtain patent, copyright of other legal protection for any element of indigenous peoples' heritage without adequate documentation of the free and informed consent of traditional owners to an arrangement for the sharing of ownership, control, use and benefits.'

The remainder of the principles basically call upon researchers to obtain consent from indigenous peoples prior to undertaking any research activities or publishing findings of such research.⁵⁰⁶ Business and industry are also called upon to agree on an immediate moratorium on making contracts with indigenous peoples for the rights to discover, record and use previously undescribed species or cultivated varieties of plants, animals or microbes or naturally occurring pharmaceuticals.⁵⁰⁷

The Draft Principles and Guidelines were distributed to indigenous peoples, organisations and states, inviting them to submit comments.⁵⁰⁸ UNEP is one of the organisations which responded by affirming its commitment to continuing to facilitate the co-operation of states in recognising the unique contributions of indigenous peoples to conservation and sustainable development; as well as their right to be compensated for their contributions to society.⁵⁰⁹

Individual human rights have not been the focus of international environmental instruments; the main focus has been, for the most part, states and their sovereign rights.⁵¹⁰ The final report on Human Rights and the Environment was submitted to the UN Sub-Commission on Prevention of

⁵⁰⁶ Paragraphs 35-36.

⁵⁰⁷ Paragraph 41.

⁵⁰⁸ Subcommission Resolution 1994/48.

⁵⁰⁹ Op cit note 2 para 9.

⁵¹⁰ Op cit not 13 at 588.

Discrimination and Protection of Minorities in 1994.⁵¹¹ One of the principles advocated in this report is the concept that human rights, an ecologically sound environment, sustainable development and peace are indivisible.⁵¹² Aspects of this concept have been captured by the Rio Convention on Biological Diversity 1992 through, for example the call on parties to respect, preserve and maintain traditional knowledge, and promote its wider application with the approval and involvement of traditional people. Reference to equitable sharing of benefits is also relevant in this respect.

Also relevant is the International Covenant on Economic, Social and Cultural Rights 1966 which entered into force in 1976.⁵¹³ In its Preamble, the Covenant recognises, in accordance with the Universal Declaration of Human Rights that the ideal of free human beings enjoying freedom from fear and want can only be achieved if conditions are created whereby everyone may enjoy his economic, social and cultural rights, as well as civil and political rights and freedom. The Covenant recognises certain rights including the right to work, the right to form and join trade unions, the right to social security, adequate standard of living, education and the enjoyment of the highest attainable standard of physical and mental health.⁵¹⁴ Of particular relevance in this thesis is Article 15 which provides as follows: -

- '1. *The States Parties to the present covenant recognises the right of everyone:*
 - i) *to take part in cultural life;*
 - ii) *to enjoy the benefits of scientific progress and its applications;*
 - iii) *to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.*
2. *The steps to be taken by the States Parties to the present Covenant to achieve the full realization of the right shall include those necessary*

⁵¹¹ Op cit note 496.

⁵¹² Op cit note 510 at 589.

⁵¹³ M Dixon International Law at 230.

⁵¹⁴ Articles 6 – 13.

for the conservation, the development and the diffusion of science and culture.

3. *The State Parties to the present Covenant undertake to respect the freedom indispensable for scientific research and Creative activity.*
4. *The States Parties to the present Covenant recognize the benefits to be derived from the encouragement and development of international contacts and co-operation in the scientific and cultural fields.'*

This Article is an express recognition of intellectual property rights as a component of rights falling within the scope of this Covenant. The benefits of scientific literary or artistic productions are best achieved through effective intellectual property regimes.

The African Charter on Human and People's Rights 1981 (The Banjul Charter) was adopted at the 18th OAU Assembly of Heads of State and Government.⁵¹⁵ The Charter covers a range of rights dealing with political, civil, economic and cultural rights. The distinguishing feature of the African Charter is its recognition of the concept of people's rights as human rights. Recognition of group rights is a departure from traditional human rights concepts which focus on the individual as opposed to groups.⁵¹⁶ The concept of collective rights is examined in more detail in Chapter 7 of this thesis.

The Draft Declaration on the Rights of Indigenous Peoples emphasises the need to respect and promote the inherent rights and characteristics of indigenous peoples; especially their rights to their lands, territories and resources, which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophies.⁵¹⁷ Article 12 guarantees indigenous peoples the right to practice and revitalise their cultural traditions and customs. This includes the right to maintain,

⁵¹⁵ Op cit note 19 at 235.

⁵¹⁶ Howard 'Evaluating Human Rights in Africa : Some Problems of Implicit Comparisons' (1984) No 2, 6 Human Rights Quarterly 160 at 163.

⁵¹⁷ Ibid. Paragraph 6 of the Preamble.

protect and develop the past, present and future manifestations of their cultures. It also includes the right to the restitution of cultural, intellectual, religious and spiritual property taken without their free and informed consent or in violation of their laws, traditions and customs. Implementation of this article is subject to debate; it is also subject to the survival of its provisions to the final draft of the Declaration.⁵¹⁸ The importance of IPR is further recognised in Article 29 which provides:-

"Indigenous peoples are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property.

They have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions literature's, designs and visual and performing arts."

The concerns raised in this section confirm the fact that intellectual, cultural and scientific property rights is an important starting point to defining other useful categories of traditional values, knowledge and resources. An equitable property rights system will have to address issues such as recognition of origin, just compensation and authorisation.

6.3.2 Impact of IPR systems as indirect incentives affecting conservation and sustainable use

Article 11 of the Convention specifies that parties shall as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity.

⁵¹⁸ As of August 1998 an Intersessional Working Group was still working on the Draft,

An incentive measure in the context of the Convention has been defined as a specific inducement designed and implemented to influence government bodies, business organisations, non-governmental organisations or local people to conserve biological diversity or to use its components in a sustainable manner.⁵¹⁹ Incentive measures are considered especially relevant in light of the global trend toward liberalisation and are consequently crucial to the objective of the Convention. Incentives for biodiversity management are derived from a complex interaction of laws, policies, property rights, social and cultural norms. As a result, effective incentive measures must take into consideration all these multiple factors.⁵²⁰

There is evidence, that IPR systems create incentives for private investment innovation, producing new products that benefit society.⁵²¹ The issue which needs to be addressed in this section is whether IPR or innovations derived in part from genetic resources biochemicals and related biological resources can create indirect incentives for the conservation and sustainable use of resources. Genetic resources contained in traditional varieties of domesticated crops, naturally occurring relative of domesticated crops, and modern improved varieties serve as resources for crop breeding and for agricultural and other biotechnology.⁵²² Genetic resources, traditional crop varieties as well as modern varieties generally result from human efforts in innovation and conservation; they are not natural material.⁵²³ As indicated elsewhere in this thesis, traditional varieties represent a process involving careful selection of plant materials adapted to varied conditions and preferences. The result of this process is described thus:-⁵²⁴

519 incorporating views of different stake holders.
UNEP 'Sharing of Experiences on Incentive Measures for Conservation and sustainable Use' (1996). UNEP/CBD/COP/3/24.
520 Idem.
521 Idem.
522 Op cit note 2.
523 Idem.
524 Op cit note 4 (c).

“..... a complex and continually evolving collection of local crop varieties often referred to as landraces, that reflects the interactions with wild species, adaptations to changing farming conditions, and responses to the economic and cultural factors that shape farmers priorities.”

Biological resources derived from genetic diversity in plant, animal and microbial species include a diversity of chemicals found in species that serve as sources of pharmaceuticals, and industrial compounds amongst other uses.⁵²⁵

In the period prior to the Convention, genetic resources were considered a common heritage and there was no direct benefit which was returned from users of other countries enjoying free access to the providers.⁵²⁶ Similarly, the providers of genetic resources did not participate in the advanced research, neither did they gain economic benefit from the IPR protected end products. Further, studies show that no significant compensation was paid in exchange for traditional knowledge or practices that facilitated the identification of a naturally accruing compound that in turn led to the development of a commercially valuable product.⁵²⁷

There are two conflicting views on the use of IPR as an indirect incentive. On the one hand there are those who believe that IPR can operate as an indirect incentive for conservation on condition that they are coupled with appropriate legal mechanisms for the transfer of benefits to providers of genetic resources.⁵²⁸ This is supported by the Convention which subscribes to the view that IPR can encourage and reward the adding of value to genetic resources used as raw materials.⁵²⁹ However, there is recognition in the Convention that IPR systems must be coupled with access and benefit

⁵²⁵ Op cit notes 277, 279 (a) and (b).

⁵²⁶ See generally chapter one and two of this thesis.

⁵²⁷ Op cit note 277.

⁵²⁸ Idem.

⁵²⁹ Article 16 paragraph 5 of the Convention.

sharing agreements. To this end the Convention provides for sharing benefits between technology developers and providers of genetic resources or traditional knowledge.⁵³⁰

From a legal perspective supporters of IPR as an incentive argue that, IPR control use by all others within a specified period and are legally recognised.⁵³¹ On the other hand a contract binds the parties and is of no effect to those who did not sign the contract. Any controls included in the contract will have no effect on third parties.⁵³² From a scientific perspective supporters argue that IPR protection encourages conservation through the development of conservation technologies and more efficient agricultural land use. A common example is the use of IPR as an incentive to encourage the development of new plant varieties that reduce the pressure to convert land to agriculture by increasing yields and enhancing the pest-resistance of crops on existing farm lands.⁵³³

Case studies on incentive measures indicate that property rights may be used as an effective incentive measure for biodiversity management. Case studies in Nepal,⁵³⁴ Tanga Tanzania,⁵³⁵ Brazil,⁵³⁶ Cameroon,⁵³⁷ and Central America⁵³⁸ show the effectiveness of incentive measures. Property rights feature prominently in the case of Tanga, Tanzania where the region was

⁵³⁰ Article 15 paragraph 7 of the Convention.

⁵³¹ See chapter two of this thesis.

⁵³² See generally P Havenga et al (eds) *General Principles of Commercial Law* (1997) 3 ed. Section B at 43-111.

⁵³³ Op cit note 277.

⁵³⁴ Gurung 'Linking People to Protected Areas in Nepal : The Annapurna Conservation Area Project' (1996) as discussed in UNEP' op cit note 299.

⁵³⁵ Gorman et al 'The Importance of formal enforcement in creating Local Incentives for sustainable Management in Tanga Tanzania' (1996) as discussed in UNEP op cit note 299.

