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**GENETIC RESOURCES, EQUITY AND INTERNATIONAL
LAW**

A thesis submitted in fulfillment of the requirements for the degree
of

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by

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ABSTRACT

This thesis examines the application of international law to the uses of agricultural crop plants termed plant genetic resources for food and agriculture. In particular, it asks the question, “does international law regulate the use of plant genetic resources for food and agriculture so as to enable equity among nations in accessing these resources and sharing the benefits which arise from them?”

In answering this question this thesis will also consider several related issues which have arisen in the course of the international debate on this topic. These resources are closely entwined with the lives and livelihoods of certain categories of peoples such as indigenous peoples and farmers and local communities. In addition, they are critical for the economies, agricultural systems and food security of nations. The thesis question will not be considered in the abstract, but will rather be placed against the background of these issues, which will be continuously used to put the legal discourse into perspective.

The legal analysis will focus on five international agreements which directly or indirectly regulate the use of crop plants. These five agreements are placed in two broad categories, i.e. environmental/conservation agreements and trade and property related agreements. The first category includes the Convention on Biological Diversity of 1992 and the International Treaty on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organisation of 2001. The second category includes the Convention for the Protection of New Varieties of Plants of 1991, the Agreement on Trade Related Aspects of Intellectual Property Rights of 1994, and several treaties of the World Intellectual Property Organisation. In addition, since the topic raises issues of rights, certain human rights treaties and documents will also be used in the analysis.

The current international conflict over plant genetic resources can be condensed into one of rights, human rights and property rights. The international treaties cited above have all contextualized the issue within a framework of property rights, setting out mechanisms for different forms of legal control of these resources. This thesis will argue that whatever the form and nature of such property rights, they cannot achieve equity in the use of crop plants. Rather the use of such rights results in violations of human rights.

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I dedicate this thesis to my mother and the memory of my father with love.

ABBREVIATIONS

| | |
|------------|--|
| ABS | Access and Benefit Sharing |
| ACP | African, Caribbean and Pacific countries |
| AIPPI | International Association for the Protection of Industrial Property |
| ASEAN | Association of South East Asian Nations |
| ASSINSEL | International Association of Plant Breeders |
| CBD | Convention on Biological Diversity |
| CDIP | WIPO Committee on Development and Intellectual Property |
| CGIAR | Consultative Group on International Agricultural Research |
| CGRFA | Commission on Genetic Resources for Food and Agriculture |
| CHH | Common Heritage of Humankind |
| CIEL | Centre for International Environmental Law |
| COGENT | International Coconut Genetic Resources Network |
| CoP | Conference of the Parties to the Convention on Biological Diversity |
| CPRs | Common property resources |
| EFTA | European Free Trade Association |
| EU | European Union |
| FAO Treaty | FAO International Treaty on Plant Genetic Resources for Food and Agriculture |
| FAO | Food and Agriculture Organisation |
| FOD | Group of Friends of Development |
| FTA | Free Trade Agreement |
| GATT | General Agreement on Tariffs and Trade |
| GE | Genetically Engineered |
| GM | Genetically Modified |
| GPA | Global Plan of Action |
| GRAIN | Genetic Resources Action International |
| GURTS | Genetic Use Restriction Technology |
| HYVs | High Yielding Varieties |
| IARC | International Agricultural Research Centre |
| ICCPR | International Covenant on Civil and Political Rights |
| ICESCR | International Covenant on Economic, Social and Cultural Rights |

| | |
|------------|--|
| ICTSD | International Centre for Trade and Sustainable Development |
| IGC | Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore |
| IISD | International Institute For Sustainable Development |
| ILM | International Legal Materials |
| ILO | International Labour Organisation |
| IP | Intellectual Property |
| IPGRI | International Plant Genetic Resources Institute |
| IPRs | Intellectual Property Rights |
| IRRI | International Rice Research Institute |
| ISA | International Searching Authority |
| ITO | International Trade Organisation |
| IUCN | World Conservation Union |
| IUPGR | International Undertaking on Plant Genetic Resources |
| LDCs | Lesser Developed Countries |
| LMMC Group | Group of Like Minded Megadiverse Countries |
| MATs | Mutually Agreed Terms |
| MDGs | Millennium Development Goals |
| MFN | Most Favoured Nation Treatment |
| MLS | Multilateral System |
| MNC | Multinational Corporation |
| MTA | Material Transfer Agreements |
| OAS | Organisation of American States |
| OAU | Organisation of African Unity |
| OECD | Organisation for Economic Co-operation and Development |
| PBR | Plant Breeders' Rights |
| PCDA | Provisional Committee on Proposals related to a WIPO Development Agenda |
| PCIPD | Permanent Committee on Co-operation on Development Related to Intellectual Property |
| PCT | Patent Co-operation Treaty |
| PGRFA | Plant Genetic Resources for Food and Agriculture |
| PIC | Prior informed consent |

| | |
|-----------------|--|
| PLT | Patent Law Treaty |
| PVP | Plant Variety Protection |
| PVPA | U.S. Plant Variety Protection Act |
| QIAP | Quaker International Affairs Programme |
| QUNO | Quaker United Nations Office |
| SBSTTA | Subsidiary Body on Scientific, Technical and Technological Advice |
| SCP | Standing Committee on the Law of Patents |
| SMTA | Standard Material Transfer Agreement |
| SPLT | Substantive Patent Law Treaty |
| TEK | Traditional Ecological Knowledge |
| TEKW | Traditional Ecological Knowledge and Wisdom |
| TK | Traditional Knowledge |
| TRIPS Agreement | Agreement on Trade Related Aspects of Intellectual Property Rights |
| TRIPS Council | Council for Trade Related Aspects of Intellectual Property Rights |
| U.S. | United States |
| UDHR | Universal Declaration on Human Rights |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNCTAD | United Nations Conference on Trade and Development |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Education, Cultural and Scientific Organisation |
| UPOV Convention | Convention for the Protection of New Varieties of Plants |
| UPOV | International Union for the Protection of New Varieties of Plants |
| USPTO | U.S. Patent and Trademark Office |
| WG8J | Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity |
| WG-ABS | <i>Ad hoc</i> Open Ended Working Group on Access and Benefit Sharing |
| WIPO | World Intellectual Property Organisation |
| WTO | World Trade Organisation |

TABLE OF CONTENTS

| | |
|--|----|
| CHAPTER 1: | |
| INTRODUCTION | 1 |
| 1.1 THE THESIS QUESTION | 1 |
| 1.2 THE STRUCTURE OF THE THESIS | 2 |
| | |
| PART 1: | |
| BIODIVERSITY AND PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE | 5 |
| | |
| CHAPTER 2: | |
| OVERVIEW OF BIODIVERSITY | 6 |
| 2.1 INTRODUCTION | 6 |
| 2.2 OVERVIEW OF BIODIVERSITY | 7 |
| 2.3 THE LEVELS OF DIVERSITY | 8 |
| 2.3.1 Ecosystem Diversity | 8 |
| 2.3.2 Species Diversity | 10 |
| 2.3.3 Genetic Diversity | 11 |
| 2.4 THE VALUES OF BIODIVERSITY | 12 |
| 2.4.1 The philosophical debate on the values of biodiversity | 12 |
| 2.4.2 The economic values of biological resources | 15 |
| 2.5 LOSS OF BIODIVERSITY | 18 |
| 2.5.1 Loss of ecosystem diversity | 19 |
| 2.5.2 Loss of species diversity | 20 |
| 2.5.3 Loss of genetic diversity | 20 |

| | | |
|---|---|----|
| 2.6 | HUMAN CULTURAL DIVERSITY | 21 |
| 2.6.1 | Traditional ecological knowledge..... | 23 |
| 2.6.2 | Loss of cultural diversity | 25 |
| 2.7 | PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (PGRFA)..... | 26 |
| 2.7.1 | Introduction..... | 26 |
| 2.7.2 | The Values of PGRFA | 28 |
| 2.7.3 | Diversity of PGRFA | 29 |
| 2.7.4 | Loss of plant genetic diversity | 30 |
| 2.7.5 | Location of PGRFA | 31 |
| 2.7.5.1 | <i>Ex situ</i> collections of PGRFA | 32 |
| 2.7.5.2 | The International Network of <i>Ex Situ</i> Collections under the auspices of FAO..... | 34 |
| 2.7.5.3 | Other International Networks of <i>Ex Situ</i> Collections of PGRFA | 35 |
| 2.8 | ISSUES OF EQUITY IN REGARD TO PGRFA | 36 |
| | | |
| CHAPTER 3: | | |
| BIOTECHNOLOGY AND THE USES OF BIOLOGICAL | | |
| RESOURCES | | |
| 39 | | |
| 3.1 | INTRODUCTION | 39 |
| 3.2 | THE DEVELOPMENT OF BIOTECHNOLOGY | 39 |
| 3.3 | THE BIOTECHNOLOGY INDUSTRY | 41 |
| 3.4 | THE APPLICATION AND USE OF BIOTECHNOLOGY FOR AGRICULTURAL DEVELOPMENT | 43 |
| 3.5 | BIOTECHNOLOGY AND AGRICULTURE IN DEVELOPING COUNTRIES | 44 |
| 3.5.1 | The Green Revolution..... | 44 |
| 3.5.2 | The Gene Revolution | 47 |

| | | |
|-------|---|----|
| 3.5.3 | Conclusion | 51 |
| 3.6 | RELATED ISSUES IN THE BIOTECHNOLOGY DEBATE..... | 52 |
| 3.6.1 | Bioprospecting | 52 |
| 3.6.2 | “Biopiracy” | 54 |
| 3.7 | CONCLUSION..... | 58 |

**PART 2:
 CONCEPTS OF PROPERTY RIGHTS AND THEIR APPLICABILITY
 TO PLANT GENETIC RESOURCES FOR FOOD AND
 AGRICULTURE..... 60**

**CHAPTER 4:
 THE THEORETICAL BASIS OF PROPERTY RIGHTS..... 61**

| | | |
|---------|---|----|
| 4.1 | INTRODUCTION | 61 |
| 4.2 | THE MEANING OF PROPERTY | 61 |
| 4.3 | WHAT CONSTITUTES PROPERTY? | 63 |
| 4.3.1 | Property as things or objects | 64 |
| 4.3.1.1 | Classification of things..... | 64 |
| 4.3.1.2 | What things can be owned? | 65 |
| 4.3.2 | Property as rights | 66 |
| 4.3.3 | Conclusion | 67 |
| 4.4 | WHO CAN OWN PROPERTY?..... | 68 |
| 4.5 | THE IMPLICATIONS OF PROPERTY..... | 69 |
| 4.5.1 | The notion of scarcity | 69 |
| 4.5.2 | Property as an object of social wealth..... | 70 |
| 4.6 | Conclusion | 71 |

| | |
|---|-----------|
| CHAPTER 5: | |
| PROPERTY REGIMES OVER BIOLOGICAL RESOURCES..... | 72 |
| 5.1 INTRODUCTION | 72 |
| 5.2 COMMON PROPERTY RESOURCES..... | 72 |
| 5.3 OPEN ACCESS OR UNREGULATED SYSTEMS..... | 74 |
| 5.3.1 The public domain and public goods | 74 |
| 5.4 GROUP OR COMMON PROPERTY SYSTEMS..... | 75 |
| 5.5 STATE PROPERTY SYSTEMS..... | 79 |
| 5.6 INDIVIDUAL OR PRIVATE PROPERTY SYSTEMS..... | 81 |
| 5.6.1 Intellectual property | 83 |
| 5.7 INTERNATIONAL PROPERTY REGIMES OVER BIOLOGICAL RESOURCES | 87 |
| 5.7.1 International Common Property Systems | 87 |
| 5.7.1.1 The Global Commons | 87 |
| 5.7.1.2. The common heritage of humankind | 89 |
| 5.7.2 State sovereignty over natural resources..... | 92 |
| 5.8 CONCLUSION..... | 95 |
| PART 3: | |
| THE INTERNATIONAL LEGAL REGIME APPLICABLE TO PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE..... | 97 |
| CHAPTER 6: | |
| THE INTERNATIONAL ENVIRONMENTAL REGIME ON PLANT GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE..... | 98 |
| 6.1 INTRODUCTION | 98 |

| | | |
|--|---|------------|
| 6.2 | THE CONVENTION ON BIOLOGICAL DIVERSITY | 98 |
| 6.2.1 | The conceptual framework and structure of the Convention on Biological Diversity | 98 |
| 6.2.2 | The scope and content of the Convention on Biological Diversity | 101 |
| 6.3 | THE GLOBAL SYSTEM FOR THE CONSERVATION AND SUSTAINABLE UTILIZATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE OF THE FOOD AND AGRICULTURE ORGANISATION (FAO GLOBAL SYSTEM)..... | 102 |
| 6.3.1 | International agreements on plant genetic resources | 103 |
| 6.3.1.1 | The International Undertaking on Plant Genetic Resources for Food and Agriculture of 1983 (IUPGR)..... | 103 |
| 6.3.1.2 | The FAO International Treaty on Plant Genetic Resources for Food and Agriculture (the FAO Treaty)..... | 106 |
| 6.4 | CONCLUSION..... | 109 |
| 6.5 | PGRFA IN THE CONTEXT OF THE INTERNATIONAL ENVIRONMENTAL REGIME..... | 109 |
| 6.5.1 | The International Regime on PGRFA in situ..... | 109 |
| 6.5.2 | The International Regime on ex situ collections of plant genetic resources for food and agriculture | 110 |
| 6.6 | CONCLUSION..... | 113 |
| CHAPTER 7: | | |
| THE INTERNATIONAL PROPERTY RIGHTS REGIME..... | | 114 |
| 7.1 | INTRODUCTION | 114 |
| 7.2 | THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV CONVENTION)..... | 115 |
| 7.3 | THE WORLD INTELLECTUAL PROPERTY ORGANISATION..... | 116 |
| 7.3.1 | Introduction..... | 116 |
| 7.3.2 | WIPO's Patent Agenda..... | 119 |
| 7.3.2.1 | The WIPO patent harmonization treaties..... | 120 |