⁵³⁶ Loureiro 'A Tax Incentive for Protected Areas and Water Supply Areas in Brazil' (1996) as discussed in UNEP op cit note 299.

⁵³⁷ Lisinge 'Community Development Programme for sustainable Use in Cameroon'. (1996) as discussed in UNEP op cit note 299.

⁵³⁸ Lacher et al 'La Amistad Biosphere Reserve, Central America' (1996) as discussed in UNEP op cit note 299.

This is a conservation complex covering over one million hectares in densely populated Costa Rica and Panama. A Collaborative effort by local communities, NGOs and private sector was initiated in response to loss of biodiversity in the buffer zone of the Reserve. Efforts involved

experiencing environmental problems relating to the use of destructive fishing methods, increasing pollution and degradation of the mangrove forest. It was recognised by regional authorities and local communities that a solution required an integrated approach coupled with enforcement of existing laws and policies. With the assistance from IUCN and Irish Aid a programme which included incentive measures was formulated. Incentive measures included the granting of use rights, revenue sharing among stake holders and a participatory process in the design, implementation monitoring and assessment of the project. This integrated approach has proven effective in the areas of the project with elimination of dynamite fishing, replanting of mangroves on dune and beach areas and more effective enforcement of existing laws and regulations.⁵³⁹ Use rights coupled with IPR rights would definitely enhance these incentives.

Proponents of the opposite view argue that IPR are unlikely to create attractive incentives for conservation or benefit sharing. IPR as they are currently utilised cannot protect the collective, historical qualities of indigenous knowledge. This conclusion is based on the fact that categories between cultural, intellectual and physical property are not as distinct and mutually exclusive as Western categories.⁵⁴⁰ For example some of the sacred sights are in fact ecological reserves as a result of the use of indigenous knowledge in conservation of such sights. They also serve as cultural centres with physical and spiritual significance. The knowledge used to manage these sights is communally held; under these circumstances commercialisation through IPR may not be the best option.⁵⁴¹

Also against are those who argue that IPR protection encourages the development of technologies that displace biological diversity or threaten biodiversity. IPR are cited as a threat to the richness and range of the

an integrated approach involving education, training, access to credit, subsidies for reforestation and cost sharing for local infrastructure building.

⁵³⁹

Op cit note 315.

⁵⁴⁰

Op cit note 9 at 121.

⁵⁴¹

Idem.

diversity of landraces by encouraging the widespread adoption of modern varieties.⁵⁴² For a new variety to be legally protected, it must be subject to very precise description, including the requirement that it be distinct, uniform and stable. This is seen as a direct disincentive to the promotion of diverse landraces or of varietal mixtures.⁵⁴³ Strength of IPR over plant varieties is linked with the disappearance of vast numbers of traditional varieties.⁵⁴⁴

It is submitted that IPR like schemes that would confer over biological information contained in genetic resources to the communities of origin can create an indirect incentive. It is however acknowledged that an integrated approach is likely to be more effective; consequently IPR must be coupled with other strategies such as benefit sharing agreements. Detailed recommendations on the issue are discussed in chapter six of this thesis.

6.3.3 Impact of IPR systems on the equitable sharing of benefits from its use

There is no dispute relating to the value of biological diversity knowledge and information. When such information is combined with research new products are developed.⁵⁴⁵ The Convention calls on parties to promote the transfer, exchange, protection and use of valuable information relating to conservation, sustainable use and benefit sharing. As indicated in Chapter One, this provision incorporates the international law principle of international co operation calling on states to search for multilateral solutions. Co operation in this case takes the form of exchange of information about technologies such as biotechnology, innovations of indigenous and local

⁵⁴² Op cit note 279 (c).

⁵⁴³ Idem.

⁵⁴⁴ Op cit note 277.

⁵⁴⁵ See detailed discussion in

(a) DR Downes 'Global Trade, Local Economies and the Law in WJ Snape (ed) *Biodiversity and the Law* (1996).

(b) T Swanson 'Impact of IPR Systems on the Conservation and Sustainable Use of Biological Diversity and on the Equitable Sharing from its use.' (1996).

UNEP/CBD/COP/3/Inf. 13.

communities and scientific and technical information. Article 17 of the Convention provides as follows:-

"1. The contracting parties shall facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity taking into account the special needs of developing countries.

2. Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialised knowledge, indigenous and traditional knowledge as such and in combination with the technologies referred to in Article 16, para 1....."

IPR is the principal legal mechanism used to encourage the creation and dissemination of novel information of value to the community.⁵⁴⁶ IPR systems serve an important function by creating incentives for investment in research leading to the development of innovations. Disclosure of valuable information about such inventions makes it possible for the community to benefit from such novel discoveries. As discussed in Chapter 2 of this thesis IPR are limited in scope because of the recognised need to balance the individual rights of exclusivity against wider socio-economic goals. Success in reaching such goals necessarily requires free exchange and use of information which is in turn expected to encourage more innovation, strengthen the technological infrastructure and enhance the capacity for technological research and development. Issues on equitable distribution of social, cultural, scientific and economic benefits are relevant in justifying limiting rights of exclusivity. The balance is struck in two ways; criteria of protection and the duration of IPR which is always specified.⁵⁴⁷

⁵⁴⁶

See chapter two of this thesis.

There are two opposing views on the role of IPR systems on benefit sharing through the development of technologies using genetic resources. IPR systems are said to be designed to provide a benefit to innovations developed by private industry; the bulk of users of end products are in the developed world. The smaller, poorer farmers in the developing world who cannot afford the expensive inputs required do not benefit from these IPR systems. There is therefore, no reward to the indigenous and local communities for their contribution to genetic resources which are later commercialised and protected by legal systems. IPR are further seen as a hindrance to the diffusion of useful new crop varieties to indigenous and local communities, especially in developing countries.⁵⁴⁸

There is agreement that IPR are intended to create incentives for productive investment in innovation which benefits society. However, existing IPR systems were not designed to distribute rewards equitably. Neither were they designed to create proprietary rights or provide economic rewards for current populations in exchange for inventions or conservation efforts by their ancestors.⁵⁴⁹ Supporters of this view acknowledge the valuable contribution by indigenous and local communities and that they should receive a share of the benefit. They however, do not agree on the use of IPR systems as a mechanism to achieve this goal.⁵⁵⁰

Existing IPR cannot provide incentives to indigenous and local communities as far as collective knowledge and information or knowledge which has been passed down from generation to generation is concerned. Most indigenous knowledge will not qualify for IPR protection due to lack of "novelty". Recognition of the value of their contribution to the development of new products entitled indigenous and local communities to some form of "reward", similar to IPR. Equitable sharing of benefits through the development of

⁵⁴⁷

Idem.

⁵⁴⁸

Op cit note 277.

⁵⁴⁹

Idem.

⁵⁵⁰

Idem.

technologies using genetic resources cannot be achieved through existing IPR systems.

6.3.4 Impact of IPR systems on transfer of and access to technology

Sharing of benefits is defined to include, inter alia "... the appropriate transfer of relevant technologies, taking into account all rights"⁵⁵¹ The reference to rights can be understood to include IPR. Technology transfer is recognised as a method for achieving one of the Convention's principal objectives which is to ensure fair and equitable sharing of benefits arising out of the use of genetic resources.⁵⁵² As indicated in chapter four of this thesis, IPR are identified as an important aspect of technology transfer. It has been argued that the application of existing IPR hinders the transfer of technology to developing countries and unfairly disregards the contributions of generations of farmers to the world's plant genetic resources.⁵⁵³ Other objections are based on the belief that strengthened IPR in some developing countries may encourage imports of IPR protected goods without stimulating foreign direct investment. Yet others argue that IPR play a small role in determining whether technology is acceptable, and that access to technology should be seen in a broader context taking into account other factors.⁵⁵⁴

Supporters of IPR contend that strong, harmonised protection of IPR would stimulate technology transfer and investment in research and development in developing countries. IPR are seen as an important indirect incentive to conserve biological diversity.⁵⁵⁵

One of the issues which needs to be addressed is the extent to which the objectives of the Convention may be furthered by requiring patent applicants

⁵⁵¹ See generally Article 16 of the Convention.

⁵⁵² Article 1 of the Convention.

⁵⁵³ Op cit note 277.

⁵⁵⁴ See chapter four of this thesis.

⁵⁵⁵ Op cit note 277

to disclose information regarding the origin of biological materials and the traditional knowledge used in the development of the inventions. Proposals in this regard shall be made in chapter six of this thesis. The Convention does not grant developing countries a general right of access to patented technology, neither does the Convention provide legal means for coercing companies to transfer patented technology.⁵⁵⁶ Other issues surrounding IPR and transfer of technology have been dealt with in chapter 4 of this thesis.

6.4 The Convention on Biological Diversity and the Agreement on Trade-Related Intellectual Property Rights (Trips)

Trade liberalisation fostered by GATT has stimulated significant growth in international trade and economic development.⁵⁵⁷ Although the link between trade and the environment was recognised as early as the 1870s,⁵⁵⁸ attention to the impact of international trade and development on the global environment intensified as a result of the United Nations Conference on Environment and Development (UNCED).⁵⁵⁹

The Preamble of the Agreement establishing the World Trade Organisation (WTO) states:

"..... relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing value of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development,

⁵⁵⁶ H S Varstad 'The Biodiversity Exchange: National Sovereignty and Technology Transfer in the Bioconvention'. Paper Presented at an International Conference on the Convention on Biological Diversity. Nairobi, Kenya, 26-29 January, 1993.

⁵⁵⁷ (a) The General Agreement on Tariffs and Trade. October 30, 1947, T.I.A.S. No. 1700.
(b) CR Fletcher 'Greening World Trade : Reconciling GATT and Multilateral Environmental Agreements, within existing World Trade Regime' (1996) *Journal of Transnational Law and Policy* Volume 5 issue 2, Spring.

⁵⁵⁸ Idem.

seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development."

The Committee on Trade and Environment (CTE) was established in recognition of these sentiments, noting that there should not be any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment and the promotion of sustainable development on the other.⁵⁶⁰ Co-ordination of policies in the fields of trade and environment became a priority.