| | | |
|-------|--|------------|
| 7.3.3 | WIPO’s Development Agenda | 123 |
| 7.4 | THE AGREEMENT ON TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (THE TRIPS AGREEMENT)..... | 126 |
| 7.4.1 | Introduction..... | 126 |
| 7.4.2 | History of the TRIPS Agreement..... | 127 |
| 7.4.3 | Negotiation of the TRIPS Agreement..... | 128 |
| 7.4.4 | The nature, scope and content of the TRIPS Agreement..... | 130 |
| 7.5 | BILATERAL TREATIES AND “TRIPS-PLUS” MEASURES..... | 132 |
| 7.5.1 | “TRIPS-plus” provisions in bilateral treaties..... | 133 |
| 7.5.2 | The development of TRIPS-plus bilateralism..... | 134 |
| 7.6 | CONCLUSION..... | 138 |
| | PART 4: | |
| | RELATED ISSUES IN THE DEBATE ON PGRFA - FARMERS’ AND INDIGENOUS PEOPLES’ RIGHTS, AND TRADITIONAL KNOWLEDGE..... | 140 |
| | CHAPTER 8: | |
| | THE RIGHTS OF FARMERS | 141 |
| | INTRODUCTION | 141 |
| 8.2 | THE DEVELOPMENT OF THE PRINCIPLE OF FARMERS’ RIGHTS..... | 141 |
| 8.3 | THE CONCEPTUALIZATION AND RATIONALES OF FARMERS’ RIGHTS AS HUMAN RIGHTS | 143 |
| 8.3.1 | Conservation | 144 |
| 8.3.2 | Equity..... | 145 |
| 8.3.3 | The preservation of farming practices | 146 |
| 8.4 | FARMERS’ RIGHTS AS PROPERTY RIGHTS | 146 |

| | | |
|-----|--|-----|
| 8.5 | ALTERNATIVE PERSPECTIVES ON FARMERS’ RIGHTS | 147 |
| 8.6 | THE SCOPE AND CONTENT OF FARMERS’ RIGHTS IN INTERNATIONAL DOCUMENTS | 149 |
| 8.7 | THE JUSTICIABILITY OF FARMERS’ RIGHTS..... | 151 |
| 8.8 | CONCLUSION..... | 154 |

**CHAPTER 9:
THE RIGHTS OF INDIGENOUS AND LOCAL
COMMUNITIES.....** 155

| | | |
|---------|---|-----|
| 9.1 | INTRODUCTION | 155 |
| 9.2 | THE DEFINITION OF INDIGENOUS PEOPLES | 156 |
| 9.3 | THE CONCEPTUALIZATION OF INDIGENOUS PEOPLES IN INTERNATIONAL DOCUMENTS | 160 |
| 9.4 | THE RIGHTS OF INDIGENOUS PEOPLES..... | 163 |
| 9.4.1 | The right to self determination..... | 164 |
| 9.4.2 | The right to culture..... | 166 |
| 9.4.3 | The right to natural resources | 167 |
| 9.4.3.1 | The human rights approach..... | 167 |
| 9.4.3.2 | The environmental law approach..... | 170 |
| 9.5 | CONCLUSION..... | 173 |

**CHAPTER 10:
TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE.....** 175

| | | |
|------|--|-----|
| 10.1 | INTRODUCTION | 175 |
| 10.2 | ISSUES OF TRADITIONAL KNOWLEDGE | 176 |
| 10.3 | THE DEFINITION OF TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE IN INTERNATIONAL INSTRUMENTS | 177 |

| | | |
|------|--|-----|
| 10.4 | RIGHTS TO TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE..... | 179 |
| 10.5 | THE WORK OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL PARTIES IN REGARD TO TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE..... | 181 |
| 10.6 | CONCLUSION..... | 184 |

| | | |
|--|--|------------|
| PART 5: | | |
| THE DEBATE ON THE APPROPRIATION OF PGRFA AND TRADITIONAL KNOWLEDGE..... | | 185 |

| | | |
|--|--|------------|
| CHAPTER 11: | | |
| THE PLANT PROTECTION PROVISIONS OF UPOV, THE TRIPS AGREEMENT AND BILATERAL TREATIES | | 186 |

| | | |
|----------|---|-----|
| 11.1 | INTRODUCTION | 186 |
| 11.2 | FORMS OF PLANT PROTECTION | 186 |
| 11.3 | DEVELOPMENTS IN PLANT PROTECTION IN THE NATIONAL SPHERE..... | 187 |
| 11.4 | PLANT VARIETY PROTECTION UNDER UPOV..... | 190 |
| 11.4.1 | UPOV Provisions..... | 191 |
| 11.4.2 | Exceptions to plant breeders' rights (PBR) | 193 |
| 11.4.2.1 | The farmers' privilege..... | 193 |
| 11.4.2.2 | The breeders' or research exception | 198 |
| 11.4.3 | Conclusion | 200 |
| 11.5 | THE PLANT PATENT PROVISIONS OF THE TRIPS AGREEMENT AND CONCERNS OF DEVELOPING COUNTRIES | 202 |
| 11.5.1 | Introduction..... | 202 |
| 11.5.2 | The potential impact of TRIPS on plant breeding | 203 |
| 11.5.3 | Exceptions to TRIPS provisions | 204 |

| | | |
|---|---|-----|
| 11.5.4 | The TRIPS debate on genetic resources and traditional knowledge..... | 205 |
| 11.5.5 | The review of Article 27.3 (b) | 206 |
| 11.5.5.1 | General issues | 207 |
| 11.5.5.2 | Scope of exceptions to patentability in Article 27.3(b) | 210 |
| 11.5.5.3 | Ethical exceptions to patentability and Article 27.2 | 211 |
| 11.5.5.4 | Conditions of patentability in Article 27.1 and plant and animal inventions..... | 212 |
| 11.5.6 | The relationship between the TRIPS Agreement and the CBD..... | 213 |
| 11.6 | TRIPS-PLUS PROVISIONS IN BILATERAL TREATIES AFFECTING PLANT GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE | 215 |
| 11.7 | CONCLUSION..... | 218 |
| CHAPTER 12: | | |
| POSITIVE MECHANISMS TO PROTECT RIGHTS OVER | | |
| BIOLOGICAL RESOURCES AND TRADITIONAL | | |
| KNOWLEDGE – ACCESS AND BENEFIT SHARING | | |
| MEASURES..... | | |
| | | 221 |
| 12.1 | INTRODUCTION | 221 |
| 12.2 | ACCESS AND BENEFIT SHARING IN INTERNATIONAL LAW | 221 |
| 12.3 | ACCESS AND BENEFIT SHARING UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY | 222 |
| 12.4 | THE WORK OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY ON ACCESS AND BENEFIT SHARING | 223 |
| 12.4.1 | The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization | 225 |
| 12.5 | NATIONAL AND REGIONAL MEASURES ON ACCESS AND BENEFIT SHARING..... | 227 |
| 12.6 | THE ELEMENTS OF ACCESS AND BENEFIT SHARING SYSTEMS..... | 228 |
| 12.6.1 | Access to genetic resources | 229 |

| | | |
|-----------|--|-----|
| 12.6.2 | Prior informed consent (PIC)..... | 230 |
| 12.6.2.1 | Who gives consent? | 233 |
| 12.6.2.2 | National legislation on PIC | 235 |
| 12.6.2.3 | The subject matter of the PIC process | 236 |
| 12.6.2.4 | Conclusion | 237 |
| 12.6.3 | Mutually agreed terms | 238 |
| 12.6.4 | Fair and equitable sharing of benefits..... | 240 |
| 12.6.4.1 | The requirement of “fair and equitable” | 241 |
| 12.6.4.2 | Benefit sharing mechanisms | 241 |
| 12.6.5 | Some examples of ABS agreements | 242 |
| 12.6.5.1 | The Kani Tribe in Kerala, India | 243 |
| 12.6.5.2 | The Hoodia plant of the San People of southern Africa | 244 |
| 12.6.5.3 | Wild rice from Mali | 246 |
| 12.6.5.4 | The National Institute of Biodiversity in Costa Rica..... | 247 |
| 12.6.5.5 | The know-how agreement with the Aguarunas in Peru | 247 |
| 12.6.5.6 | Points to note..... | 248 |
| 12.7 | THE DRAFT INTERNATIONAL REGIME ON ACCESS AND BENEFIT SHARING..... | 251 |
| 12.8 | CONCLUSION..... | 253 |
| 12.9 | THE TRIPS AGREEMENT AND PRIOR INFORMED CONSENT/BENEFIT SHARING..... | 254 |
| 12.9.1 | The national based approach..... | 255 |
| 12.9.2 | Conclusion | 258 |
| 12.10 | THE MULTILATERAL SYSTEM OF ACCESS AND BENEFIT SHARING UNDER THE FAO TREATY | 259 |
| 12.10.1 | Access under the multilateral system (MLS)..... | 260 |
| 12.10.2 | The coverage of the multilateral system (MLS) | 261 |
| 12.10.3 | Benefit sharing under the MLS..... | 262 |
| 12.10.4 | The Standard Material Transfer Agreement | 262 |
| 12.10.4.1 | The SMTA access provisions..... | 262 |
| 12.10.4.2 | Conditions of access..... | 264 |
| 12.10.4.3 | The SMTA benefit sharing provisions | 264 |
| 12.10.4.4 | Implementation of the SMTA | 265 |

| | |
|--------------------------|-----|
| 12.10.5 Conclusion | 266 |
|--------------------------|-----|

**CHAPTER 13:
POSITIVE MECHANISMS TO PROTECT RIGHTS OVER
BIOLOGICAL RESOURCES AND TRADITIONAL
KNOWLEDGE – SUI GENERIS LEGISLATION..... 268**

| | |
|-------------------------|-----|
| 13.1 INTRODUCTION | 268 |
|-------------------------|-----|

| | |
|---|-----|
| 13.2 OPTIONS UNDER TRIPS FOR THE PROTECTION OF PLANT VARIETIES | 269 |
|---|-----|

| | |
|--|-----|
| 13.2.1. Plant variety protection based on patents..... | 270 |
|--|-----|

| | |
|--|-----|
| 13.2.2 Plant variety protection based on UPOV or plant breeders’ rights..... | 271 |
|--|-----|

| | |
|---|-----|
| 13.3 SUI GENERIS SYSTEMS OF PROTECTION OF PLANT VARIETIES | 272 |
|---|-----|

| | |
|---|-----|
| 13.3.1 What is an “effective” system of sui generis protection? | 272 |
|---|-----|

| | |
|--|-----|
| 13.3.2 Alternate sui generis systems of plant protection | 273 |
|--|-----|

| | |
|---|-----|
| 13.3.2.1 The nature of the protectable subject matter | 274 |
|---|-----|

| | |
|--|-----|
| 13.3.2.2 The criteria to qualify for protection..... | 275 |
|--|-----|

| | |
|---|-----|
| 13.3.2.3 The nature of the protection | 276 |
|---|-----|

| | |
|--|-----|
| 13.3.2.4 Who can obtain property rights over the subject matter? | 277 |
|--|-----|

| | |
|--|-----|
| 13.3.2.5 Farmers’ rights in a <i>sui generis</i> system..... | 277 |
|--|-----|

| | |
|----------------------|-----|
| 13.4 CONCLUSION..... | 278 |
|----------------------|-----|

| | |
|--|-----|
| 13.5 SUI GENERIS PROTECTION OF TRADITIONAL KNOWLEDGE - INTRODUCTION | 280 |
|--|-----|

| | |
|---|-----|
| 13.6 OPTIONS FOR SUI GENERIS SYSTEMS TO PROTECT TRADITIONAL KNOWLEDGE..... | 282 |
|---|-----|

| | |
|---|-----|
| 13.6.1 Sui generis systems for the protection of traditional knowledge based on intellectual property rights | 282 |
|---|-----|

| | |
|---|-----|
| 13.6.2 Sui generis systems for the protection of traditional knowledge, based on customary laws..... | 283 |
|---|-----|

| | |
|---|-----|
| 13.6.3 Sui generis systems for the protection of traditional knowledge based on Community Rights | 285 |
|---|-----|

| | |
|---|-----|
| 13.7 THE INTERNATIONAL DEBATE ON SUI GENERIS SYSTEMS TO PROTECT TRADITIONAL KNOWLEDGE | 288 |
| 13.7.1 The TRIPS Council..... | 288 |
| 13.7.2 The WIPO IGC | 290 |
| 13.7.3 The CBD | 291 |
| 13.7.4 The United Nations Permanent Forum on Indigenous Issues (UNPFII) | 292 |
| 13.8 CONCLUSION..... | 293 |