The terms of reference of CTE include,⁵⁶¹

- (a) Identification of the relationship between trade measures and environmental measures, in order to promote sustainable development.
- (b) Formulation of appropriate recommendations on whether any modifications of the provisions of the multilateral trading system are required, compatible with the open, equitable and non-discriminatory nature of the system, as regards in particular:-
 - (i) the need for rules to enhance positive interaction between trade and environment measures for the promotion of sustainable development;
 - (ii) the avoidance of protectionist trade measures, and the adherence to effective multilateral disciplines to ensure responsibilities of the multilateral trading system to environmental objectives set forth in Agenda 21 and the Declaration; and

⁵⁵⁹

Rio Declaration on Environment and Development, June 13, 1992, 31 I.L.M. 874.

⁵⁶⁰

WTO Trade and Environment Committee was established by TNC Decision on Trade and Environment, MTM. TNC/W/141, 29 March 1994.

⁵⁶¹

Idem.

- (iii) surveillance of trade measures used for environmental purposes, of trade related aspects of environmental measures which have significant trade effects.

Provisions on IPR in both TRIPS and the Convention have been discussed in detail elsewhere in this thesis.⁵⁶² This section is going to focus on the relationship between the Convention and TRIPS. This is necessitated by the need to develop a mutually supportive relationship in order to avoid conflict in implementation.

Although the Convention and the TRIPS agreement approach IPR from different perspectives; it is evident that IPR are important under both instruments. A large number of countries are parties to both the Convention and WTO.⁵⁶³ Under TRIPS there is recognition of the dual need to promote effective and adequate protection of IPR and to ensure that measures and procedures to enforce IPR do not themselves become barriers to legitimate trade.⁵⁶⁴ Although the TRIPS agreement is detailed in minimum standards and implementation at national level, both instruments allow a significant degree of flexibility. There is, consequently, potential for complementary and synergetic implementation in the following areas.⁵⁶⁵

- (a) Mutually agreed upon terms for access to genetic resources could identify IPR as part of the benefit to be shared amongst parties to an agreement on genetic resources formulation of comparable definition and IPR systems would be required.
- (b) Article 26 of the Convention prescribes obligations for parties with regard to presentation of reports on measures taken for implementation of the provisions of the Convention. Implementation of

⁵⁶² See chapters 2, 3 and 4 of this thesis.

⁵⁶³ UNEP 'The Convention on Biological Diversity and the Agreement on Trade - Related Intellectual Property Rights (TRIPS) : Relationships and Synergies' (1996). Conference of the Parties to the Convention on Biological Diversity. 3rd Meeting.

⁵⁶⁴ TRIPS preamble, paragraph 1.

⁵⁶⁵ Op cit note 343.

these obligations is likely to fall within the scope of the notification requirement found in Article 63 of TRIPS.⁵⁶⁶ Procedures for exchanging relevant information would benefit members of both instruments. For example in implementing rules requiring patent applications to disclose the country of origin of biological material, the same report could be sent to the TRIPS Council as well as the clearing-house mechanism for scientific and technical co-operation established under Article 18(3) of the Convention.

- (c) Formulation of complementary policy and guidelines. This may be a continuing process to address issues as they arise during implementation. For example, common policies to encourage disclosure in patent applications of the country and community of origin for genetic resources.

Flexibility allowed by both the Convention and TRIPS does not rule out the possibility of conflict. For example national measures to promote technology transfer in terms of Article 16 of the Convention might raise most-favoured nation issues if parties to the Convention and non-parties were treated differently.⁵⁶⁷ Further, the TRIPS agreement prescribes grounds for compelling owners of IPR to licence technologies. If compulsory licences are implemented under the Convention on grounds other than those prescribed by TRIPS conflict is likely to arise. These issues can be addressed by the WTO primary forum for considering trade and environment, the CTE.⁵⁶⁸

6.5 Conclusions

IPR related provisions in the Convention are not limited to technology transfer and exchange of technical or scientific information issues. Provisions with IPR implications also include those dealing with knowledge and

⁵⁶⁶ Article 63 paragraph 2 of TRIPS requires members to notify the laws and regulations pertaining to the subject matter of the Agreement to the Council of TRIPS in order to assist that Council in its review of operations of the Agreement.

⁵⁶⁷ Most Favoured Nation provisions of TRIPS have been discussed in Chapter 3 of this thesis.

⁵⁶⁸ Op cit note 340.

practices of indigenous and local communities. incentives, sharing of benefits and international collaborations. Apart from these provisions in the Convention, the significance of IPR is clearly reflected in initiatives of groups of indigenous people coupled with international instruments. It is submitted however, that existing IPR systems offer insufficient protection especially to indigenous people, and that there is need for a different system of reward. The basis for recognition of rights has been established; legitimacy of rewards under these circumstances is therefore proven.

Despite arguments to the contrary, IPR can be used as an indirect incentive for conservation; they can encourage the adding of value to resources. In formulating IPR regime to address the issues which have been highlighted in this chapter, other instruments dealing with IPR must be recognised and taken into consideration.

CHAPTER SEVEN

Recommendation And Conclusions

7.1 Introduction

We have attempted in this work, to examine intellectual property rights and their impact on implementation of provisions of the Convention on Biological Diversity. Problems relating to existing IPR systems as far as biotechnology, transfer of appropriate technology and indigenous/traditional knowledge are concerned have been highlighted. The most serious discrepancy in existing systems has been identified as the lack of protection provided to indigenous/traditional knowledge.

Studies have shown that many of the indigenous innovators, whether individual or communities do not consider their diversity or knowledge about it as a tradable commodity. Their ethical values motivate them to share such knowledge with outsiders without expectation of material reward.⁵⁶⁹ What is unfortunate is that in the process of adhering to their values, these innovators remain poor while the extractors of their knowledge accumulate wealth. Farmers, indigenous people, local communities are in most cases never acknowledged on their contribution to new products in a manner in which they can be identified.⁵⁷⁰ Further, the wealth accumulated out of value addition in this knowledge is seldom shared with the providers. It is submitted in this work that, the norms of proprietary rights for scientific knowledge are not fundamentally different from the rights of providers of traditional knowledge which is useful to people outside their communities; and that there is need to recognise their contribution in a meaningful way.

⁵⁶⁹ AK Gupta 'Assessing Biological Diversity and Associative Knowledge System : Can Ethics Influence Equity.' (1997) Genetic Resources Action International (GRAIN) Publications 1-6.
⁵⁷⁰ Idem.

The need for an alternative legal framework to the IPR system regarding the protection of indigenous/traditional knowledge cannot, under these circumstances be over emphasised. Any new system should promote equity to local communities for their contribution, incentives for conservation of biological resources and access to these resources. The first part of this chapter examines examples of recent approaches and their limitations. This is followed by recommendations for future action.

7.2 IPR Systems And Biological Diversity : Effectiveness Of Current Approaches

7.2.1 Patents

As discussed in chapter two of this thesis, patents may be granted for genetic resources in the form of the entire organism or parts thereof. Many countries allow patents for micro-organisms; there is no inherent legal reason preventing the patenting of genetic materials of agricultural, pharmaceutical and other uses.⁵⁷¹ Even the fact that some materials may be identified in the wild rather than purposely invented is not in itself a problem. The main obstacle appears to be the fact that patents are not granted for a plant in its entirety, but for a plant, or other product with unique characteristics which must be specified in the patent claims.⁵⁷² Examples of such unique attributes include, inter alia, elevated typtophane levels, herbicide resistance and other attributes induced through technological procedures.⁵⁷³

Not all traditional varieties possess unique attributes which can be patented. In order to identify attributes useful for pharmaceutical or industrial applications, a genetic sequence has to be identified and removed from the

⁵⁷¹ UNEP 'Applicability of IPRs to the Protection of Genetic Resources.' (1994) UNEP Publications.

⁵⁷² Idem.

⁵⁷³ Idem.

source organism. Identifying and classifying these attributes in order to meet patent requirements is a task which is beyond the means of local communities in terms of expertise and the costs of preparing and processing applications.⁵⁷⁴ Patents are therefore, not practical for protecting genetic materials in these circumstances.

Apart from the above, there is strong opposition to the use of IPR especially patents in the area of genetic materials. On 3 April 1998 Indian farmers held protest rallies in the streets of New Delhi against a US patent on basmati rice. These protests were followed a few weeks later by Bangkok farmers' protests against US companies patenting of jasmine rice.⁵⁷⁵ Stakeholders representing Asian countries have defined these patents as "biopiracy" meaning the stealing of genetic material and knowledge from communities in gene-rich developing countries.⁵⁷⁶ The granting of IPR on rice is being equated to the colonial era when countries like England took control of crop resources in developing countries and built empires around such resources.

Most Asian countries have prohibited patents on life forms for fear of making it possible for corporate monopolies to touch peoples basic needs. Further, many Asian cultures are based on a holistic view involving respect for culture, life and resources; attributes which are said to be disregarded by Western property systems.⁵⁷⁷ It is feared that these countries are now forced to extend IPR to plant varieties by the TRIPS agreement which came into force in 1995. This agreement which sets out compulsory uniform standards for IPR protection allows countries to exclude plants and animals from patent

⁵⁷⁴

(a) Idem.

(b) A Abbott 'Monoglot filing Urged for European Patents' (1993) Nature at 3. Abbott submits facts indicating that the cost of preparing an application costs about US 20,000 in the US and twice as much in Europe.

⁵⁷⁵

GRAIN 'Biopiracy, TRIPS and the Patenting of Asia's Rice Bowl : A collective NGO Situation on IPR on Rice.' (1998) May. (This paper is a common initiative of the following NGOs, POS and individuals from Indonesia, Phillipines and Thailand : Assisi Foundation, BIOTHAI, CEC, GRAIN, Greens Philippines Hayuma, MAPISAN, PAN Indonesia, PDG, SIBAT, TREE and University of the Philippines colleagues Dr Ronny Quijano and Dr Oscar Zamora).

⁵⁷⁶

Idem.

⁵⁷⁷

Idem.

laws.⁵⁷⁸ However, members are called upon to provide titles of intellectual monopoly to 'inventors of micro-organisms, microbiological processes and products and plant varieties'.⁵⁷⁹ In terms of Article 27 3(b), plant varieties must be either patentable or subject to an effective 'sui generis' system. Developing countries are expected to implement this provision by the year 2000.⁵⁸⁰

Opposition to granting patents to genetic resources and specifically to the provisions in TRIPS is based on the belief that this move favours transnational corporations and that it will lead to the control of agriculture and food production by these corporations through genetic engineering. For example, a community known as MASIPAG⁵⁸¹ believes that TRIPS will have the following effects:-⁵⁸²

- (i) curtailment of free exchange of seeds which is essential to farmer's livelihoods;
- (ii) establishment of a punishing royalty regime;
- (iii) granting of excessive monopoly rights to transnational companies;
- (iv) commercialisation of the country's once equitably-shared local farm knowledge and resources;
- (v) undermining community property rights and values; and
- (vi) marginalisation of farmers in the local and national food production process.