**CHAPTER 14:
DEFENSIVE MECHANISMS TO PROTECT BIOLOGICAL
RESOURCES AND TRADITIONAL KNOWLEDGE – DISCLOSURE
OF ORIGIN OF GENETIC RESOURCES AND TRADITIONAL
KNOWLEDGE.....**

| | |
|---|-----|
| 14.1 INTRODUCTION | 295 |
| 14.2 DEFINITION OF DISCLOSURE OF ORIGIN | 296 |
| 14.3 OBJECTIVES OF A DISCLOSURE OF ORIGIN MECHANISM..... | 296 |
| 14.4 SCOPE OF THE DISCLOSURE OF ORIGIN MECHANISM | 297 |
| 14.5 PROCEDURAL ASPECTS OF A DISCLOSURE OF ORIGIN MECHANISM | 298 |
| 14.6 LEGAL EFFECTS OF A DISCLOSURE OF ORIGIN MECHANISM | 299 |
| 14.7 DEVELOPING COUNTRY STRATEGIES FOR THE INTRODUCTION OF DISCLOSURE OF ORIGIN PROVISIONS | 300 |
| 14.7.1 National strategies..... | 300 |
| 14.7.2 International strategies | 301 |
| 14.8 PROPOSALS FOR DISCLOSURE OF ORIGIN REQUIREMENTS IN INTERNATIONAL FORA | 303 |
| 14.8.1 Proposals in the TRIPS Council | 304 |

| | | |
|----------|--|-----|
| 14.8.1.1 | Developing country proposals | 304 |
| 14.8.1.2 | Proposal of Norway | 307 |
| 14.8.2 | The Debate in the World Intellectual Property Organisation | 307 |
| 14.8.2.1 | Proposal of Switzerland | 310 |
| 14.8.2.2 | The European Community proposal | 312 |
| 14.8.3 | Developments in the CBD | 313 |
| 14.8.3.1 | The Bonn Guidelines | 314 |
| 14.8.3.2 | Disclosure obligations in the draft International Regime on Access and Benefit sharing..... | 316 |
| 14.8.3.3 | Certificate of origin/source/legal provenance | 319 |
| 14.8.4 | The Governing Body of the FAO Treaty | 320 |
| 14.8.5 | UPOV..... | 321 |
| 14.9 | ISSUES FOR CONSIDERATION | 321 |
| 14.10 | CONCLUSION..... | 325 |

**CHAPTER 15:
DEFENSIVE MECHANISMS TO PROTECT BIOLOGICAL
RESOURCES AND TRADITIONAL KNOWLEDGE – THE
RECOGNITION OF TRADITIONAL KNOWLEDGE AS
PRIOR ART** 330

| | | |
|----------|--|-----|
| 15.1 | ISSUES OF TRADITIONAL KNOWLEDGE IN PATENTABLE INVENTIONS | 329 |
| 15.2 | THE PROTECTION OF TRADITIONAL KNOWLEDGE WITHIN THE INTELLECTUAL PROPERTY RIGHTS SYSTEM..... | 331 |
| 15.2.1 | The legal aspect of integrating traditional knowledge and prior art | 332 |
| 15.2.2 | The practical aspect of integrating traditional knowledge and prior art | 337 |
| 15.2.2.1 | Defensive publication of traditional knowledge | 337 |
| 15.2.2.2 | Enforcement of search and disclosure measures | 341 |
| 15.3 | CONCLUSION..... | 343 |

**CHAPTER 16:
CONCLUSION.....** 346

BIBLIOGRAPHY 352

**GENETIC RESOURCES, EQUITY AND INTERNATIONAL
LAW**

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by

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ABSTRACT

This thesis examines the application of international law to the uses of agricultural crop plants termed plant genetic resources for food and agriculture. In particular, it asks the question, “does international law regulate the use of plant genetic resources for food and agriculture so as to enable equity among nations in accessing these resources and sharing the benefits which arise from them?”

In answering this question this thesis will also consider several related issues which have arisen in the course of the international debate on this topic. These resources are closely entwined with the lives and livelihoods of certain categories of peoples such as indigenous peoples and farmers and local communities. In addition, they are critical for the economies, agricultural systems and food security of nations. The thesis question will not be considered in the abstract, but will rather be placed against the background of these issues, which will be continuously used to put the legal discourse into perspective.

The legal analysis will focus on five international agreements which directly or indirectly regulate the use of crop plants. These five agreements are placed in two broad categories, i.e. environmental/conservation agreements and trade and property related agreements. The first category includes the Convention on Biological Diversity of 1992 and the International Treaty on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organisation of 2001. The second category includes the Convention for the Protection of New Varieties of Plants of 1991, the Agreement on Trade Related Aspects of Intellectual Property Rights of 1994, and several treaties of the World Intellectual Property Organisation. In addition, since the topic raises issues of rights, certain human rights treaties and documents will also be used in the analysis.

The current international conflict over plant genetic resources can be condensed into one of rights, human rights and property rights. The international treaties cited above have all contextualized the issue within a framework of property rights, setting out mechanisms for different forms of legal control of these resources. This thesis will argue that whatever the form and nature of such property rights, they cannot achieve equity in the use of crop plants. Rather the use of such rights results in violations of human rights.

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I dedicate this thesis to my mother and the memory of my father with love.

ABBREVIATIONS

| | |
|------------|--|
| ABS | Access and Benefit Sharing |
| ACP | African, Caribbean and Pacific countries |
| AIPPI | International Association for the Protection of Industrial Property |
| ASEAN | Association of South East Asian Nations |
| ASSINSEL | International Association of Plant Breeders |
| CBD | Convention on Biological Diversity |
| CDIP | WIPO Committee on Development and Intellectual Property |
| CGIAR | Consultative Group on International Agricultural Research |
| CGRFA | Commission on Genetic Resources for Food and Agriculture |
| CHH | Common Heritage of Humankind |
| CIEL | Centre for International Environmental Law |
| COGENT | International Coconut Genetic Resources Network |
| CoP | Conference of the Parties to the Convention on Biological Diversity |
| CPRs | Common property resources |
| EFTA | European Free Trade Association |
| EU | European Union |
| FAO Treaty | FAO International Treaty on Plant Genetic Resources for Food and Agriculture |
| FAO | Food and Agriculture Organisation |
| FOD | Group of Friends of Development |
| FTA | Free Trade Agreement |
| GATT | General Agreement on Tariffs and Trade |
| GE | Genetically Engineered |
| GM | Genetically Modified |
| GPA | Global Plan of Action |
| GRAIN | Genetic Resources Action International |
| GURTS | Genetic Use Restriction Technology |
| HYVs | High Yielding Varieties |
| IARC | International Agricultural Research Centre |
| ICCPR | International Covenant on Civil and Political Rights |
| ICESCR | International Covenant on Economic, Social and Cultural Rights |

| | |
|------------|--|
| ICTSD | International Centre for Trade and Sustainable Development |
| IGC | Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore |
| IISD | International Institute For Sustainable Development |
| ILM | International Legal Materials |
| ILO | International Labour Organisation |
| IP | Intellectual Property |
| IPGRI | International Plant Genetic Resources Institute |
| IPRs | Intellectual Property Rights |
| IRRI | International Rice Research Institute |
| ISA | International Searching Authority |
| ITO | International Trade Organisation |
| IUCN | World Conservation Union |
| IUPGR | International Undertaking on Plant Genetic Resources |
| LDCs | Lesser Developed Countries |
| LMMC Group | Group of Like Minded Megadiverse Countries |
| MATs | Mutually Agreed Terms |
| MDGs | Millennium Development Goals |
| MFN | Most Favoured Nation Treatment |
| MLS | Multilateral System |
| MNC | Multinational Corporation |
| MTA | Material Transfer Agreements |
| OAS | Organisation of American States |
| OAU | Organisation of African Unity |
| OECD | Organisation for Economic Co-operation and Development |
| PBR | Plant Breeders' Rights |
| PCDA | Provisional Committee on Proposals related to a WIPO Development Agenda |
| PCIPD | Permanent Committee on Co-operation on Development Related to Intellectual Property |
| PCT | Patent Co-operation Treaty |
| PGRFA | Plant Genetic Resources for Food and Agriculture |
| PIC | Prior informed consent |

| | |
|-----------------|--|
| PLT | Patent Law Treaty |
| PVP | Plant Variety Protection |
| PVPA | U.S. Plant Variety Protection Act |
| QIAP | Quaker International Affairs Programme |
| QUNO | Quaker United Nations Office |
| SBSTTA | Subsidiary Body on Scientific, Technical and Technological Advice |
| SCP | Standing Committee on the Law of Patents |
| SMTA | Standard Material Transfer Agreement |
| SPLT | Substantive Patent Law Treaty |
| TEK | Traditional Ecological Knowledge |
| TEKW | Traditional Ecological Knowledge and Wisdom |
| TK | Traditional Knowledge |
| TRIPS Agreement | Agreement on Trade Related Aspects of Intellectual Property Rights |
| TRIPS Council | Council for Trade Related Aspects of Intellectual Property Rights |
| U.S. | United States |
| UDHR | Universal Declaration on Human Rights |
| UN | United Nations |
| UNCED | United Nations Conference on Environment and Development |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNCTAD | United Nations Conference on Trade and Development |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Education, Cultural and Scientific Organisation |
| UPOV Convention | Convention for the Protection of New Varieties of Plants |
| UPOV | International Union for the Protection of New Varieties of Plants |
| USPTO | U.S. Patent and Trademark Office |
| WG8J | Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity |
| WG-ABS | <i>Ad hoc</i> Open Ended Working Group on Access and Benefit Sharing |
| WIPO | World Intellectual Property Organisation |
| WTO | World Trade Organisation |

TABLE OF CONTENTS

| | |
|--|----|
| CHAPTER 1: | |
| INTRODUCTION | 1 |
| 1.1 THE THESIS QUESTION | 1 |
| 1.2 THE STRUCTURE OF THE THESIS | 2 |
| | |
| PART 1: | |
| BIODIVERSITY AND PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE | 5 |
| | |
| CHAPTER 2: | |
| OVERVIEW OF BIODIVERSITY | 6 |
| 2.1 INTRODUCTION | 6 |
| 2.2 OVERVIEW OF BIODIVERSITY | 7 |
| 2.3 THE LEVELS OF DIVERSITY | 8 |
| 2.3.1 Ecosystem Diversity | 8 |
| 2.3.2 Species Diversity | 10 |
| 2.3.3 Genetic Diversity | 11 |
| 2.4 THE VALUES OF BIODIVERSITY | 12 |
| 2.4.1 The philosophical debate on the values of biodiversity | 12 |
| 2.4.2 The economic values of biological resources | 15 |
| 2.5 LOSS OF BIODIVERSITY | 18 |
| 2.5.1 Loss of ecosystem diversity | 19 |
| 2.5.2 Loss of species diversity | 20 |
| 2.5.3 Loss of genetic diversity | 20 |

| | | |
|---|---|----|
| 2.6 | HUMAN CULTURAL DIVERSITY | 21 |
| 2.6.1 | Traditional ecological knowledge..... | 23 |
| 2.6.2 | Loss of cultural diversity | 25 |
| 2.7 | PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (PGRFA)..... | 26 |
| 2.7.1 | Introduction..... | 26 |
| 2.7.2 | The Values of PGRFA | 28 |
| 2.7.3 | Diversity of PGRFA | 29 |
| 2.7.4 | Loss of plant genetic diversity | 30 |
| 2.7.5 | Location of PGRFA | 31 |
| 2.7.5.1 | <i>Ex situ</i> collections of PGRFA | 32 |
| 2.7.5.2 | The International Network of <i>Ex Situ</i> Collections under the auspices of FAO..... | 34 |
| 2.7.5.3 | Other International Networks of <i>Ex Situ</i> Collections of PGRFA | 35 |
| 2.8 | ISSUES OF EQUITY IN REGARD TO PGRFA | 36 |
| | | |
| CHAPTER 3: | | |
| BIOTECHNOLOGY AND THE USES OF BIOLOGICAL | | |
| RESOURCES | | |
| 39 | | |
| 3.1 | INTRODUCTION | 39 |
| 3.2 | THE DEVELOPMENT OF BIOTECHNOLOGY | 39 |
| 3.3 | THE BIOTECHNOLOGY INDUSTRY | 41 |
| 3.4 | THE APPLICATION AND USE OF BIOTECHNOLOGY FOR AGRICULTURAL DEVELOPMENT | 43 |
| 3.5 | BIOTECHNOLOGY AND AGRICULTURE IN DEVELOPING COUNTRIES | 44 |
| 3.5.1 | The Green Revolution..... | 44 |
| 3.5.2 | The Gene Revolution | 47 |

| | | |
|-------|---|----|
| 3.5.3 | Conclusion | 51 |
| 3.6 | RELATED ISSUES IN THE BIOTECHNOLOGY DEBATE..... | 52 |
| 3.6.1 | Bioprospecting | 52 |
| 3.6.2 | “Biopiracy” | 54 |
| 3.7 | CONCLUSION..... | 58 |

**PART 2:
 CONCEPTS OF PROPERTY RIGHTS AND THEIR APPLICABILITY
 TO PLANT GENETIC RESOURCES FOR FOOD AND
 AGRICULTURE..... 60**