These fears are not entirely baseless. Asian farmers plant back their rice harvest for about 80% of their needs; most of these farmers cannot afford to purchase seeds every year. In March 1999 a US corporation known as Delta Land and Pine with the help of the US Department of Agriculture developed

⁵⁷⁸ TRIPS, Article 27(2).

⁵⁷⁹ Ibid Article 27(3)(b).

⁵⁸⁰ See chapter 3 of this thesis for a discussion on implementation of TRIPS.

⁵⁸¹ Op cit note 355. MASIPAG is a farmer led community managing breeding and conservation efforts on rice and vegetables throughout the Philippines. It started in 1986, involves 50 trial farms and maintains over 500 collections of traditional and improved varieties. Over 10 000 farmers are involved in this initiative.

⁵⁸² Idem.

and patented a hybrid rice which involves a gene that prevents seeds from germinating. This hybrid rice is likely to force farmers to purchase seeds from the corporation every year.⁵⁸³ This corporation has been able to gain ownership over seeds incorporating knowledge developed by local communities for years, add patentable attributes to this knowledge, call it new and exclude such communities from sharing in the benefits of the new product.

Existing IPR systems cannot grant protection to rice farmers in Asia, neither can these systems work in favour of local communities elsewhere in developing countries. It is submitted however, that these farmers together with other communities falling under this category still need a system of recognition and reward. As long as participation in the global economy cannot be avoided and membership to multilateral trade and environmental agreements a necessity, formulation of realistic property rights systems is crucial.

7.2.2 Plant breeders rights

Plant Breeders Rights as indicated in chapter two of this thesis are a form of patent like protection expressly for plants. Although protection applies to the whole plant, its extent is not as broad as that of a patent. The main advantage of Plant Breeders Rights is that it can be acquired more easily and applications are not as expensive as those for patents.⁵⁸⁴ Other advantages include the fact that even varieties discovered in the wild can be protected under Plant Breeders Rights regimes as long as the requirements of homogeneity and stability are satisfied.⁵⁸⁵ Genetic materials of use in

⁵⁸³

Idem.

⁵⁸⁴

Op cit note 3.

⁵⁸⁵

For example, section 2(1) of the South African Plant Breeders' Rights Act 15 of 1976 provides that the Act shall apply in relation to every variety of any prescribed kind of plant if it is new, distinct, uniform and stable. Section 2(2) elaborates this further by providing that a variety shall be deemed to be

agriculture are also covered. The main limitations therefore, relate to the extent of protection and provision of adequate remuneration to breeders.

7.2.3 Farmers rights

Farmers rights have been defined as⁵⁸⁶

“..... rights arising from the past, present and future contributions of farmers in conserving, improving and making plant genetic resources....”

As discussed earlier, Farmers Rights operate more as a moral obligation than an economic incentive, concerned more with a general conservation and equity objective. This concept which was introduced as a recognition of the contribution of local communities does not offer these communities the same protection which is accorded contributions protected under other IPRS.

Recent developments have seen the emergence of IPR regimes whereby patent protection is granted for some form of discovery, when the discovery requires notable input of human effort and ingenuity. Examples include the following:⁵⁸⁷

- (a) In agriculture, a gene will be patentable if it is used in a species in which it did not evolve or which it could not have been transferred to through conventional breeding.

-
- (a) new if propagating material or harvested material thereof has not been sold or otherwise disposed of by, or with the consent of, the breeder for purposes of exploitation of the variety
 - (b) distinct if, at the date of filing of the application for a plant breeder's right, it is clearly distinguishable from any other variety of the same kind of plant of which the existence on that date is a matter of common knowledge;
 - (c) uniform if, subject to the variation that may be expected from the particular features of the propagation thereof, it is sufficiently uniform with regard to the characteristics of the variety in question;
 - (d) stable if the characteristics thereof remain unchanged after repeated propagation or, in the case of a particular cycle of propagation, at the end of each cycle.

⁵⁸⁶

FAO Resolution 5/89.

⁵⁸⁷

Op cit note 11.

- (b) A purified form of a chemical can be patented if the chemical is found in nature only in purified form.
- (c) Genes that have been transferred to unrelated organisms can be patented.
- (d) Derivatives of the natural compound resulting from drug development processes are also patentable.

It has been argued that in all the above and similar situations some improvement on nature is evident, and that it is this improvement which forms the basis for patent protection. It is a fact though, that what has been considered as unimproved 'as far as biological resources are concerned is the product of extensive work, skill and ingenuity of such communities. It follows therefore, that just as discoveries which require significant input of human effort and ingenuity are able to obtain IPR protection, local communities and individuals first expending the time and expense to identify new species plus the expense of maintaining those species could be granted certain rights. IPR systems should be able to accord rights to real originators preservers and developers of knowledge and conservationists.⁵⁸⁸

7.2.4 Codes of conduct

Codes of Conduct are generally standardised but voluntary agreements specifying obligations.⁵⁸⁹ One important Code in biodiversity is the FAO Draft International Code of Conduct for Plant Germplasm Collecting and Transfer whose provisions are examined in detail below.

The objectives of the Code are articulated in Article 1 and they include the following:

⁵⁸⁸ RA Sedjo 'Property Rights and the Protection of Plant Genetic Resources' in JR Kloppenburg (ed) *Seeds and Sovereignty* (1988) 293-314.
⁵⁸⁹ Op cit note 351.

- (i) Promotion of conservation, collection and use of plant genetic resources from their natural habitats or surroundings in ways that respect the environment and local traditions and cultures.
- (ii) Fostering the direct participation of farmers, scientists and organisations in countries where germplasm is collected.
- (iii) Promotion of the safe exchange of plant genetic resources, information and technologies.
- (iv) Ensuring recognition to the rights and needs of local communities and farmers, and those who manage wild and uncultivated plant genetic resources.
- (v) Promotion of mechanisms to facilitate compensation to local communities and farmers for their contribution to the conservation and development of plant genetic resources.
- (vi) Ensuring equitable sharing of resources.

The Code is voluntary and is addressed primarily to governments and provides a set of general principles which governments may use.⁵⁹⁰ Article 4 places a shared responsibility on collectors, donors, sponsors, curators and users of germplasm to ensure that the collection, transfer and use of plant germplasm is carried out to the maximum benefit to the international community; and with minimal effects on the evolution of crop plant diversity and the environment. Obligations are also extended to all parties who fund or authorise collecting activities, or donate conserve or use germplasm.⁵⁹¹

The main machinery for implementation of these principles revolves around the issuing of collectors' permits. Conditions for granting of permits are articulated in detail.⁵⁹² Not only are applicants required to undertake to respect the relevant national laws, they are also expected to demonstrate knowledge of, familiarity with the species collected and distribution methods.

⁵⁹⁰ FAO Draft International Code of Conduct for Plant Germplasm Collecting and Transfer, 31 May 1996. Article 3.

⁵⁹¹ Ibid Article 4.

⁵⁹² Ibid Article 7.

Detailed plans for field missions including provisional route, estimated timing of expedition, types of material to be collected and even likely benefits to the host country have to be provided. Collectors should also provide so far as is known the national and foreign curators to whom germplasm and information is intended to be distributed on the completion of the mission.⁵⁹³

Permits which are granted are required to indicate the categories and quantities of germplasm which may or may not be collected or exported; together with those quantities which must be deposited in the country. Indication of special areas and species, special regulations or restrictions and any financial obligations to be met by the applicant is also considered necessary.⁵⁹⁴

More importantly, the Code elaborates the responsibilities of collectors who are granted permits before, during and after collection. Article 9.2 dealing with Pre-collection responsibilities provides as follows:-

"Before field work begins collectors and national collaborators should discuss, and to the extent possible, decide on practical arrangements including : (i) collecting priorities, methodologies and strategies, (ii) information to be gathered during collection, (iii) processing and conservation arrangements for germplasm samples, associated soil/symbiont samples, and voucher specimens, and (iv) financial arrangements for the mission."

During collection collectors are called upon to respect local customs and traditions and their property rights, especially if use is made of local knowledge on the characteristics and value of germplasm.⁵⁹⁵ In order not to increase the risk of genetic erosion, acquisition of germplasm should not deplete the populations of the farmers' planting stocks or wild species, or

⁵⁹³

Idem.

⁵⁹⁴

Ibid Article 8.

⁵⁹⁵

Ibid Article 10.1.

remove significant genetic variation from the local gene pool.⁵⁹⁶ Local communities should be supplied with information about⁵⁹⁷

- (i) the purpose of the mission,
- (ii) procedures for obtaining samples of collected germplasm,
- (iii) any other information requested.

The most relevant responsibilities during the post-collection period are those requiring collectors to deposit duplicate sets of all collections and associated materials, plus records of any pertinent information with the host country and other curators.⁵⁹⁸ Also important is the requirement to prepare a consolidated report on the collecting mission providing details on localities visited, samples collected and the intended site(s) or conservation.⁵⁹⁹

Responsibilities of sponsors,⁶⁰⁰ curators⁶⁰¹ and users⁶⁰² are also spelt out. The principles on responsibilities of users seem to address some important concerns raised by local communities. In order to benefit local communities, farmers and host countries, users of germplasm are required to consider some form of compensation for the benefits derived from the use of germplasm. Such compensation may take any or a combination of the following:-⁶⁰³

- (i) facilitating access to new improved varieties and other products on mutually agreed terms;
- (ii) support for relevant research;
- (iii) facilitating the transfer of appropriate technology for the conservation and use of plant genetic resources;
- (iv) skills enhancement through training;

⁵⁹⁶ Ibid Article 10.2.

⁵⁹⁷ Ibid Article 10.3.

⁵⁹⁸ Ibid Article 11.

⁵⁹⁹ Idem.

⁶⁰⁰ Ibid Article 12.

⁶⁰¹ Ibid Article 13.

⁶⁰² Ibid Article 14.

⁶⁰³ Idem.

- (v) providing support for programmes to evaluate and enhance local landraces and other indigenous germplasm; and
- (vi) dissemination of scientific and technical information obtained from germplasm.