**CHAPTER 4:
 THE THEORETICAL BASIS OF PROPERTY RIGHTS..... 61**

| | | |
|---------|---|----|
| 4.1 | INTRODUCTION | 61 |
| 4.2 | THE MEANING OF PROPERTY | 61 |
| 4.3 | WHAT CONSTITUTES PROPERTY? | 63 |
| 4.3.1 | Property as things or objects | 64 |
| 4.3.1.1 | Classification of things..... | 64 |
| 4.3.1.2 | What things can be owned? | 65 |
| 4.3.2 | Property as rights | 66 |
| 4.3.3 | Conclusion | 67 |
| 4.4 | WHO CAN OWN PROPERTY?..... | 68 |
| 4.5 | THE IMPLICATIONS OF PROPERTY..... | 69 |
| 4.5.1 | The notion of scarcity | 69 |
| 4.5.2 | Property as an object of social wealth..... | 70 |
| 4.6 | Conclusion | 71 |

| | |
|---|-----------|
| CHAPTER 5: | |
| PROPERTY REGIMES OVER BIOLOGICAL RESOURCES..... | 72 |
| 5.1 INTRODUCTION | 72 |
| 5.2 COMMON PROPERTY RESOURCES..... | 72 |
| 5.3 OPEN ACCESS OR UNREGULATED SYSTEMS..... | 74 |
| 5.3.1 The public domain and public goods | 74 |
| 5.4 GROUP OR COMMON PROPERTY SYSTEMS..... | 75 |
| 5.5 STATE PROPERTY SYSTEMS..... | 79 |
| 5.6 INDIVIDUAL OR PRIVATE PROPERTY SYSTEMS..... | 81 |
| 5.6.1 Intellectual property | 83 |
| 5.7 INTERNATIONAL PROPERTY REGIMES OVER BIOLOGICAL RESOURCES | 87 |
| 5.7.1 International Common Property Systems | 87 |
| 5.7.1.1 The Global Commons | 87 |
| 5.7.1.2. The common heritage of humankind | 89 |
| 5.7.2 State sovereignty over natural resources..... | 92 |
| 5.8 CONCLUSION..... | 95 |
| PART 3: | |
| THE INTERNATIONAL LEGAL REGIME APPLICABLE TO PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE..... | 97 |
| CHAPTER 6: | |
| THE INTERNATIONAL ENVIRONMENTAL REGIME ON PLANT GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE..... | 98 |
| 6.1 INTRODUCTION | 98 |

| | | |
|--|---|------------|
| 6.2 | THE CONVENTION ON BIOLOGICAL DIVERSITY | 98 |
| 6.2.1 | The conceptual framework and structure of the Convention on Biological Diversity | 98 |
| 6.2.2 | The scope and content of the Convention on Biological Diversity | 101 |
| 6.3 | THE GLOBAL SYSTEM FOR THE CONSERVATION AND SUSTAINABLE UTILIZATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE OF THE FOOD AND AGRICULTURE ORGANISATION (FAO GLOBAL SYSTEM)..... | 102 |
| 6.3.1 | International agreements on plant genetic resources | 103 |
| 6.3.1.1 | The International Undertaking on Plant Genetic Resources for Food and Agriculture of 1983 (IUPGR)..... | 103 |
| 6.3.1.2 | The FAO International Treaty on Plant Genetic Resources for Food and Agriculture (the FAO Treaty)..... | 106 |
| 6.4 | CONCLUSION..... | 109 |
| 6.5 | PGRFA IN THE CONTEXT OF THE INTERNATIONAL ENVIRONMENTAL REGIME..... | 109 |
| 6.5.1 | The International Regime on PGRFA in situ..... | 109 |
| 6.5.2 | The International Regime on ex situ collections of plant genetic resources for food and agriculture | 110 |
| 6.6 | CONCLUSION..... | 113 |
| CHAPTER 7: | | |
| THE INTERNATIONAL PROPERTY RIGHTS REGIME..... | | 114 |
| 7.1 | INTRODUCTION | 114 |
| 7.2 | THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV CONVENTION)..... | 115 |
| 7.3 | THE WORLD INTELLECTUAL PROPERTY ORGANISATION..... | 116 |
| 7.3.1 | Introduction..... | 116 |
| 7.3.2 | WIPO's Patent Agenda..... | 119 |
| 7.3.2.1 | The WIPO patent harmonization treaties..... | 120 |

| | | |
|-------|--|------------|
| 7.3.3 | WIPO’s Development Agenda | 123 |
| 7.4 | THE AGREEMENT ON TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (THE TRIPS AGREEMENT)..... | 126 |
| 7.4.1 | Introduction..... | 126 |
| 7.4.2 | History of the TRIPS Agreement..... | 127 |
| 7.4.3 | Negotiation of the TRIPS Agreement..... | 128 |
| 7.4.4 | The nature, scope and content of the TRIPS Agreement..... | 130 |
| 7.5 | BILATERAL TREATIES AND “TRIPS-PLUS” MEASURES..... | 132 |
| 7.5.1 | “TRIPS-plus” provisions in bilateral treaties..... | 133 |
| 7.5.2 | The development of TRIPS-plus bilateralism..... | 134 |
| 7.6 | CONCLUSION..... | 138 |
| | PART 4: | |
| | RELATED ISSUES IN THE DEBATE ON PGRFA - FARMERS’ AND INDIGENOUS PEOPLES’ RIGHTS, AND TRADITIONAL KNOWLEDGE..... | 140 |
| | CHAPTER 8: | |
| | THE RIGHTS OF FARMERS | 141 |
| | INTRODUCTION | 141 |
| 8.2 | THE DEVELOPMENT OF THE PRINCIPLE OF FARMERS’ RIGHTS..... | 141 |
| 8.3 | THE CONCEPTUALIZATION AND RATIONALES OF FARMERS’ RIGHTS AS HUMAN RIGHTS | 143 |
| 8.3.1 | Conservation | 144 |
| 8.3.2 | Equity..... | 145 |
| 8.3.3 | The preservation of farming practices | 146 |
| 8.4 | FARMERS’ RIGHTS AS PROPERTY RIGHTS | 146 |

| | | |
|-----|--|-----|
| 8.5 | ALTERNATIVE PERSPECTIVES ON FARMERS’ RIGHTS | 147 |
| 8.6 | THE SCOPE AND CONTENT OF FARMERS’ RIGHTS IN INTERNATIONAL DOCUMENTS | 149 |
| 8.7 | THE JUSTICIABILITY OF FARMERS’ RIGHTS..... | 151 |
| 8.8 | CONCLUSION..... | 154 |

**CHAPTER 9:
THE RIGHTS OF INDIGENOUS AND LOCAL
COMMUNITIES..... 155**

| | | |
|---------|---|-----|
| 9.1 | INTRODUCTION | 155 |
| 9.2 | THE DEFINITION OF INDIGENOUS PEOPLES | 156 |
| 9.3 | THE CONCEPTUALIZATION OF INDIGENOUS PEOPLES IN INTERNATIONAL DOCUMENTS | 160 |
| 9.4 | THE RIGHTS OF INDIGENOUS PEOPLES..... | 163 |
| 9.4.1 | The right to self determination..... | 164 |
| 9.4.2 | The right to culture..... | 166 |
| 9.4.3 | The right to natural resources | 167 |
| 9.4.3.1 | The human rights approach..... | 167 |
| 9.4.3.2 | The environmental law approach..... | 170 |
| 9.5 | CONCLUSION..... | 173 |

**CHAPTER 10:
TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE..... 175**

| | | |
|------|--|-----|
| 10.1 | INTRODUCTION | 175 |
| 10.2 | ISSUES OF TRADITIONAL KNOWLEDGE | 176 |
| 10.3 | THE DEFINITION OF TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE IN INTERNATIONAL INSTRUMENTS | 177 |

| | | |
|------|--|-----|
| 10.4 | RIGHTS TO TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE | 179 |
| 10.5 | THE WORK OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL PARTIES IN REGARD TO TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE..... | 181 |
| 10.6 | CONCLUSION..... | 184 |

| | | |
|--|--|------------|
| PART 5: | | |
| THE DEBATE ON THE APPROPRIATION OF PGRFA AND TRADITIONAL KNOWLEDGE..... | | 185 |

| | | |
|--|--|------------|
| CHAPTER 11: | | |
| THE PLANT PROTECTION PROVISIONS OF UPOV, THE TRIPS AGREEMENT AND BILATERAL TREATIES | | 186 |

| | | |
|----------|---|-----|
| 11.1 | INTRODUCTION | 186 |
| 11.2 | FORMS OF PLANT PROTECTION | 186 |
| 11.3 | DEVELOPMENTS IN PLANT PROTECTION IN THE NATIONAL SPHERE..... | 187 |
| 11.4 | PLANT VARIETY PROTECTION UNDER UPOV..... | 190 |
| 11.4.1 | UPOV Provisions..... | 191 |
| 11.4.2 | Exceptions to plant breeders' rights (PBR) | 193 |
| 11.4.2.1 | The farmers' privilege..... | 193 |
| 11.4.2.2 | The breeders' or research exception | 198 |
| 11.4.3 | Conclusion | 200 |
| 11.5 | THE PLANT PATENT PROVISIONS OF THE TRIPS AGREEMENT AND CONCERNS OF DEVELOPING COUNTRIES | 202 |
| 11.5.1 | Introduction..... | 202 |
| 11.5.2 | The potential impact of TRIPS on plant breeding | 203 |
| 11.5.3 | Exceptions to TRIPS provisions | 204 |

| | | |
|---|---|-----|
| 11.5.4 | The TRIPS debate on genetic resources and traditional knowledge..... | 205 |
| 11.5.5 | The review of Article 27.3 (b) | 206 |
| 11.5.5.1 | General issues | 207 |
| 11.5.5.2 | Scope of exceptions to patentability in Article 27.3(b) | 210 |
| 11.5.5.3 | Ethical exceptions to patentability and Article 27.2 | 211 |
| 11.5.5.4 | Conditions of patentability in Article 27.1 and plant and animal inventions..... | 212 |
| 11.5.6 | The relationship between the TRIPS Agreement and the CBD..... | 213 |
| 11.6 | TRIPS-PLUS PROVISIONS IN BILATERAL TREATIES AFFECTING PLANT GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE | 215 |
| 11.7 | CONCLUSION..... | 218 |
| | | |
| CHAPTER 12: | | |
| POSITIVE MECHANISMS TO PROTECT RIGHTS OVER | | |
| BIOLOGICAL RESOURCES AND TRADITIONAL | | |
| KNOWLEDGE – ACCESS AND BENEFIT SHARING | | |
| MEASURES..... | | |
| | | 221 |
| 12.1 | INTRODUCTION | 221 |
| 12.2 | ACCESS AND BENEFIT SHARING IN INTERNATIONAL LAW | 221 |
| 12.3 | ACCESS AND BENEFIT SHARING UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY | 222 |
| 12.4 | THE WORK OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY ON ACCESS AND BENEFIT SHARING | 223 |
| 12.4.1 | The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization | 225 |
| 12.5 | NATIONAL AND REGIONAL MEASURES ON ACCESS AND BENEFIT SHARING..... | 227 |
| 12.6 | THE ELEMENTS OF ACCESS AND BENEFIT SHARING SYSTEMS..... | 228 |
| 12.6.1 | Access to genetic resources | 229 |

| | | |
|-----------|--|-----|
| 12.6.2 | Prior informed consent (PIC)..... | 230 |
| 12.6.2.1 | Who gives consent? | 233 |
| 12.6.2.2 | National legislation on PIC | 235 |
| 12.6.2.3 | The subject matter of the PIC process | 236 |
| 12.6.2.4 | Conclusion | 237 |
| 12.6.3 | Mutually agreed terms | 238 |
| 12.6.4 | Fair and equitable sharing of benefits..... | 240 |
| 12.6.4.1 | The requirement of “fair and equitable” | 241 |
| 12.6.4.2 | Benefit sharing mechanisms | 241 |
| 12.6.5 | Some examples of ABS agreements | 242 |
| 12.6.5.1 | The Kani Tribe in Kerala, India | 243 |
| 12.6.5.2 | The Hoodia plant of the San People of southern Africa | 244 |
| 12.6.5.3 | Wild rice from Mali | 246 |
| 12.6.5.4 | The National Institute of Biodiversity in Costa Rica..... | 247 |
| 12.6.5.5 | The know-how agreement with the Aguarunas in Peru | 247 |
| 12.6.5.6 | Points to note..... | 248 |
| 12.7 | THE DRAFT INTERNATIONAL REGIME ON ACCESS AND BENEFIT SHARING..... | 251 |
| 12.8 | CONCLUSION..... | 253 |
| 12.9 | THE TRIPS AGREEMENT AND PRIOR INFORMED CONSENT/BENEFIT SHARING..... | 254 |
| 12.9.1 | The national based approach..... | 255 |
| 12.9.2 | Conclusion | 258 |
| 12.10 | THE MULTILATERAL SYSTEM OF ACCESS AND BENEFIT SHARING UNDER THE FAO TREATY | 259 |
| 12.10.1 | Access under the multilateral system (MLS)..... | 260 |
| 12.10.2 | The coverage of the multilateral system (MLS) | 261 |
| 12.10.3 | Benefit sharing under the MLS..... | 262 |
| 12.10.4 | The Standard Material Transfer Agreement | 262 |
| 12.10.4.1 | The SMTA access provisions..... | 262 |
| 12.10.4.2 | Conditions of access..... | 264 |
| 12.10.4.3 | The SMTA benefit sharing provisions | 264 |
| 12.10.4.4 | Implementation of the SMTA | 265 |

| | |
|--------------------------|-----|
| 12.10.5 Conclusion | 266 |
|--------------------------|-----|