The Code can serve as a useful model for protection of genetic materials. However, no obligations or restrictions are placed on third parties who are not directly involved in the agreement; this forms a serious limitation to its effectiveness. The fact that the Code is voluntary and requires a lot of collaborative action by governments implies that this code, together with similar instruments provide only partial protection to genetic resources.⁶⁰⁴

7.2.5 The Andean Pact ; common system on access to genetic resources⁶⁰⁵

The Preamble to this Pact states that it is necessary to recognise the historical contribution of indigenous, Afro-American and local communities to biological diversity; its conservation, development and the sustainable use of its components, together with the benefits yielded by such contribution. The main objective of the Pact as set out in Article 2 is to regulate access to the genetic resources of the member countries in order to

- (i) create conditions for fair and equitable sharing of the benefits accruing from such access;
- (ii) establish a basis for the recognition and appreciation of genetic resources, their derivatives and related intangible components; and
- (iii) encourage the conservation of biological diversity and sustainable use of biological resources containing genetic resources.

Member countries are called upon to recognise and value the rights and decision-making capacity of indigenous, Afro-American and local communities with regard to their traditional practices, knowledge and

⁶⁰⁴ More discussion on this in UNEP 1994, op cit note 351.

innovations connected with genetic resources and their derivatives. To ensure effectiveness, such recognition should be supported with complementary national legislation.⁶⁰⁵ An important feature of this Pact is Article 16 dealing with access procedures. It is provided that all access procedures must include the presentation and approval of contracts. More importantly, conditions in contracts of access are specified and should include

- (i) participation by nationals of the subregion in research activities into genetic resources;
- (ii) support for research contributing to the conservation and sustainable use of biological diversity;
- (iii) strengthening of mechanisms for the transfer of knowledge and technologies including biotechnologies which are culturally, socially and environmentally safe and healthy;
- (iv) provision of information likely to contribute to greater knowledge of matters relating to the genetic resources;
- (v) strengthening institutional capacities and capacities of indigenous afro-american and local communities with regard to intangible components associated with genetic resources; and
- (vi) obligatory deposit in designated institutions duplicates of all material collected.

The parties to access contract shall be the State, represented by a competent National Authority and the applicant.⁶⁰⁷ Member countries are also given the right to limit access through legal mechanisms in cases of the following:⁶⁰⁸

- (i) Endemism, rarity or threat of extinction of species, subspecies, varieties or breeds;

⁶⁰⁵

Third Interim Measure of Decision 345 of the Commission and Proposal 284 of the Board.

⁶⁰⁶

Op cit note 370 Article 7.

⁶⁰⁷

Ibid Article 32.

⁶⁰⁸

Ibid Article 45.

- (ii) Conditions of vulnerability or fragility in the structure or function of ecosystems, likely to be aggravated by access activities;
- (iii) Adverse effects of access activities on human health or on essential elements of the inhabitants' cultural identity;
- (iv) Access activities likely to have undesirable or hard-to-control environmental impacts on ecosystems;
- (v) Danger of genetic erosion due to access activities;
- (vi) Regulations governing biosafety; or
- (vii) Genetic resources or geographics areas classified as strategic.

Administration and implementation of the Pact is to be achieved through the Competent National Authority,⁶⁰⁹ the Andean Committee on Genetic Resources,⁶¹⁰ penalties for infringement⁶¹¹ and the requirement of notification among members.⁶¹²

The Pact relies heavily on legislation to be enacted by the member countries. This is one of the factors which may limit the effectiveness of the Pact. Like codes of conduct, the primary responsibility is left with the government.

7.2.6 Republic of the Philippines Executive Order no 247, 1995

In recognition of its obligations under Article 16 of the Convention, the Republic of the Philippines prescribes guidelines and establishes a regulatory framework for the prospecting of biological and genetic resources, their by-products and derivatives for scientific and commercial purposes. This move was necessitated by the State's interest in conservation efforts to ensure that the research, collection and use of species, genes and products is regulated. Further, the State sought to ensure that the rights of indigenous cultural communities and other Philippine communities are identified and recognised

⁶⁰⁹ Powers of competent national authority are provided for under Article 50.

⁶¹⁰ Ibid Article 51.

⁶¹¹ Ibid Articles 46 and 47.

⁶¹² Ibid Article 48.

when information based on their knowledge and practices is directly or indirectly put to commercial use.⁶¹³

According to this order, prospecting of biological and genetic resources within ancestral lands and domains of indigenous cultural communities can only be undertaken with the prior informed consent of such communities obtained in accordance with the customary laws of the concerned community.⁶¹⁴ Further measures include the requirement for prospectors of resources to enter into agreements with government representative bodies.⁶¹⁵ Commercial research agreements are required if the research and collection of biological and genetic resources is intended directly or indirectly for commercial purposes. Academic research agreements are required where prospecting is intended for academic purposes only. Additional limitation is included by the provision that only duly recognised Philippine universities and academic institutions may apply for an academic research agreement.

The minimum terms of commercial and academic research agreements are as follows.⁶¹⁶

- (i) There must be a limit on samples that the collector may obtain or export.
- (ii) A complete set of all specimens collected shall be deposited by the collector with the national Museum or a duly designated government entity.
- (iii) Access to collected specimens and relevant data shall be allowed to all citizens and government entities whenever these specimens are deposited abroad.
- (iv) If a commercial product is derived from research activities, the collector shall inform the government and affected local communities.

⁶¹³ Republic of the Philippines Executive Order No. 247, 18 May 1995. See the Preamble to this order.

⁶¹⁴ Ibid section 2.

⁶¹⁵ Ibid section 3.

⁶¹⁶ Ibid section 5.

- (v) Payment of royalty must be made to the government or local community in case commercial use is derived from the biological and genetic resources taken.
- (vi) Submission of status report of research has to be made to the Inter-Agency Committee whose main function is to monitor compliance.⁶¹⁷
- (vii) Involvement of citizens in research conducted by foreigners.
- (viii) The maximum period for commercial research agreements is three years, renewable at the option of the government.

This Executive Order is an enforceable legal instrument binding all citizens and foreigners who may wish to conduct research in biological resources in the Philippines. It is therefore more likely to be more effective in achieving its objective than other voluntary instruments such as codes of conduct.

7.2.7 Effectiveness of recent developments

The Fourth Meeting of the Conference of the Parties to the Convention on Biological Diversity was held in Bratislava in May 1998. Preparatory work for this Conference included a workshop on traditional knowledge and biological diversity. The objective of the workshop was to come up with recommendations for the fourth meeting of the Conference of the Parties on how to implement the provisions of the Convention dealing with the knowledge, innovation and practices of indigenous and local communities.⁶¹⁸

Findings in the report of the workshop indicate that the erosion of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of

⁶¹⁷ The Inter-Agency Committee on Biological and Genetic Resources created under section 6 is made up of representatives from relevant government departments, academic institutions, NGOs and Peoples organisations with membership consisting of indigenous/cultural communities.

⁶¹⁸ Report of the Workshop on Traditional knowledge and Biological Diversity; Madrid 24-28 November 1997. UNEP/CBD/TKBD/1/3 dated 15 December 1997.

biological diversity is still continuing at an alarming rate.⁶¹⁹ Decisions in this area are still made in the interests of profits, sometimes to the detriment of indigenous peoples and contrary to the spirit of the Convention. In order to counteract this trend, parties are called upon to urgently take decisive action by implementing all aspects of Article 8(j) of the Convention and other related Articles.⁶²⁰ Specific recommendations of the workshop include:⁶²¹

1. The identification of incentives relevant for strengthening the use of knowledge, innovations and practices of indigenous and local communities.
2. Development of standards and guidelines for the protection, maintenance and development of indigenous knowledge in consultation and participation with indigenous peoples and local communities which
 - (a) facilitate the development of sui generis systems of protection for indigenous knowledge according to indigenous customary laws and values;
 - (b) recognise the concept of collective rights of indigenous peoples and local communities and incorporate this in all national and international legislation;
 - (c) take into account and incorporate existing political and legal systems of indigenous peoples and local communities and their customary use of resources; and
 - (d) recognise traditional agricultural systems of indigenous peoples and local communities.

The report also brings to the attention of the parties the fact that modification of international and national IPR legislation is slow forcing some communities to develop and adopt interim mechanisms which prevent the continual erosion of knowledge.⁶²²

⁶¹⁹

Idem.

⁶²⁰

Idem.

⁶²¹

Ibid, paragraphs 223-225.

⁶²²

Such mechanisms include codes of conduct and guidelines.

Other documents prepared for the fourth meeting of the Conference of the Parties show that several governments have enacted legislation to regulate access to resources.⁶²³ Laws, executive orders and regional regulations have already been adopted in some countries. Most of these instruments have certain provisions in common. They all designate appropriate authorities to process access applications. They make provision for procedural steps that must be followed by an individual or institution applying for permission to prospect. Substantive provisions are characterised by conditions that an applicant must fulfil in order to gain access to genetic resources. The most common conditions include sharing of research results, deposit of specimens, technology transfer, capacity building and the collection of fees, royalties and other financial benefits. It is clear however, that these instruments do not address adequately issues surrounding the protection of indigenous knowledge. Development of legal framework with the objective of granting sufficient protection to indigenous knowledge and innovations embodying such knowledge is consequently needed urgently.

7.3 Proposals for a New IPR System

7.3.1 Systems for protection of indigenous knowledge and innovations

Several interested parties have called for a new form of IPR specifically applicable to genetic resource issues.⁶²⁴ Collin suggested the introduction of discovery rights similar to the idea of informed consent.⁶²⁵ Recommendations for the establishment of some degree of novelty, ingenuity and recognition of

⁶²³ Conference of the Parties to the Convention on Biological Diversity. Fourth Meeting Bratislava, 4-15 May 1998. Documents for item 16.2 of the Provisional Agenda. Addressing the Fair and Equitable Sharing of the Benefits arising out of Genetic Resources: Options for Assistance to Developing Country Parties to the Convention on Biological Diversity.

⁶²⁴ See examples in Keystone Center, Oslo Plenary Session 'Final Consensus Report : Global Initiative for the Security and Sustainable Use of Plant Genetic Resources". (1991) Keystone Co.