**CHAPTER 13:
POSITIVE MECHANISMS TO PROTECT RIGHTS OVER
BIOLOGICAL RESOURCES AND TRADITIONAL
KNOWLEDGE – SUI GENERIS LEGISLATION..... 268**

| | |
|-------------------------|-----|
| 13.1 INTRODUCTION | 268 |
|-------------------------|-----|

| | |
|---|-----|
| 13.2 OPTIONS UNDER TRIPS FOR THE PROTECTION OF PLANT VARIETIES | 269 |
|---|-----|

| | |
|--|-----|
| 13.2.1. Plant variety protection based on patents..... | 270 |
|--|-----|

| | |
|--|-----|
| 13.2.2 Plant variety protection based on UPOV or plant breeders’ rights..... | 271 |
|--|-----|

| | |
|---|-----|
| 13.3 SUI GENERIS SYSTEMS OF PROTECTION OF PLANT VARIETIES | 272 |
|---|-----|

| | |
|---|-----|
| 13.3.1 What is an “effective” system of sui generis protection? | 272 |
|---|-----|

| | |
|--|-----|
| 13.3.2 Alternate sui generis systems of plant protection | 273 |
|--|-----|

| | |
|---|-----|
| 13.3.2.1 The nature of the protectable subject matter | 274 |
|---|-----|

| | |
|--|-----|
| 13.3.2.2 The criteria to qualify for protection..... | 275 |
|--|-----|

| | |
|---|-----|
| 13.3.2.3 The nature of the protection | 276 |
|---|-----|

| | |
|--|-----|
| 13.3.2.4 Who can obtain property rights over the subject matter? | 277 |
|--|-----|

| | |
|--|-----|
| 13.3.2.5 Farmers’ rights in a <i>sui generis</i> system..... | 277 |
|--|-----|

| | |
|----------------------|-----|
| 13.4 CONCLUSION..... | 278 |
|----------------------|-----|

| | |
|--|-----|
| 13.5 SUI GENERIS PROTECTION OF TRADITIONAL KNOWLEDGE - INTRODUCTION | 280 |
|--|-----|

| | |
|---|-----|
| 13.6 OPTIONS FOR SUI GENERIS SYSTEMS TO PROTECT TRADITIONAL KNOWLEDGE..... | 282 |
|---|-----|

| | |
|---|-----|
| 13.6.1 Sui generis systems for the protection of traditional knowledge based on intellectual property rights | 282 |
|---|-----|

| | |
|---|-----|
| 13.6.2 Sui generis systems for the protection of traditional knowledge, based on customary laws..... | 283 |
|---|-----|

| | |
|---|-----|
| 13.6.3 Sui generis systems for the protection of traditional knowledge based on Community Rights | 285 |
|---|-----|

| | |
|---|-----|
| 13.7 THE INTERNATIONAL DEBATE ON SUI GENERIS SYSTEMS TO PROTECT TRADITIONAL KNOWLEDGE | 288 |
| 13.7.1 The TRIPS Council..... | 288 |
| 13.7.2 The WIPO IGC | 290 |
| 13.7.3 The CBD | 291 |
| 13.7.4 The United Nations Permanent Forum on Indigenous Issues (UNPFII) | 292 |
| 13.8 CONCLUSION..... | 293 |

**CHAPTER 14:
DEFENSIVE MECHANISMS TO PROTECT BIOLOGICAL
RESOURCES AND TRADITIONAL KNOWLEDGE – DISCLOSURE
OF ORIGIN OF GENETIC RESOURCES AND TRADITIONAL
KNOWLEDGE.....**

| | |
|---|-----|
| 14.1 INTRODUCTION | 295 |
| 14.2 DEFINITION OF DISCLOSURE OF ORIGIN | 296 |
| 14.3 OBJECTIVES OF A DISCLOSURE OF ORIGIN MECHANISM..... | 296 |
| 14.4 SCOPE OF THE DISCLOSURE OF ORIGIN MECHANISM | 297 |
| 14.5 PROCEDURAL ASPECTS OF A DISCLOSURE OF ORIGIN MECHANISM | 298 |
| 14.6 LEGAL EFFECTS OF A DISCLOSURE OF ORIGIN MECHANISM | 299 |
| 14.7 DEVELOPING COUNTRY STRATEGIES FOR THE INTRODUCTION OF DISCLOSURE OF ORIGIN PROVISIONS | 300 |
| 14.7.1 National strategies..... | 300 |
| 14.7.2 International strategies | 301 |
| 14.8 PROPOSALS FOR DISCLOSURE OF ORIGIN REQUIREMENTS IN INTERNATIONAL FORA | 303 |
| 14.8.1 Proposals in the TRIPS Council | 304 |

| | | |
|----------|--|-----|
| 14.8.1.1 | Developing country proposals | 304 |
| 14.8.1.2 | Proposal of Norway | 307 |
| 14.8.2 | The Debate in the World Intellectual Property Organisation | 307 |
| 14.8.2.1 | Proposal of Switzerland | 310 |
| 14.8.2.2 | The European Community proposal | 312 |
| 14.8.3 | Developments in the CBD | 313 |
| 14.8.3.1 | The Bonn Guidelines | 314 |
| 14.8.3.2 | Disclosure obligations in the draft International Regime on Access and Benefit sharing..... | 316 |
| 14.8.3.3 | Certificate of origin/source/legal provenance | 319 |
| 14.8.4 | The Governing Body of the FAO Treaty | 320 |
| 14.8.5 | UPOV..... | 321 |
| 14.9 | ISSUES FOR CONSIDERATION | 321 |
| 14.10 | CONCLUSION..... | 325 |

CHAPTER 15:

DEFENSIVE MECHANISMS TO PROTECT BIOLOGICAL RESOURCES AND TRADITIONAL KNOWLEDGE – THE RECOGNITION OF TRADITIONAL KNOWLEDGE AS PRIOR ART

330

| | | |
|----------|---|-----|
| 15.1 | ISSUES OF TRADITIONAL KNOWLEDGE IN PATENTABLE INVENTIONS | 329 |
| 15.2 | THE PROTECTION OF TRADITIONAL KNOWLEDGE WITHIN THE INTELLECTUAL PROPERTY RIGHTS SYSTEM..... | 331 |
| 15.2.1 | The legal aspect of integrating traditional knowledge and prior art | 332 |
| 15.2.2 | The practical aspect of integrating traditional knowledge and prior art | 337 |
| 15.2.2.1 | Defensive publication of traditional knowledge | 337 |
| 15.2.2.2 | Enforcement of search and disclosure measures | 341 |
| 15.3 | CONCLUSION..... | 343 |

CHAPTER 16:

CONCLUSION.....

346

BIBLIOGRAPHY 352

CHAPTER 1

INTRODUCTION

1.1 THE THESIS QUESTION

The International Treaty on Plant Genetic Resources for Food and Agriculture defines “plant genetic resources for food and agriculture” as “any genetic material of plant origin of actual or potential value for food and agriculture.”¹ In essence, the term can be used to refer to the diversity of crop plants, both wild varieties and those which humans have modified, developed and used throughout history, and which have now accumulated in a vast resource of agricultural plant diversity. This resource has been drawn upon to meet basic human needs of food and nutrition, and has sustained agricultural systems throughout the world for centuries.

In the last few decades certain developments have brought about changes, not to the nature of plant genetic resources for food and agriculture (PGRFA), but to the conception of their values. The first such development is the progress of biotechnology which now enables the genetic manipulation of plants, including the accelerated development of new crop varieties. This has resulted in an immense escalation in the value of PGRFA. Aside from their historic uses as a source of food, such plants have now become a significant commercial asset.

A legal phenomenon has also simultaneously arisen as a direct result of this technological development. This phenomenon is the expansion and development of intellectual property rights to encompass plant varieties, including those necessary for food and agriculture. As a result of the potential commercial value of PGRFA, there has been an increased interest in obtaining exclusive property rights over plant varieties for economic gain. This interest has been facilitated by developments in international intellectual property and trade law, which require all nations to now adhere to a system which acknowledges private property rights over, inter alia, crop plant varieties, which were hitherto generally accessible to everybody.

This thesis is a study of these international law developments in the regulation of the uses of PGRFA, and asks a specific question: does the present international legal system regulating the

¹ *International Treaty on Plant Genetic Resources for Food and Agriculture*, adopted at the 31st Session of the FAO Conference on 3 November 2001 available at <http://www.fao.org/ag/cgrfa/itpgr.htm> and the website of the Treaty at <http://www.planttreaty.org/> last accessed 23rd June 2008.

uses of plant genetic resources for food and agriculture, ensure to the global community, equitable access to these plants and to the benefits which arise out of them?

In exploring this question, this thesis will also simultaneously pursue a second line of inquiry on some inter-related issues. As observed above, the diversity of plant crops now available to humans was largely due to the efforts of generations of farmers and other agriculture based communities in developing and conserving them. These crops have, until these recent developments, been generally freely available, and have contributed to a continuous process of agricultural development over time. A legal regime which permits these plants or their components to now be acquired by vested interests to the exclusion of those who originally developed and used them, raises questions of equity as well as questions of the transfer of property rights over them.

A second related issue concerns that of traditional knowledge, including traditional agricultural knowledge. The ability of agriculture based communities to develop and diversify this body of natural resources was obviously due, among other factors, to a store of knowledge regarding their uses and benefits. It has become a matter of concern that this body of knowledge is also being used to determine the value of plants which can then be appropriated. These two issues have now become inextricably linked to the debate on the international regulation of the uses of PGRFA, and therefore will be considered together with the main question.

1.2 THE STRUCTURE OF THE THESIS

This thesis will be structured according to the following format. Substantively, it will consist of factual introductions to the issues, the conceptualization of the legal context of the international regimes in question, and an analysis of the provisions of the international agreements relating to PGRFA and the debates which have taken place on the issue in international fora. These will be presented in five parts.

Part 1, consisting of two chapters, provides a factual background to the issues. Chapter 1 contains a brief introduction to biological diversity, and a more detailed analysis of PGRFA in particular. It explains the importance of conserving this diversity and the causes of its loss. A related element of diversity, namely human cultural diversity and its link to natural resources will also be explained. This explanation feeds into the discussion on traditional knowledge. Chapter

2 contains a discussion of how modern biotechnology has changed the institutional framework within which PGRFA is used, for example the changes it has made to agricultural systems, particularly in developing countries. It will also discuss matters of concern which have arisen as a result of biotechnological processes, importantly, the appropriation of plant resources as raw material for this purpose. This section provides a historical perspective on the issues which will provide a framework for current concerns.

PGRFA is now susceptible of private ownership and international law has, in a range of treaties, devised several forms of ownership which can be applied to these resources. Therefore it is important to analyse the concepts underpinning the notion of property in general, and the property rights applicable to PGRFA in particular. Accordingly, Part 2 will discuss the philosophical foundations of property rights over natural resources. It will then examine, more specifically, the property regimes contained in the international agreements, which regulate the uses of these resources. These concepts are important as they form the basis of the debate regarding which form of property rights, if any, should be applied to crop plants.

Part 3 provides a preliminary introduction to the five international agreements which seek to regulate access to, and the uses of, PGRFA. These agreements have been divided into two categories. The first is the international environmental/conservation regime whose primary focus is the conservation of biological and genetic resources. The agreements in this category also contain provisions on access to genetic resources and benefit sharing of their uses. The second category is the international trade and property rights regime which conversely seeks to restrict such access and to facilitate private ownership of plants. This Part of the thesis will also provide a historical perspective on the nature and structure of these agreements, and importantly the political basis of their negotiation and implementation. This is necessary in order to set the context for the more detailed analysis of their provisions which have contributed to the controversy over PGRFA.

Part 4 deals with inter-related issues relating to agriculture based communities, and two chapters consider the international discourse on the rights of farmers and indigenous peoples respectively. These chapters examine a range of international documents, including human rights documents, in analyzing the nature, scope and extent of the rights of these communities in regard to PGRFA and their linkage to this debate. The third chapter in this part deals with the question of traditional knowledge. The appropriation of such knowledge often runs parallel with the

appropriation of the genetic resources and is thus also the interface between the issues of PGRFA and communities.

Having defined the parameters of the debate in the first four parts, the final Part 5 consisting of Chapters 11-15, will review the international debate on PGRFA as it has been played out in the international fora which administer the agreements. It will contain a detailed analysis of the provisions of the five treaties, and examine the records of the debates in the institutions administering them so as to determine the question whether these agreements as they stand at present, achieve equity in the use of PGRFA. These debates reflect the viewpoints of the various stakeholders involved and strategies to negotiate contentious points, and illustrate the economic and political realities underlying this debate.

The concluding Chapter 16 will summarise the analysis and arguments in the thesis, and based upon them, offer an answer to the thesis question. This thesis does not attempt to provide practical solutions to the problem or strategies for further action. Its purpose is rather, to analyse the current trends and issues, and their impacts upon the various stakeholders involved and to raise points of concern.

Part 1

***Biodiversity and Plant Genetic Resources for
Food and Agriculture***

CHAPTER 2

OVERVIEW OF BIODIVERSITY

2.1 INTRODUCTION

The Convention on Biological Diversity (CBD) defines “biological diversity” as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems”¹. Definitions of biodiversity therefore consider three levels of diversity – genetic, species, and ecosystem diversity.² The term “biological resources” refers more specifically to the physical manifestations of biodiversity which have actual or potential value for humanity.³ Biological resources can be managed, i.e. they can be consumed or replenished and conserved. The way biological resources are managed enhances or reduces biodiversity.⁴

The purpose of this chapter is to provide a brief overview of biodiversity, its values to humans and the causes of its loss. These factors will then lead into the discussion of its uses for food and agriculture and the controversies that have arisen in the international sphere in regard to these uses. Since the subject of this thesis is plant genetic resources for food and agriculture (PGRFA), the discussion will explore this topic in detail. It will also consider the subject of human cultural diversity which is intrinsically linked to issues of biodiversity and agricultural diversity, and which is an aspect of the present debate on this subject.

¹ *Convention on Biological Diversity* (1992) 31 ILM 818, Article 2 (hereinafter CBD).

² See World Resources Institute, International Union for the Conservation of Nature and United Nations Environment Programme, *Global Biodiversity Strategy*, (1992) Box 1 at 2 (hereinafter *Global Biodiversity Strategy*). Jeffrey A McNeely, Kenton R Miller, Walter V Reid, Russell A Mittermeier and Timothy B Werner, *Conserving the World's Biological Diversity* (1990) 11 (hereinafter *Conserving the World's Biological Diversity*). These three aspects will be discussed in more detail below.

³ *Conserving the World's Biological Diversity*, above n 2, 18. Article 2 of the CBD defines it as including “genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value to humanity”.

⁴ *Conserving the World's Biological Diversity*, above n 2, 18.