⁶²⁵ MA Collin 'An intellectual Property Rights Framework for Biodiversity Prospecting' in WV Reid et al (eds) *Biodiversity Prospecting: Using Genetic Resources for Sustainable Development*. (1993) 159-197. Washington DC World Resources Institute.

utility like a patent system in application are made. Specific details are however not developed.⁶²⁶ Other interested groups have suggested a new system incorporating some general guiding principles with no details on how the laws, regulations are to be formulated.⁶²⁷

In June 1998 the Ministerial meeting of the Organisation of African Unity approved model legislation on community rights and access to biological resources.⁶²⁸ Recognition and protection of rights of local communities to benefit collectively from their knowledge, innovations and practices is embodied in Article 5. Local communities are also recognised as the lawful and sole custodians of their knowledge in perpetuity. The use of knowledge for commercial and other purposes requires prior informed consent and participation of the communities concerned. Other requirements include full disclosure of research findings, approval by appropriate state authorities and payment of royalties to the relevant communities where commercial use is involved.⁶²⁹ Collective or group rights are also recognised in the African Charter on Human and Peoples Rights 1981.

In South Africa, Dr Serole drafted a Private Member's Bill entitled 'Protection and Promotion of South African Indigenous Knowledge'.⁶³⁰ Indigenous knowledge in this Bill is widely defined to include inter alia, cultural properties, traditional ownership, tangible cultural properties incorporated in material objects, intangible cultural properties expressed by words, musical sounds or action, folk tales, traditional medicine and other techniques and processes.⁶³¹ The Bill's provisions provide for protection against illicit use and exploitation and other prejudicial actions.⁶³²

⁶²⁶ Op cit note 351.

⁶²⁷ See for example the Mataatua Declaration.

⁶²⁸ A Dyer, 'Intellectual Property Rights for New Beneficiaries : Intellectual Property and Indigenous Technology' (1998) Paper presented at the WIPO African Regional Colloquium on the Teaching of Intellectual Property Law, Pretoria, 12-15 October 1998, WIPO/IPLT/PRE/98/4.

⁶²⁹ Idem.

⁶³⁰ Idem.

⁶³¹ S 1.

⁶³² Ibid. Sections 15-20.

This Bill is one of the latest initiatives in the area of indigenous knowledge. The main limitation of the Bill is contained in Section 3 which provides that provisions of the Intellectual Property Laws Act 1997 applies to the Bill. We have, in this thesis supported the view that existing IPR systems, including those incorporated in South African IPR legislation, cannot provide protection for indigenous knowledge. Consequently, the Bill, does not provide a solution as far as intangible cultural properties are concerned.

An examination of different proposals, codes of conduct, declarations and other instruments reveal that any new system should be guided by the principles of equity to local communities, provision of incentives for future conservation and access to resources. Developing or formulating a new IPR system incorporating these principles should be undertaken against the environment within which local communities operate. A sense of communal ownership which is still prevalent in many parts and the link between cultural values and biological resources are some of the factors which need to be taken into consideration.

Determination of representative structures or group of people may be difficult. One of the reasons for this is the fact that administrative boundaries do not overlap with ecological boundaries of a resource.⁶³³ It is possible therefore, for claims of a right to knowledge on that resource to arise from more than one community. In some cases communities are formed by groups of people who are largely self selected and informally constituted.⁶³⁴ Determination of whether claims of exclusive rights over knowledge or resources by a community are legitimate becomes complex under these circumstances.

In cases where a community is clearly defined, existing rights within such a community may not be precise. Rights in a community may be use specific,

⁶³³ Op cit note 349.

⁶³⁴ J Lindsay 'Improving the Legal Environment for Community Forestry' (1996) FAO Development Law Service publication 1-12.

others are based on the nature of residence in an area while others still are based on ownership of private residential property or land for cultivation. Further complications are caused by the varying nature of boundaries for collecting resources due to seasons; and the varying dependence on common resources for survival by members of the community. In some cases forms of customary rights arise from continued use of private property by the community.⁶³⁵

Commercialisation envisaged by the introduction of IPR systems necessarily requires qualification and attaching monetary value to both knowledge and resources. Communities will have to decide how much royalty should be charged; they also have to be in a position to evaluate such information and decide how much information is sufficient given different circumstances. Any new system has to distinguish individual contributions from collective ones in order to ensure equity even amongst members of the community themselves.

Fairness and equity requires quantification and valuation of the following:⁶³⁶

- (i) the benefit that arise from using genetic resources and knowledge;
- (ii) the contributions from different stakeholders to the creation of these benefits;
- (iii) the benefits provided in exchange for access to, and use of genetic resources; and
- (iv) the allocation of benefits between different beneficiaries.

Effectiveness of a new system may be influenced significantly by existing community and legal institutions. An understanding of existing community management practices and their relationship with state policies and laws is crucial. Effective IPR systems will vary depending on peculiar characteristics of the different communities. Lindsay⁶³⁷ proposes certain key methodological and substantive principles that are central to the improvement of the legal

⁶³⁵

See a discussion of community rights in GRAIN, May 1998, op cit note 387.

⁶³⁶

Op cit note 403.

⁶³⁷

Op cit note 409.

environment for community forestry however varied the situation. Though these principles focus on forestry, they can be applied to the general area of biological diversity. Principles relevant to biological diversity are discussed below.

- (a) The legal framework must be understood as a multi-dimensional structure. The framework must take into consideration other policy and legal instruments which impact on biological diversity. These instruments include, inter alia,
 - (i) national environmental policies;
 - (ii) national environmental legislation;
 - (iii) national IPR laws;
 - (iv) rules or regulations;
 - (v) area specific instruments or agreements, for example joint management agreements or partnerships between the government and community, user group agreements or any other temporary rights; and
 - (vi) other areas of law which are not directly related to biological diversity but may have an influence on implementation of any new system. Examples of these include land use laws which may affect access to resources and land tenure laws which may influence community ownership or control over certain areas. Others are laws regulating the formation and registration of associations or groups. Complex and expensive requirements may discourage communities who wish to gain legal recognition. Laws concerning marketing, taxation and processing might affect the economic viability of the community. As far as indigenous knowledge is concerned, doubts have already been raised as to whether royalty returns from intellectual property derived from natural resources would be

sufficiently high to amount to an economic incentive in favour of the preservation of biological diversity.⁶³⁸

- (b) The legal framework must provide flexibility for local variation. For any new system to succeed, cognisance of local ecological, social and economic variations is crucial. As discussed earlier in this chapter, variations arise right from the definition of community, existing rights, dependence on resources and even the value placed on such resources. IPR systems should be flexible enough to accommodate these sometimes unique peculiarities. The prescription of standards should leave sufficient room for local preferences and innovation. We support Lindsay's argument that broad procedural guidelines are necessary to ensure equity amongst community members; and to ensure that resources are managed sustainably to protect national interests.⁶³⁹ Existing local structures and rules should not be replaced unless they are contrary to national interests.
- (c) The legal framework should provide for local control as much as possible. All the declarations from different groups of local/indigenous communities are premised on the fact that communities are capable of managing resources and knowledge; and that they have the right to determine issues in this area. An IPR system should give these communities benefits, which will not take away existing cultural, customary rights. This must however be reviewed within the context of national policies and laws relating to conservation of biological diversity.
- (d) The legal framework should create rights that are secure and responsibilities that are clear.

The rights and responsibilities of the community must be clearly defined; flexibility of the system should not create ambiguity. The defined rights should be both realistic and secure. To achieve this,

⁶³⁸ SB Hill and A Dale 'Biodiversity Conservation : Developing a Research and Policy Agenda for Canada (1995). Department of Natural Resource Sciences McGill University, ste-de-Bellevue, Quebec. Unpublished manuscript.

⁶³⁹ Op cit note 409.

Lindsay proposes the creation of exclusive rights.⁶⁴⁰ He argues that groups must have the right to exclude outsiders from the managed resources. Members should not be expected to share those benefits with non-participants unless specifically agreed otherwise. In the narrow area of IPR however, fears of restricting research access have been raised, and calls to disallow exclusionary rights in the area of genetic resources have been made.⁶⁴¹ It is submitted that licences upon payment of royalties will solve the problem of free riders.

Security of such rights should be guaranteed through carefully formulated termination procedures. Wide discretionary powers to government institutions may leave room for arbitrary termination of rights; this should be avoided. Security of rights is also guaranteed by the duration; rights must exist for periods which are sufficient to enable communities to gain benefits.

- (e) The legal framework should provide guidance on defining the beneficiary group and identifying the community.

Where possible, existing administrative units can be used. In areas where groups are self defining, guidelines should be provided to ensure that particular individuals are not unfairly excluded from participation. Collective as well as individual rights should be addressed.

These principles advocate the establishment of a framework which, while defining clear rules governing the issue, also strengthening the rights of communities, thus making ownership more valuable and in this way fostering conservation efforts. In the following section, we are going to discuss more specific proposals on the use of IPR to protect indigenous knowledge.

⁶⁴⁰

Idem.

⁶⁴¹

Op cit note 351.

IPR can effectively be used to protect the knowledge of indigenous people, traditional healers and farmers if the following issues are addressed.

- (a) While the right for intellectual contribution of a breeder or genetic engineer for their intellectual contribution to a specific variety is clear, the application of such variety to future generations of plants or animals may well be unknown at the time of granting such rights. This is in view of the very nature of genetic resources; the human contribution triggers changes which would not have accrued under natural conditions. After the change has been made, the organism itself continues to develop. Any IPR regime extending protection to genetic resources needs to determine whether such protection will cover the initial innovative step, or it will also cover subsequent natural evolutionary changes that will occur.⁶⁴²
- (b) Traditional healers hold in confidence knowledge of therapeutic values of wild species. Value of such knowledge is derived from non-disclosure. Therefore protection by trade secrets seems to be most appropriate for this category of knowledge. However, the risks of extending IPR to wild species include the receipt of speculative claims whose utility may be difficult to establish.⁶⁴³ One may also need to balance public interest against private benefits. More of the public domain wild species may suddenly be placed in private hands as a result of the incentive in the form of IPR. Privatisation of specific types of knowledge may lead to maximisation of social benefits, as long as there is equity in the distribution and access to resources.
- (c) The knowledge of indigenous people, farmers and traditional healers is usually passed down from generation to generation. The whole question of who deserves the rewards for such knowledge is also an important issue. If, for example, the strict requirement of patentability are applied, then such knowledge may not qualify due to lack of novelty. The only person who can gain protection under IPR is the one who can prove the use of or combination of individually known ideas

⁶⁴²

Op cit note 2.

into a new functional combination.⁶⁴⁴ There is however, no innovation in cases where old ideas are used especially if they are known to the public. The question to be answered is whether it is equitable to grant protection to the efforts of generations of farmers and traditional healers through their descendants; or to extend protection only to those who, through ingenuity add to this knowledge. If the whole local community deserves to receive compensation or rewards, then perhaps IPR regimes may not be the most appropriate instruments.