2.2 OVERVIEW OF BIODIVERSITY

The world's biodiversity is not evenly distributed and it has been noted that:

[t]he single most obvious pattern in the global distribution of species is that overall species richness increases with decreasing latitude. At its crudest this means that there are far more species per unit area and in total in the tropics than there are in temperate regions and far more species in temperate regions than there are in polar regions.⁵

The largest concentration of biodiversity is in the tropical forests which comprise about 7% of the land surface of the Earth and which are estimated to hold more than 50% of all species.⁶ Many of the countries in which this diversity is concentrated are located in the southern hemisphere and are also those which are economically less developed.⁷

Notwithstanding the extent of the scientific data on this topic, it has been acknowledged that the current state of knowledge of the earth's biodiversity is woefully inadequate and inventories and fundamental research are required to rectify this gap.⁸ Wilson observes that:

[i]n approaching diversity, biologists are close to traveling blind. They have only the faintest ideas of how many species there are on earth or where most occur; the biology of more than 99 percent remain unknown.⁹

This statement is reflected in the estimates of the total number of species which have been cited, as ranging from two to 10 million at the lower end of the scale, to 30 to 100 million at the upper

⁵ Brian Groombridge, (ed) *Global Biodiversity- Status of the Earth's Living Resources, A Report compiled by the World Conservation Monitoring Centre* (1992) 43.

⁶ Thomas E Lovejoy, 'Biodiversity: What is it?' in Marjorie L Reaka-Kudla, Don E Wilson and Edward O Wilson (eds), *Biodiversity II Understanding and Protecting Our Biological Resources* (1997). See also *Conserving the World's Biological Diversity*, above n 2, 86 and Norman Myers, *The Primary Source, Tropical Forests and Our Future* (1984).

⁷ Russell A Mittermeier, Norman Myers, Jorgen B Thomsen, Gustavo A B da Fonseca and Silvio Olivieri, 'Biodiversity Hotspots and Major Tropical Wilderness Areas: Approaches to Setting Conservation Priorities' (1998) 12(3) *Conservation Biology* 516. For a discussion on legal protection of hotspots see John Charles Kunich, 'Fiddling around While the Hotspots Burn Out' (2001) 14 *Georgetown International Environmental Law Review* 179.

⁸ *Conserving the World's Biological Diversity*, above n 2, 13. The CBD also notes the general lack of information and knowledge regarding biodiversity and the urgent need to rectify this – CBD, Preamble, paragraph 7.

⁹ Edward O Wilson, *The Diversity of Life*, (1992) 312.

end.¹⁰ The numbers of species named or described ranges from 1.4 million to 1.75 million.¹¹ It has also been pointed out that little is known about the species that have been identified except where they were collected and what they look like.¹² The gaps in information relate also to the potential values they may have for humanity, particularly in regard to their medicinal properties and benefits for food and agriculture.¹³

2.3 THE LEVELS OF DIVERSITY

Biological diversity has in practice been defined at three levels – ecosystem, species and genetic diversity - in descending order. In addition, a further form of diversity, namely human cultural diversity, has been cited as being inextricably linked to the conservation and sustainable use of natural resources.

2.3.1 *Ecosystem Diversity*

The CBD defines an ecosystem as “a dynamic complex of plant, animal, and microorganism communities and the non living environment interacting as a functional unit”.¹⁴ “Ecosystem diversity relates to the variety of habitats, biotic communities, and ecological processes in the

¹⁰ *Global Biodiversity Strategy*, above n 2, 9, Box 2; Hans-Peter Wiekard, ‘Diversity Functions and the Value of Biodiversity’ (2002) 78(1) *Land Economics* 20, footnote 11; Farhana Yamin ‘Biodiversity, Ethics and International Law’ (1995) 71(3) *International Affairs* 529, 530.

¹¹ *Global Biodiversity Strategy*, above n 2, 9; Wilson, above n 9, 132-133; Wiekard, above n 10, 24; Nigel E Stork, ‘Measuring Global Biodiversity and Its Decline’ in Marjorie L Reaka-Kudla, Don E Wilson and Edward O Wilson (eds), *Biodiversity II Understanding and Protecting Our Biological Resources* (1997) 41.

¹² Stork, above n 11, 45.

¹³ Two decades ago Myers observed that to date scientists have explored the utilitarian value of only one percent of all species - Norman Myers, ‘The Exhausted Earth (1981) *Foreign Policy* No. 42, 141. “Of the number catalogued, scientists have thoroughly “researched” only eleven hundred of the forty thousand plants with possible medicinal or nutritional value for humans” - Daniel T Jenks, ‘The Convention on Biological Diversity - An Efficient Framework for the Preservation of Life on Earth?’ (1995) 15 *Northwestern School of Law Journal of International Law & Business* 636, 643 (references at n 42).

¹⁴ CBD, Article 2. This definition is echoed in World Resources Institute, *Millennium Ecosystem Assessment, 2005 - Ecosystems and Human Well-being: Biodiversity Synthesis*, Preface, page iii. (hereinafter *Millennium Ecosystem Assessment*).

biosphere, as well as the tremendous diversity within ecosystems in terms of habitat differences and the variety of ecological processes.”¹⁵ According to the Global Biodiversity Strategy:

[e]cosystem diversity is harder to measure than species or genetic diversity because the ‘boundaries’ of communities – associations of species – and ecosystems are elusive. Nevertheless, as long as a consistent set of criteria is used to define communities and ecosystems, their number and distribution can be measured.¹⁶

The findings of the Millennium Ecosystem Assessment¹⁷ indicate that over the past 50 years humans have made greater changes to ecosystems that at any other period of history. This has been largely to meet life sustaining needs such as food, fresh water, timber, fibre and fuel. Although much of this extraction has resulted in substantial net gains to human well being,¹⁸ it has been achieved at the cost of irreversible degradation of ecosystems and consequent loss of diversity.¹⁹ Most significantly the Assessment notes that the degradation of ecosystems is a significant obstacle to achieving the Millennium Development Goals agreed to in September 2000 by the international community.²⁰

One of the primary categories of ecosystems is agricultural ecosystems or agroecosystems, managed by people to meet food, fibre and fuel needs. They have been described as follows:

Agricultural ecosystems, or agroecosystems, are ecosystems in which naturally occurring plants and animals have been replaced by crop plants and livestock animals deliberately selected by

¹⁵ *Conserving the World’s Biological Diversity*, above n 2, 17.

¹⁶ *Global Biodiversity Strategy*, above n 2, 2.

¹⁷ The Millennium Ecosystem Assessment was initiated in 2001 under the auspices of the United Nations and “set out to assess the consequences of ecosystem change for human well-being and to establish the scientific basis for actions needed to enhance the conservation and sustainable use of ecosystems and their contributions to human well-being” - *Millennium Ecosystem Assessment*, above n 14, Foreword at ii.

¹⁸ “Human well being has five main components: the basic material needs for a good life, health, good social relations, security, and freedom of choice and action” – *Millennium Ecosystem Assessment*, above n 14, 19, Box 1.1.

¹⁹ *Millennium Ecosystem Assessment*, above n 14, 2.

²⁰ The Millennium Development Goals are to (1) eradicate extreme poverty and hunger, (2) achieve universal primary education, (3) promote gender equality and empower women, (4) reduce child mortality, (5) improve maternal health, (6) combat HIV/AIDS, malaria and other diseases, (7) ensure environmental sustainability and (8) develop a global partnership for development. See the website at <http://www.un.org/millenniumgoals/> last accessed 25th April 2008.

human beings. The degree of disruption of the natural system varies widely with different types of agriculture.²¹

Agriculture is one of the most common uses of land and estimates of the areas of agricultural ecosystems range from 24% to 38% of the earth's land area. It has been said that as a managed ecosystem agriculture plays a unique role in supplying ecosystem services, i.e. provisioning, regulating, and cultural services, as well as demanding supporting services to enable it to be productive.²²

2.3.2 *Species Diversity*

A species has been defined as “a group of organisms capable of inter breeding freely with each other but not with members of other species.”²³ Species diversity refers to the variety of such groups of organisms on earth.

Species diversity also includes domestic and cultivated species in agriculture.²⁴ The Global Biodiversity Strategy notes the value of variety in agriculture and points out that for generations people have raised a wide range of crops and livestock to enhance productivity. These have contributed to watershed protection, maintenance of soil fertility and pest management strategies.²⁵ However, modern agricultural practices which are dependent on a few high yielding varieties are largely eroding this heterogeneity. As the number of crop species declines, the species which co-evolved with the traditional agricultural systems also diminish. This aspect will be further discussed below.

²¹ UNEP/CBD/SBSTTA/2/10 - Subsidiary Body on Scientific, Technical and Technological Advice, Second Meeting, 2 to 6 September 1996, *Agricultural Biological Diversity*, 12 August 1996.

²² Scott M. Swinton, Frank Lupi, G. Philip Robertson and Stephen K. Hamilton, ‘Ecosystem services and agriculture: Cultivating agricultural ecosystems for diverse benefits’ (2007) 64(1) *Ecological Economics* 245. See also World Resources Institute, *Peoples and Ecosystems, The Fraying Web of Life* (2000) 53-68 (hereinafter *Peoples and Ecosystems*); CGRFA-11/07/Inf.17 - CGRFA, Eleventh Regular Session, 11-15 June 2007, *Environment and Agriculture*.

²³ *Global Biodiversity Strategy*, above n 2, 230. See also Wilson, above n 9, 38. It has also been noted that species diversity is a difficult concept to define and measure – Andrew J Hamilton ‘Species Diversity or Biodiversity’ (2005) 75 *Journal of Environmental Management* 89.

²⁴ The CBD defines domestic or cultivated species as “species in which the evolutionary process has been influenced by humans to meet their needs” – CBD, Article 2.

²⁵ *Global Biodiversity Strategy*, above n 2, 4.

2.3.3 Genetic Diversity

The Global Biodiversity Strategy defines genetic diversity as the “variation of genes within species.”²⁶ This includes distinct populations of the same species²⁷ and the genetic variation within a particular population.²⁸ “Genetic resources” are those elements of genetic diversity which are beneficial to humans,²⁹ and of the earth’s natural resources these are perhaps the most critical to humanity. For example, it has been noted that

[t]he genetic diversity of plants, animals, insects, and microorganisms determines agroecosystems’ productivity, resistance to pests and disease, and, ultimately, food security for humans.³⁰

The importance of genetic diversity is not confined to its direct values for humans and it is also an essential aspect of ecological processes. It has been pointed out that over centuries as crops evolved for agriculture they became diversified into countless “landraces.”³¹ These landraces form the second category of genetic resources and are part of traditional agricultural systems. They were adapted to varied environmental conditions, cropping systems, human uses and preferences. These traditional systems are an extension of natural ecosystems and, like the former, achieve sustainability and balance through genetic diversity which enables them to

²⁶ Ibid 2.

²⁷ The example cited is the thousands of traditional rice varieties in India – *Global Biodiversity Strategy*, above n 2, 2.

²⁸ The United Nations Environment Programme, *Global Biodiversity Assessment* (1995) defines this as the “variation in the genetic composition of individuals within or among species; the heritable genetic variation within and among populations” at 1110 (hereinafter *Global Biodiversity Assessment*). For example, genetic variation is very high among Indian rhinos and very low among cheetahs – *Global Biodiversity Strategy*, above n 2, 2. See also *Conserving the World’s Biological Diversity*, above n 2, 17.

²⁹ *Global Biodiversity Assessment*, above n 28, defines genetic resources as the “genetic material of plants, animals or microorganisms, including modern cultivars and breeds, primitive varieties and breeds, landraces and wild/weedy relatives of crop plants or domesticated animals of value as a resource for future generations of humanity” at 1110. The CBD defines “genetic material” as “any material of plant, animal, microbial or other origin containing functional units of heredity” and “genetic resources” as “genetic material of actual or potential value” – CBD, Article 2.

³⁰ Peoples and Ecosystems, above n 22, 14.

³¹ Landraces are “a crop cultivar or animal breed that evolved with and has been genetically improved by traditional agriculturalists, but has not been influenced by modern breeding practices” - *Global Biodiversity Assessment*, above n 28, 1112.

constantly adapt to changing conditions.³² This function serves the purpose not only of maximising yields but of ensuring yield security.³³

2.4 THE VALUES OF BIODIVERSITY

Since the impetus to conserve biodiversity is necessarily drawn from its values to people, it is useful at this point to examine the different values that biological resources have to humankind. This would also help to understand the national and international legal regimes which have evolved in regard to biodiversity. As Bowman argues, the creation and application of legal principles is incomplete and potentially ineffective without an understanding and agreement as to the philosophical motivations that underpin them. Therefore it is essential that a consensus should be reached on the theoretical framework of the regime in question.³⁴ As much as the philosophical basis of the human rights discourse centres on the notion of the inherent dignity of human beings,³⁵ the moral and ethical foundations of biodiversity conservation are grounded in a discourse on the values to be assigned to it.

2.4.1 *The philosophical debate on the values of biodiversity*

Unlike the notion of the inherent dignity of the human being which is absolute, the values of biodiversity are relative and have been subject to classification. Bowman cites them as “instrumental, inherent and intrinsic.”³⁶ Instrumental value depends on the utility of the

³² J J Hardon, ‘Conservation and Use of Agro-Biodiversity’ (1996) 3(3) *Biodiversity Letters* 92.

³³ Ibid.

³⁴ Michael Bowman, ‘The Nature, Development and Philosophical Foundations of the Biodiversity Concept in International Law’ in Michael Bowman and Catherine Redgwell (eds), *International Law and the Conservation of Biological Diversity* (1996).

³⁵ *Universal Declaration of Human Rights*, G.A. res. 217A (III), U.N. Doc A/810 at 71 (1948), Preamble; *International Covenant on Civil and Political Rights* GA res. 2200A (XXI), 21 UN GAOR Supp. (No. 16) at 49, UN Doc. A/6316 (1966), 993 UNTS 3, 6 ILM 368 (1967) (entered into force 23 March 1976) Preamble and Article 10; *International Covenant on Economic, Social and Cultural Rights* GA res. 2200A (XXI), 21 UN GAOR Supp. (No. 16) at 52, UN Doc. A/6316 (1966), 999 UNTS 171, 6 ILM 368 (1967) (entered into force 3 January 1976) Preamble. See also David Kretzmer and Eckart Klein, *The Concept of Human Dignity in Human Rights Discourse* (2002).

³⁶ Bowman, above n 34.

particular entity, while inherent value is the value attached to it irrespective of its usefulness. He further states that:

intrinsic value, by contrast, is understood to be the value that entities have of themselves, for themselves, and therefore does not presuppose the existence of any external valuer at all.³⁷

However, the mere fact of determining whether or not a particular entity has any value at all, including an intrinsic value, per se assumes the presence of an external, dominant valuer, and the imposition of a subjective and often political value system. This reflects an essentially anthropocentric world view.³⁸

By contrast it can be argued that many traditional cultures and philosophies generally did not consciously place a value on the non human world surrounding them. Rather, they considered themselves to be simply a cog in the wheel of diversity as other living and non-living components. This perception of their immediate environment was often based upon a sense of assimilation and mutual interdependence with it.³⁹ Therefore, while humans could harness the elements of nature for their own ends, in turn they were heavily dependent upon them for sustenance and duly acknowledged this relationship. On occasion they acknowledged the superior force of nature's elements, as exemplified by the deification of natural objects which is a fundamental aspect of many animistic and totemistic spiritual beliefs. Similarly, a particular

³⁷ Ibid 15. On the other hand, the Millennium Ecosystem Assessment defines intrinsic value as “the value of something in and for itself, irrespective of its utility for someone else” which is equivalent to Bowman’s definition of inherent value - *Millennium Ecosystem Assessment*, above n 14, 1. This demonstrates the difficulties of defining and assigning values at all.

³⁸ For an analysis of anthropocentric and non-anthropocentric justifications of environmental protection see Alexander Gillespie, *International Environmental Law, Policy and Ethics* (1997).

³⁹ For an analysis of the social and cultural differences in the perception of value see *Global Biodiversity Assessment*, above n 28, 837-839. Gadgil and Guha argue that ecosystem peoples have viewed themselves as part of a community which includes trees, birds, streams or rocks, many of which are protected as sacred objects - Madhav Gadgil and Ramachandra Guha, *Ecology and Equity, the Use and Abuse of Nature in Contemporary India* (1995). Similarly, it has been noted that concepts of biodiversity and conservation are rejected by indigenous peoples, who believe that nature is an extension of society, rather than an object to be conserved - Darrell A Posey (ed), *Cultural and Spiritual Values of Biodiversity* (1999) 7. See also Bradley Bryan, ‘Property as Ontology: On Aboriginal and English Understandings of Ownership’ (2000) 13 *Canadian Journal of Law & Jurisprudence* 3 for a description of Aboriginal views of their relationships with nature. By contrast it has been pointed out that one of the dominant metaphors in Western culture conceives of man and nature as separate from and in opposition to one another - Alex Geisinger, ‘Sustainable Development and the Domination of Nature: Spreading the Seed of the Western Ideology of Nature’ (1999) 27 *Boston College Environmental Affairs Law Review* 43.

species of animal may also be revered as sacred, and therefore protected.⁴⁰ The sanctification of ecosystems which were set aside for religious purposes also reflects this worldview.⁴¹

International documents take differing approaches to the values of biodiversity. While the World Charter for Nature acknowledges its intrinsic value,⁴² it merely constitutes soft law. Subsequent international documents have clearly taken the position that the economic values of biodiversity represent the most effective incentives for its conservation and sustainable use.⁴³ The Preamble to the CBD begins by noting “the intrinsic value of biological diversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components.”⁴⁴ Intrinsic value has been set apart from the list of obviously human centred values, but is not defined, nor referred to anywhere else in the Convention. The other values listed are clearly instrumental. The definition of the term “biological resources”⁴⁵ and its continuous occurrence throughout the Convention also reflects the emphasis on the components of biodiversity which are of use to humanity. The structure of the Convention reflects not only a framework to conserve biodiversity, but also one by which access to these resources and the ability to utilize them can be achieved.

⁴⁰ Gadgil and Guha, above n 39, 91. See also Lee P Breckenridge, ‘Protection of Biological and Cultural Diversity: Emerging Recognition of Local Community Rights in Ecosystems under International Environmental Law’ (1992) 59 *Tennessee Law Review* 735.

⁴¹ See for example a description of the sacred groves of India in Gadgil and Guha, above n 39, 91. It has been estimated that about 300,000 to 400,000 sacred groves exist in India, constituting an area the same size as all the legally protected areas found in the country - Johan Colding and Carl Folke, ‘The Taboo System: Lessons about Informal Institutions for Nature Management’ (2000) 12 *Georgetown International Environmental Law Review* 413, 429. The authors point out that access to and the use of resources of sacred groves was restricted. See also Gregory F Maggio, ‘Recognizing the Vital Role of Local Communities in International Legal Instruments for Conserving Biodiversity’ (1997/1998) 16 *UCLA Journal of Environmental Law & Policy* 179, text at nn 78 and 79.

⁴² *World Charter for Nature*, adopted by United Nations General Assembly Resolution A/RES/37/7 (28 October 1982) - Preamble.

⁴³ See for example the *Rio Declaration on Environment and Development*, 31 ILM 876, Principles 1 and 4.

⁴⁴ CBD, Preamble.

⁴⁵ See CBD, Article 2 for the definitions of “biological diversity” and “biological resources.” See also, *Conserving the World’s Biological Diversity*, above n 2, 11 where it is said that biological resources are the portion of diversity that is of actual or potential use to people.

It can be argued therefore that placing a value on biodiversity in whatever form is essentially anthropocentric. However, it is perhaps inevitable that emphasising the material benefits it provides to humans becomes the best, and today perhaps the only, incentive for ensuring its conservation and sustainable use. The Global Biodiversity Strategy takes a forthrightly pragmatic view of the values of biodiversity, addressing them solely in terms of their value to humans.⁴⁶ It states that since biodiversity is closely entwined with human needs, its conservation should be considered a matter of national security. The current conflicts over plant genetic resources and the need for food security, validate this statement. Therefore the use and control of biodiversity is not merely an issue of sustainable development, or even State sovereignty, but often goes to the core of a nation's survival.⁴⁷

2.4.2 *The economic values of biological resources*

Unlike attempts to measure the intrinsic value of biodiversity,⁴⁸ it is both possible and necessary to quantify the economic value of biological resources, and several methods have been devised to do so. Assessing the costs and benefits of protecting biological resources provides a basis for determining their total value, and consequently the returns from investments in conservation measures.⁴⁹ Since the value of conserving natural resources is considerable, the investments can be viewed as a form of economic development.⁵⁰ The different categories of instrumental values that can be assigned to natural resources are⁵¹ direct values which include consumptive use values,⁵² productive use values,⁵³ indirect use values, including non-consumptive use values,⁵⁴ and option or existence values.⁵⁵

⁴⁶ *Global Biodiversity Strategy*, above n 2, 5.

⁴⁷ As Wilson observes, every country has three forms of wealth – material, cultural and biological - Wilson, above n 9, 311.

⁴⁸ Bowman, above n 34, 26.

⁴⁹ See the references cited in *Conserving the World's Biological Diversity*, above n 2, 27. It has also been stated that undervaluing ecosystem services has resulted in bad management practices and recognising and measuring these values is essential for governments, industries and communities to make informed production and consumption choices - *Peoples and Ecosystems*, above n 22, 232.

⁵⁰ *Conserving the World's Biological Diversity*, above n 2, 27.

⁵¹ *Ibid* 27-34.

⁵² Resources which are consumed directly without passing through a market.

The value of biodiversity for food and agriculture obviously represents the most direct life sustaining significance for human beings, but the importance of plants for human survival is not limited to their uses as a source of food. The value of biodiversity for human health is no less crucial, and human dependence on wild organisms for medicine cannot be understated.⁵⁶ Throughout history, peoples have exploited plant species for medicinal use and have developed complex systems of traditional medicine which are still practised today.⁵⁷ It is estimated that about 75% of the world's population relies on extracts derived from plants and other tools of traditional medicine.⁵⁸ The benefits of genetic resources also include scientific, technological, and commercial applications.⁵⁹

The indirect use values of biodiversity include a range of non-consumptive uses. For example, ecosystems provide "ecosystem services" which are the direct and indirect benefits that people obtain from ecosystems. These services include provisioning services such as food, water, timber

⁵³ Resources that are commercially harvested.

⁵⁴ This has been defined as "the value of resources which are not diminished by their use. Values that do not require access to or active use of a biological resource by the valuer" - *Global Biodiversity Assessment*, above n 28, 1114. This includes indirect values of ecosystem functions such as watershed protection, photosynthesis, regulation of climate and production of soil.

⁵⁵ These are cited as the intangible values of keeping options open for the future or simply knowing that certain species exist. The *Global Biodiversity Assessment*, above n 28, states that "[s]tudies on the role of biodiversity in maintaining ecological equilibria have shown that the simple fact of existence of many species inevitably gives them a value. For some, of course, this is the highest value that can be given at present" (at 685). This is also called non-use or passive use value (at 1114).

⁵⁶ Erin B Newman, 'Earth's Vanishing Medicine Cabinet: Rain Forest Destruction and its Impact on the Pharmaceutical Industry' (1994) 20 *American Journal of Law & Medicine* 479.

⁵⁷ Gordon M Cragg, Michael R Boyd, Michael R Grever and Saul A Schepartz, 'Pharmaceutical Prospecting and the Potential for Pharmaceutical Crops Natural Product Drug Discovery and Development at the United States National Cancer Institute' (1995) 82(1) *Annals of the Missouri Botanical Garden* 47. Traditional systems of medicine have a formal role in the health care systems of many countries. For a discussion of these systems see for example Gerard Bodeker, 'Evaluating Ayurveda' (2001) 7(5) *Journal of Alternative & Complementary Medicine* 389 and Alex Hankey, 'The Scientific Value of Ayurveda' (2005) 11(2) *Journal of Alternative & Complementary Medicine* 221.

⁵⁸ Philip Abelson, 'Medicine from Plants' (1990) 247 (No 4942) *Science New Series* 513. Note also that Action 40 of the *Global Biodiversity Strategy*, above n 2, acknowledges the role of traditional medicines and advocates their appropriate and sustainable use (at 92). It cautions however that on occasion the use of traditional medicine can threaten biodiversity, due to over harvesting of medicinal plants and hunting of endangered species.

⁵⁹ Manuel F Balandrin, James A Klocke, Eve Syrkin Wurtele and Wm Hugh Bollinger, 'Natural Plant Chemicals: Sources of Industrial and Medicinal Materials' (1985) 228 (No 4704) *Science New Series* 1104.

and fibre; regulating services that affect climate, floods, disease, wastes, and water quality; cultural services that provide recreational, aesthetic and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling.⁶⁰

Non consumptive use values of biodiversity include aesthetic, cultural, and spiritual effects. These are often indefinable and usually disregarded, but are nevertheless significant factors. The cultural and spiritual importance of biodiversity to many communities has been discussed above, and even when these dimensions are absent, the mere knowledge that certain species and habitats exist fulfils certain psychological needs in people.⁶¹ Nevertheless, attempts have been made to quantify these,⁶² and the aesthetic values of both eco-systems and species translate into significant income generation from tourism and recreation.⁶³

The option value of a species relates to its potential future uses for humanity, which are unknown as yet. As pointed out, the other values would all necessarily include an option value. Therefore from an economic point of view, the potential value of a species would have to be calculated against the value of the action which may cause its destruction.⁶⁴ It should be noted that option values would include the potential values of biological resources for agriculture and medicinal drugs.

Finally, as Wilson points out, in calculating the value of biodiversity, “[t]he traditional econometric approach, weighing market price and tourist dollars, will always underestimate the true value of wild species.”⁶⁵ This approach would not factor in the intangible values which are usually overlooked, nor will it take account of the integration of all ecosystems and species into

⁶⁰ *Millenium Ecosystem Assessment*, 1. See also *Peoples and Ecosystems*, above n 22, 11.

⁶¹ See David Harmon, ‘Biodiversity and the Sacred: Some Insights for Preserving Cultural Diversity and Heritage’ (2003) 55(2) *Museum International* 63.

⁶² For example, for a discussion on the value of conserving the African elephant see *Global Biodiversity Assessment*, above n 28, 872.

⁶³ *Global Biodiversity Strategy*, above n 2, 4.

⁶⁴ For a discussion on calculating the option value of species see Ilhem Kassar and Pierre Lasserre, ‘Species preservation and biodiversity value: a real options approach’ (2004) 48(2) *Journal of Environmental Economics and Management* 857.

⁶⁵ Wilson, above n 9, 308.

the larger picture of biodiversity as a whole. The loss of each ecosystem and species will inevitably have an impact on the larger picture.

2.5 LOSS OF BIODIVERSITY

The root causes of the loss of biodiversity have been viewed as the ways in which societies use resources on the one hand, and impact upon them on the other.⁶⁶ While the destruction and degradation of the earth's biodiversity at the hands of humans is a centuries old process,⁶⁷ it has accelerated considerably in recent times. It has been noted that:

[c]hanges in biodiversity due to human activities were more rapid in the past 50 years than at any time in human history, and the drivers of change that cause biodiversity loss and lead to changes in ecosystem services are either steady, show no evidence of declining over time, or are increasing in intensity.⁶⁸

While the general causes of the destruction of biodiversity have been cited as over exploitation, habitat destruction, and introduction of exotic species, the intensity of these causes has varied at different historical periods.⁶⁹ In the present day, the main causes cited are habitat destruction and the introduction of exotic animals and alien invasive species.⁷⁰ Other causes cited are over-harvesting of species, chemical pollution, climate change, and the increase in the human population with the consequent pressure on natural resources.⁷¹

⁶⁶ *Global Biodiversity Assessment*, above n 28, 763; *Global Biodiversity Strategy*, above n 2, 11.