- (d) If IPR are used to protect the knowledge of indigenous people, such protection will be meaningful if such rights are enforceable.⁶⁴⁵ To start with, structures for registration of IPR must be accessible to all. Secondly and more importantly, indigenous people will need to have access to information of what has been patented in their area of interest world-wide. This is the only way they will be in a position to identify infringements and challenge the infringing party. The reality is that, most of the affected communities are not in a position to effectively enforce such rights under existing systems. To begin with, there are no structures for the registration of IPR in the rural communities where they live. Local communities for the most part have no access to information concerning patents; even if they had access, such information would be more likely than not, completely incomprehensible within their socio-economic and cultural environment.

The imbalance in power between local communities and multinational companies which have had free access to genetic resources cannot be overemphasised.

A simple farmer in a developing country obviously has very slim chances of successfully challenging a multinational company for infringement. The costs of challenging a right internationally may be beyond the means of the majority of the people in these communities,

⁶⁴³ Op cit note 67.

⁶⁴⁴ This was also discussed in *Ransby Cavell vWandberg* op cit note 31.

⁶⁴⁵ Op cit note 355.

let alone the procedural complexities which are involved. Such costs and procedures are enough to outweigh the benefits thus watering down the effectiveness of IPR as an incentive for conservation of biodiversity.

Application of the principles discussed earlier in this chapter is one way of ensuring effectiveness of IPR systems.

7.3.2 General proposals

In the previous section of this chapter we considered some principles for the development of an appropriate IPR system for the protection of indigenous knowledge. This was based on a realistic appraisal of IPR systems which irresistibly leads one to the conclusion that these systems cannot and were not designed to grant indigenous and local communities protection for their knowledge. It follows therefore that issues surrounding indigenous knowledge should be addressed under a new system.

Existing IPR systems were also not designed to distribute rewards equitably. Equitable sharing and distribution of biological resources can best be achieved through other mechanisms. To this end, certain existing initiatives are worthy of retention. They include contracts, codes of conduct, guidelines, declarations and other legislative instruments regulating access to resources. The combination of these initiatives and a new IPR system for indigenous knowledge is likely to provide the guarantee of equity, which is missing in the current system.

Transfer of environmentally sound technologies plays an important role in the implementation of the Convention. Existing IPR systems can, with certain amendments be used to facilitate such transfer. Careful consideration of technology licensing agreements to ensure that they do not foreclose access would go a long way towards the elimination of barriers. Requirements for disclosure of origin of biological material in patent applications should provide

the necessary recognition of providers of resources where value is added, and a new product is then patented. The terms of transfer of the new product to the providers of the resource should take cognisance of this fact.

International IPR systems require review where concerns of parties, especially developing countries have not been taken into consideration. Provisions in TRIPS which require members to provide IPR protection of plant varieties have been hotly contested by developing countries. Arguments that these provisions are to the disadvantage of developing countries are valid; review of these provisions is therefore supported. The need for developing countries to strengthen regional arrangements to address specific needs cannot be overemphasised.

Legislation does not occur in a vacuum. Any new system must be formulated within the context of existing socio-economic, political and legal infrastructure. This is especially important in countries with economies in transition, where any new legislation must take into account restructuring in other sectors. The system proposed in the appendix of this thesis is not expected to be valid for all time or applicable universally. It is tabled as a feasible basis of an equitable IPR system capable of responding to changing needs in society and developments in national and international IPR systems. There are limits to what legal reform alone can accomplish. Changing actual conditions in order to ensure protection of all stakeholders in the area of biological diversity requires a complex combination of initiatives.

7.4 Conclusion

Loss of biodiversity caused by direct habitat loss, invasion by introduced species, over-exploitation of living resources, pollution, global climate change and industrial activities is a problem which required national, regional and multilateral efforts. At the international level, treaties focusing on the

protection of the environment have been used to address some of these causes. A survey of international legal responses prior to 1992 indicate a clear effort to create obligations for the protection of species genes and habitats as well as the control of specific economic and social practices impacting on the environment. Treaties and regional agreements dealing with pollution, global climate change, protection of flora and fauna and protection of marine environment have been examined in Chapter One of this thesis. One problem which became evident was the lack of a co-ordinating machinery between different treaties. The Rio Convention 1992 arose due to similar concerns. The convention, however, sought to address additional issues including the recognition of the sovereign rights of developing countries over their genetic resources and access to advanced technology in exchange for access to genetic resources.

Principles of international law became increasingly important in determining obligations of the parties. Most of the treaties and regional agreements incorporated the principles of state responsibility which making states accountable for breaches of international law; the precautionary rule imposing an obligation on the state to act carefully and with foresight, and international co-operation challenging states to search for multilateral solutions in this area. Others, equally important obligations, include the obligation to make Environmental Impact Assessment and the principle that that states have common but differentiated responsibilities. Uniform application of these principles enhances the concept of concerted efforts which is an important pre-requisite to success in combating environmental degradation.

Any attempt to address issues regarding access to genetic resources and advanced technology cannot overlook the relationship between IPR and biological diversity. Imbalances in systems governing access to resources are highlighted in Chapter Two. The need to evaluate the effectiveness of provisions guaranteeing intellectual property rights to knowledge adding

value to resources becomes apparent. Chapter Three examines IPRs relevant to biodiversity noting that although IPR are designed to stimulate innovation, they do not provide protection to the contribution of local communities. Formulation of an intellectual property rights regime that stimulates communities to explore, discover, conserve and sustainable use of biological resources is suggested. An examination of international IPR regimes reveal that provisions aimed at increasing the potential of developing countries to engage in inventive activities are missing.

Chapter Five addresses issues regarding IPR and technology transfer. Concerns of developing countries are identified and the need for the establishment of a proper balance between IPR protection, private rights and social and economic welfare is raised. Restrictive clauses in technology licencing agreements are known to foreclose access to technology thus limiting the capacity of developing countries to meet their obligations. In Chapter Six the focus shifts to the IPR provisions in the Rio Convention 1992. The interrelationship between IPR and other aspects of the Conventions implementation is examined. The relevance of IPR to knowledge and practices of indigenous and local communities , sharing of benefits and international collaboration is emphasized. The fact that existing IPR system offer insufficient protection especially to indigenous people is reaffirmed. A different system of reward is seen as the only liable approach in filling the loophole. An analysis of recent initiatives on access to resources and protection of indigenous knowledge demonstrate that while effective measures for control of access to biological resources are in place, a system for protection of indigenous knowledge is still lacking. Debates at the Fourth Conference of the Parties of the Convention held in May 1998 reveal that an IPR system for indigenous knowledge is yet to be formulated.

In this thesis the challenge is taken up by the formulation of a model collective IPR Act guided by specific principles. The model is proposed as a feasible basis for a system which complements codes of conduct, guidelines,

regulations and other initiatives on access to genetic resources. The proposed system is expected to operate parallel to existing IPR systems. The model makes provision for collective IPR rights; conditions for granting of rights, duration and effect of such rights. The establishment of a separate body to administer the Act is also provided for. This is an attempt to establish a system of reward for conservation of biological resources through the application of indigenous knowledge. Extension of the scope of IPR has worked in the area of biotechnology, where even absolute novelty is not required; it should work for indigenous knowledge.

APPENDIX

COLLECTIVE INTELLECTUAL PROPERTY RIGHTS ACT

PREAMBLE

PARLIAMENT

1. Recalling the objectives of the Convention on Biological Diversity embodied in Article 1;
2. Recognising that conservation and sustainable use of biological diversity will be enhanced by measures to ensure effective implementation of the Convention at national level;
3. Recognising further that intellectual property rights play an important role in implementation of the provisions of the Convention;
4. Stressing that local and indigenous communities play a vital role in conservation of biological diversity;
5. Noting that existing intellectual property regimes do not grant protection for indigenous intellectual property;
6. Reaffirming the importance of developing an intellectual property regime for indigenous knowledge as applied to biological diversity.

Parliament enacts the following law.

CHAPTER ONE

INTRODUCTORY PROVISIONS

Objectives

1. The objectives of this Act are to

- (a) provide special measures for the protection of indigenous knowledge as applied to conservation and sustainable use of biological diversity;
- (b) provide adequate standards and principles concerning the availability, scope and use of collective intellectual property rights;
- (c) provide effective and appropriate means for the enforcement of collective intellectual property rights;
- (d) create incentives for conservation of biological diversity.

Interpretation

2. In this Act, unless inconsistent with the context

- (i) 'biological diversity' means the variability among living organisms from all sources, between species and of ecosystems.
- (ii) 'biological resources' includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.
- (iii) 'Board' means the National Collective Intellectual Property Rights Board.
- (iv) 'Collective Intellectual Property Rights' means rights granted to a registered community in terms of section 6.
- (v) 'community' means a community registered in terms of section 4 (2).

- (vi) 'conservation' means the preservation of the biological resources and their protection from misuse or waste.
- (vii) 'commulative knowledge' means knowledge passed on from generation to generation; increasing by continuous additions.
- (viii) 'derivative' includes raw extracts of living or dead organisms of biological origin, derived from the metabolism of living organisms.
- (ix) 'environment' means land, water, air and other external influences and conditions which affect the development and life of all organisms including man.
- (x) 'governing council' means the council established in terms of section 15.
- (xi) 'indigenous' means originating in a particular community.
- (xii) 'Minister' means a Minister who is for the time being responsible for matters relating to intellectual property rights.
- (xiii) 'sustainable use' means the use of components of biological diversity in a way and at a rate that does not lead to the long term decline of biological diversity.
- (xiv) 'this Act' includes the regulations made by the Minister.

(3) Application of the Act

- (1) This Act shall apply to collective and cumulative indigenous knowledge which enhances conservation and sustainable use of biological diversity.

- (2) Knowledge referred to in subsection (1) shall include:
- (a) use practices, in particular techniques for
 - (i) identification of useful species;
 - (ii) selection of crop varieties;
 - (iii) breeding new crop varieties;
 - (iv) conservation of resources.
 - (b) lifestyle and values;
 - (c) processes;
 - (d) religious beliefs and myths; and
 - (e) any other act involving the enhancement of the resource base to better meet human needs.
- (3) To qualify for protection under this act knowledge referred to in subsection (1) must prove useful to others.

CHAPTER TWO

APPLICATIONS FOR PROTECTION

4. Persons who may apply for collective intellectual property rights.
- (1) An application for the grant of collective intellectual property rights may be by a community in possession of indigenous knowledge referred to in section 3.
 - (2) Any community wishing to apply for the grant of collective intellectual property rights, whether alone or jointly with other communities must apply for a registration with the Board in terms of subsection 3.

- (3) Application for registration of the community must include
- (a) details of the membership and leadership of the community;
 - (b) information concerning how the community was constituted;
 - (c) information concerning election of representatives for purposes of this Act;
 - (d) details of the laws and or customs which regulate property rights in the community;
 - (e) details of common areas used in conjunction with neighbouring communities;
 - (f) details of any existing property rights; and
 - (g) any other prescribed information.
- (4) The Board must consider the application and may in doing so
- (a) establish whether the information supplied is accurate;
 - (b) establish whether or not there are any communities who qualify to apply for the same knowledge;
 - (c) consult with neighbouring communities and individual members of the community; and
 - (d) evaluate the viability of granting collective intellectual property rights to the community.
- (5) The Board may reject an application made in terms of this section if it is established

- (a) that the application does not comply with any provision of this Act;
 - (b) that the applicant is not entitled to make the application under this Act;
 - (c) that person/persons submitting the application are not the lawful representatives of the community;
 - (d) that the application contains a material misrepresentation; and
 - (e) that the application prejudices the rights of individual members of the community or neighbouring communities.
- (5) Application for collective intellectual property rights
- (1) An application for the grant of collective intellectual property rights must be made to the Board in the manner prescribed under the regulations.
 - (2) The Board may require
 - (a) identification of indigenous knowledge by name, sufficient description and characterisation;
 - (b) details concerning the application of such knowledge to biological diversity;
 - (c) where appropriate evidence of enhancement of use or value as a result of the use of such knowledge;
 - (d) information concerning the origin of such knowledge;

- (e) information concerning the utility of such knowledge within and outside the community;
 - (f) extent of the contribution of individual members of the community to the preservation or improvement of such knowledge;
 - (g) information on the distribution of benefits arising from collective intellectual property rights amongst members of the community; and
 - (f) such additional information deemed necessary.
- (3) The Board may accept oral evidence from members of the community.
 - (4) The Board must consider applications and investigate any objections thereof within 60 days.

CHAPTER THREE

GRANT DURATION AND EFFECT OF RIGHTS

- (6)
 - (1) The Board may, after considering an application in terms of section 5 grant collective intellectual property rights to a community.
 - (2) The Board shall in respect of collective intellectual property rights granted
 - (a) issue a certificate of registration in respect thereof;
 - (b) enter the applicable particulars in the register; and
 - (c) publish such particulars relating to the grant in

- (i) the government gazette;
 - (ii) a local newspaper circulating in the area.
- (3) The Board may grant IPR subject to conditions relating to conservation and sustainable use of resources.
- (7) Collective intellectual property rights shall be granted in perpetuity.
- (8) Rights conferred
 - (1) Collective intellectual property rights shall confer on the community the following exclusive rights
 - (a) where the subject matter of collective rights is a tangible resource or its derivative, to prevent third parties not having a licence or prior informed consent from using, reproducing, offering for sale, selling, harvesting or importing that product.
 - (b) where the subject matter is a practice of use, lifestyle, process or belief, preventing the third parties not having prior informed consent from using, reproducing, offering for sale, selling or importing a product obtained directly by such practice, lifestyle, process or belief.
 - (2) Owners of collective intellectual property rights shall have the right to conclude licensing agreements.
- (9) Exceptions to the rights conferred under this Act.

- (1) The provisions of Section 8 shall not apply in the following cases
 - (a) utilisation for purposes of educating; and
 - (b) non-commercial utilisation by other or neighbouring communities.
- (2) Utilisation for purposes of education requires
 - (a) application to the Board in the manner prescribed in the regulations.
 - (b) indication of source of information by mentioning the community and/or geographic place from which the knowledge utilised has been derived.
- (3) The Board must consult the relevant community before granting permission under Section (2).

(10) Licences

- (1) A community holding collective intellectual property rights may, at the request of another person wishing to utilise such knowledge for commercial purposes grant such a person a licence to utilise the knowledge.
- (2) The licence may include provisions regarding
 - (a) the identity of knowledge and/or tangible resources;
 - (b) the quantity of the resource involved;
 - (c) specific areas for collection;
 - (d) any special requirements and procedures;

- (e) information to be furnished to the holders of collective intellectual property rights;
 - (f) period of validity of the licence;
 - (g) royalties payable in respect of exploitation of the licence;
and
 - (h) any non-monetary benefits.
- (3) The Board may assist communities in negotiating licence provisions with third parties.

11. Termination of collective property rights

- (1) Collective intellectual property rights may be terminated by the Board if
- (a) any information submitted to the Board was incorrect;
 - (b) collective intellectual property rights were granted on the application of persons not entitled to apply under the provisions of this Act;
 - (c) the subject of intellectual property does not fall within the terms of section 3 of this Act; and
 - (d) the primary or intended use or exercise of the rights conferred under this Act is contrary to law.
- (2)
- (a) The Board shall notify representatives of the community in writing of such termination and the grounds thereof.

- (b) Holders of collective intellectual property rights may appeal against the decision of the Board in the manner prescribed under the regulations.

12. Infringement

- (1) Collective intellectual property rights shall be infringed by any person who
 - (a) performs or causes to perform an act which requires a licence under the provisions of Section --- without a licence; or
 - (b) fails to comply with any term or condition of a licence.
- (2) The holder of collective intellectual property rights may, upon proof of infringement of that right apply for the appropriate remedy under Section ---

CHAPTER FOUR

ADMINISTRATION OF THE ACT

13. Establishment of the National Collective Intellectual Property Rights Board

- (1) The National Collective Intellectual Property Rights Board is hereby established.
- (2) The object of the Board is to ensure effective implementation of the provisions of this Act.
- (3) The board must maintain an office in each province and as many local offices as it considers necessary.

- (4) The Board shall have a minimum of — members.
- (5) Membership of the Board must include
 - (a) representatives from the state;
 - (b) representatives from registered and unregistered communities;
 - (c) persons with expertise in intellectual property rights and/or biological diversity; and
 - (d) environmental interest groups.
- (6) The Minister, after consulting the governing council must establish rules for the appointment of members to the Board.

14. Functions of the Board

- (1) The Board must
 - (a) consider applications for and grant collective intellectual property rights;
 - (b) establish committees for enforcement of provisions of this Act; and
 - (c) publish information about its activities.
- (2) The Board may
 - (a) publish guidelines in relation to any matter dealt with in this Act;
 - (b) provide assistance to communities in processing, registration and concluding licensing agreements;

- (c) commission research into matters relevant to its functions and publish research findings;
- (d) delegate certain functions to existing local structures;
- (e) charge fees for services where appropriate; and
- (f) provide advice or training relating to the primary objects of this Act.

15. The Governing Council of the Board

- (1) The Board shall be governed by the Governing Council, whose acts are acts of the Board.
- (2) The Governing Council shall consist of
 - (a) a chairperson and--- other members nominated in terms of subsection (3) and appointed by the Minister; and
 - (b) the director of the Board appointed in terms of section 17 of this Act.
- (3) Nominations under subsection 3(2) shall be made by members representing local communities, the State, and interested private organisations.

16. Intellectual Property Rights Officers

- (1) The governing council must appoint as intellectual property rights officers as many competent persons as it considers necessary for the achievement of the objectives of this Act.
- (2) The governing council must establish guidelines for

- (a) appropriate appointments procedures;
- (b) terms and conditions of service;
- (c) termination of services; and
- (d) any other terms and conditions of appointment not contained in this section.

17. Director of Board

- (1) The governing council must appoint as director of the Board a person who
 - (a) is skilled and experienced in intellectual property rights and/or environmental affairs; and
 - (b) is capable of managing and directing the activities of the Board.
- (2) The governing council must determine the director's terms and conditions of service.

18. Establishment of Committees

- (1) The Board must establish committees consisting of the following persons
 - (a) representatives from indigenous communities;
 - (b) a member of the governing council;
 - (c) the director;
 - (d) intellectual property officer; and
 - (e) any other member qualified to assist the Board.

- (2) The Board must determine the terms and conditions of committee members referred to in (a) and (e).

19. Finances of the Board

- (1) The Board shall be financed by
 - (a) the monies that Parliament may appropriate to the Board from time to time, and
 - (b) fees payable to the Board in terms of this Act.

Provided that the Board may not charge a fee unless the governing council has established a tariff of fees.

20. Delegation of Powers and Duties

- (1) The Board may delegate any of its functions, other than the functions referred to in subsection (4) to
 - (a) any member of the governing council;
 - (b) the director;
 - (c) an intellectual property officer; and
 - (d) any committee established by the Board.
- (2) A delegation referred to in subsection (1)
 - (a) must be in writing;
 - (b) may be subject to conditions;
 - (c) must specify the period for which it lasts; and
 - (d) may be amended or revoked at any time.

- (3) The governing council may vary or set aside any decision made by a person acting in terms of any delegation made in terms of subsection (1).
- (4) The governing council may not delegate the power or duty to
 - (a) appoint the director;
 - (b) determine terms and conditions of service; and
 - (c) termination of service.

21. Content of Regulations

- (1) The Minister may make regulations to deal with
 - (a) registration of communities for the purpose of this Act;
 - (b) procedures for application of collective IPR;
 - (c) utilisation of indigenous knowledge for educational purposes;
 - (d) licensing agreements;
 - (e) objections to registration of any community;
 - (f) appointment of persons to the Board, governing council and committees;
 - (g) appeals;
 - (h) supply of evidence in support of applications for collective intellectual property rights;
 - (i) dispute resolutions;
 - (j) any function of the Board or governing council; and

- (k) any matter which he/she considers necessary for the achievement of the objects of this Act.

22. Remedies for Infringement

- (1) Upon proof of infringement, a community granted collective intellectual property rights may recover by action in a competent court any of the following remedies
 - (a) compensation;
 - (b) an order for custody, surrender, return or disposal of any tangible resource; and
 - (c) any other remedy the competent court may deem appropriate.

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