⁶⁷ Wilson, above n 9, Chapter 12.

⁶⁸ *Millenium Ecosystem Assessment*, above n 14, vi.

⁶⁹ Wilson, above n 9, 253.

⁷⁰ Ibid 253. Habitat destruction has been cited as the most significant problem throughout the world – Lovejoy, above n 6. See also Jim Chen, 'Across the Apocalypse on Horseback: Biodiversity Loss and the Law' in Charles McManis (ed), *Biodiversity and the law: intellectual property, biotechnology and traditional knowledge*, (2007) Chapter 4.

⁷¹ *Conserving the World's Biological Diversity*, above n 2, 38. A wider list of causes also cites consumerism, persecution and exploitation of populations, gross inequity in access to resources and conflicts between native peoples and migrants, world wars and displacement of human populations, large engineering works, high input agriculture including the widespread use of improved cultivars, large scale industrial production and dietary change especially towards commodity crops and meats - W Lesser, *Sustainable Use of Genetic Resources under the Convention on Biological Diversity - Exploring Access and Benefit Sharing Issues* (1998), 2.

2.5.1 *Loss of ecosystem diversity*

The destruction and alteration of ecosystems is probably the single biggest threat to biodiversity, since loss of ecosystems necessarily impacts upon species and genetic diversity as well. The areas most vulnerable are the tropical forests which have been recognised as the largest, most complex, and self-perpetuating of all ecosystems, and which hold the greatest diversity of species.⁷² The main cause of forest destruction is conversion to agricultural land, including the growth of biofuel plantations.⁷³ Other factors include climate change, diseases, invasive species, pests, air pollution and pressures from economic activities such as mining.⁷⁴ Between 1990 and 2005 global forest areas decreased at an annual rate of 0.2 per cent, although some parts of the world showed an expansion after 2000. The net loss of global forest areas in the 1990s amounted to around 2.4 percent of total forests.⁷⁵ The fragmentation of forests has also been identified as a direct cause of species extinction.⁷⁶

The CBD has noted the loss of agroecosystem diversity, observing that farming system level diversity is particularly important to small farmers for food and economic security. It observes that “[t]he adoption of modern farming systems has often resulted in the reduction of species, activities and landscape features within the agroecosystem.” The consequences of such loss include the loss of crop species and the opportunities for continued selection by farmers, the loss of biological diversity in agricultural soils and the erosion of the diversity of insects, potentially leading to pest resurgence.⁷⁷

⁷² United Nations Environment Programme, *Global Environmental Outlook 4* (2007) 168 (hereinafter *Global Environmental Outlook 4*). Tropical forest clearance and conversion has been viewed as the root causes of the current global biodiversity crisis – I M Turner, ‘Species Loss in Fragments of Tropical Rain Forest: A Review of the Evidence’ (1996) 33(2) *Journal of Applied Ecology* 200.

⁷³ Agricultural conversion to cropland and managed pastures has affected about 26 percent of the earth’s land area, including one third of temperate and tropical forests and one quarter of natural grasslands – *Peoples and Ecosystems*, above n 22, 24. See also *Global Environmental Outlook 4*, above n 72, 168.

⁷⁴ *Global Environmental Outlook 4*, above n 72, 88-91.

⁷⁵ *Ibid.*

⁷⁶ Turner, above n 72; *Global Environmental Outlook 4*, above n 72, 168.

⁷⁷ UNEP/CBD/SBSTTA/2/10, above n 21, 12-14.

2.5.2 *Loss of species diversity*

Species extinction is one of the most critical aspects of biodiversity loss. While loss of species is a natural process, it has accelerated as a result of human intervention. Given the general lack of data on species it is difficult to pinpoint the extent of the loss, but it has been estimated that over the past few hundred years, humans have increased species extinction rates by as much as 1,000 times background rates that were typical over Earth's history.⁷⁸ The distribution of species is also becoming more homogenous.⁷⁹ Apart from this, most species are also declining in range or number both globally and locally, and between 10% and 50% of well-studied higher taxonomic groups (mammals, birds, amphibians, conifers, and cycads) are currently threatened with extinction.⁸⁰

2.5.3 *Loss of genetic diversity*

“Genetic erosion” is defined as the loss of genetic diversity including both individual genes and particular combinations of genes, as for instance those in locally bred landraces.⁸¹ Since the data on the genetic diversity of wild species is scarce, it is difficult to estimate the loss, though studies have revealed that there is a decline.⁸² The decline of genetic diversity in cultivated species has, however, been established, and while there are several reasons for this, the overwhelming cause is the substitution of improved and exotic crops in place of traditional, locally developed varieties.⁸³ Since the 1960s the traditional crops planted by farmers globally have been replaced by more “modern” varieties, developed through formal breeding systems.⁸⁴ Many of these varieties were

⁷⁸ *Millennium Ecosystem Assessment*, above n 14, 3.

⁷⁹ *Ibid* 4.

⁸⁰ *Ibid* 4.

⁸¹ Food and Agriculture Organisation, *The State of the World's Plant Genetic Resources for Food and Agriculture* (1998) 33 (hereinafter *State of the World's PGRFA*).

⁸² *Millennium Ecosystem Assessment*, above n 14, 4.

⁸³ *State of the World's PGRFA*, above n 81, 34.

⁸⁴ About 80 percent of wheat area in developing countries and three quarters of rice in Asia are now planted with the modern varieties. The loss of diversity can be seen in the example of Sri Lanka, where more than 2,000 varieties of rice were found in 1959, but only five major varieties in the 1980s - *Peoples and Ecosystems*, above n 22, 14. See also FAO, Bangkok (Thailand) Regional Office for Asia and the Pacific; M.S. Swaminathan Research Foundation, Chennai (India) *Sri Lankan Women and Men as Bioresource Managers* (1999) Chapter 5 <<http://www.fao.org/DOCREP/005/AC791E/AC791E00.htm#TOC>> at 18th April 2008. Similarly, around 1,500 local rice varieties have become extinct in Indonesia – *Global Biodiversity Strategy*, above n 2, 9.

adopted in the context of the “Green Revolution.”⁸⁵ These crops are often based upon genetic uniformity derived from “elite germplasm” rather than on genetic diversity.⁸⁶ It has been noted that while uniformity per se is not necessarily dangerous, the hazards of planting large areas with a genetically uniform crop variety must be recognised.⁸⁷

2.6 HUMAN CULTURAL DIVERSITY

The subject of cultural diversity is introduced into this chapter because it is closely linked with biodiversity, including PGRFA. A specific aspect of cultural diversity which will be further developed in this thesis, is that of the traditional knowledge of communities and peoples located throughout the world which relate to the uses of plants for human benefit. The fact that this knowledge is sometimes utilised by those outside these communities, and commercial benefits derived from it, has become an issue in the international debate on the conservation and sustainable use of biodiversity.

Cultural diversity is measured by the attributes of human society including language, religious beliefs, land management practices, art, music, social structure, crop selection, diet and other.⁸⁸ Cultural diversity obviously does not pertain only to “local, indigenous and traditional cultures and groups,” “but must be understood and recognised as a dynamic source of exchange, creativity

⁸⁵ *Global Biodiversity Strategy*, above n 2, 9. The environmental, economic and other impacts of the Green Revolution will be discussed further in Chapter 3.

⁸⁶ Genetic uniformity is based on crops that have (1) rapid and uniform germination of seeds, (2) nearly simultaneous flowering (3) nearly simultaneous maturation of harvest, (4) stature that promotes mechanical harvest, (5) product uniformity for taste and chemical composition, and (6) year-to-year stability of yield – *Global Biodiversity Assessment*, above n 28, 949.

⁸⁷ *State of the World's PGRFA*, above n 81, 30. For example the Report notes that in European barley, protection against mildew depends on one gene and one fungicide and mutation of the pathogen could destroy this resistance in a “single evolutionary step.” See also *Global Biodiversity Strategy*, above n 2, 9 for examples of the impacts on crops of genetic diversity loss.

⁸⁸ *Global Biodiversity Strategy*, above n 2, 3. See also UNEP/GC.22/INF/16 - United Nations Environment Programme, *Summary Report of the High-Level Roundtable on Cultural Diversity and Biodiversity for Sustainable Development* (20 December 2002); UNEP/GC.23/INF/23 - United Nations Environment Programme, *Report on the Implementation of Governing Council Decision 22/16 on Environment and Cultural Diversity* (2005) footnotes 14 and 15.

and innovation in any culture”⁸⁹ in both the developing and developed worlds.⁹⁰ However, it has also been noted that:

[a] direct correlation between environment and cultural diversity is evident in the tropical regions, where the greatest concentration of the planet’s biological and cultural diversity can be found.⁹¹

The global connection between biodiversity and cultural diversity is now being analysed within the concept of “biocultural” diversity or the “inextricably interrelated diversity of life in both nature and culture.”⁹² It has been asserted that:

Biocultural diversity may be thought of as the sum total of the world’s differences, no matter what their origin. It includes biological diversity at all its levels, from genes to populations to species to ecosystems; cultural diversity in all its manifestations (including linguistic diversity), ranging from individual ideas to entire cultures; and, importantly, the interactions among all of these. On a global scale, the primary importance of biocultural diversity is that it is the fundamental expression of the variety upon which all life is founded. Conceptually, biocultural diversity bridges the divide between disciplines in the social sciences that focus on human creativity and

⁸⁹ UNEP/GC.23/INF/23, above n 88, 7. See also *UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions*, CLT-2005/CONVENTION DIVERSITE-CULT REV 20 October 2005 - Article 4 for the definition of cultural diversity.

⁹⁰ The developing countries which are predominantly located in the southern hemisphere have been tagged with the term “third world.” This term has been discussed in Karin Mickelson, ‘Rhetoric and Rage: Third World Voices in International Legal Discourse’ (1998) 16 *Wisconsin International Law Journal* 353. The author notes that “[i]n a purely descriptive sense, “Third World” is frequently used interchangeably with other terms such as “less-developed,” “developing,” or “underdeveloped” countries, and, increasingly, “the South.” The referent are the countries of Africa, Asia, and Latin America that have traditionally been classified as lagging behind the “West,” “North,” “First World” or “developed countries” in terms of economic growth and indicators of economic prosperity” (at 356). The terms also refer to the countries which have been marginalized within the international community. From another perspective the term would refer to a political coalition of nations in pursuit of common goals. Such a grouping was formalized in the Non-aligned movement and the Group of 77. The author argues that this conceptualization is dubious as there is a growing diversity among these countries and they are often fractured politically. However, for the sake of clarity these terms will be used to refer to the countries which have a general common interest in protecting their PGRFA and traditional knowledge and which are predominantly, but not all, located in the southern hemisphere.

⁹¹ UNEP/GC.23/INF/23, above n 88, 6. See also Posey (ed), above n 39, Introduction at 3 where it is noted that “of the nine countries which together account for 60 percent of human languages, six of these centres of ‘cultural diversity’ are also ‘megadiversity’ countries with exceptional numbers of unique plant and animal species.” An example of the extent of cultural diversity which may be present within one nation (India) is provided by Shalini Bhutani and Ashish Kotari, ‘The biodiversity rights of developing nations: A perspective from India’ (2002) 32 *Golden Gate University Law Review* 587, 594.

⁹² Luisa Maffi, ‘Diversity and the Spice of Life’ (2002) 25(2) *ReVision* 19, 19.

behaviour, and those in the natural sciences that focus on the evolutionary fecundity of the non-human world. The result is a more integrated view of the patterns that characterize life on Earth.⁹³

It is significant that the CBD has recognized the link between cultural diversity and biodiversity, noting “the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources,”⁹⁴ and acknowledging that the “knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles” are relevant for the conservation and sustainable use of biological diversity.⁹⁵ However, I will argue in this thesis that this recognition has not contributed positively to the current controversy over the equitable uses of either biodiversity or the traditional knowledge relating to it.

2.6.1 Traditional ecological knowledge

An aspect of cultural diversity which has been gaining increasing recognition and which will be addressed in this thesis is that of Traditional Ecological Knowledge (TEK) or Traditional Ecological Knowledge and Wisdom (TEKW). Modern western science is not the only source of information on biodiversity⁹⁶ and it has been acknowledged that there is a separate store of such knowledge among traditional communities that have an intimate understanding of their immediate environment and its components. TEK has been defined as the knowledge and insights acquired through extensive observation of an area or a species. This may include knowledge passed down through oral traditions, or shared among users of a resource.⁹⁷ It has also been observed that the significance of traditional knowledge (TK) is not its antiquity since much of it is

⁹³ Jonathan Loh and David Harmon, ‘A global index of biocultural diversity’ (2005) 5(3) *Ecological Indicators* 231. On the basis of the formula they propounded in order to quantify global biocultural diversity, the authors identified Papua New Guinea, Indonesia, Cameroon and Columbia as the world’s most biodiverse countries.

⁹⁴ CBD, Preamble Paragraph 12.

⁹⁵ CBD, Article 8(j).

⁹⁶ However, one view is that the modern science of systematic biology which emerged from the practice of collecting and preserving representative specimens in biological collections remains the ultimate source of knowledge - Stephen Blackmore, ‘Knowing the Earth’s Biodiversity: Challenges for the Infrastructure of Systematic Biology’ (1996) 274 (No 5284) *Science, New Series* 63.

⁹⁷ Henry P Huntington, ‘Using Traditional Ecological Knowledge in Science: Methods and Applications’ (2000) 10(5) *Ecological Applications* 1270.

in fact quite new, but the social process of learning and sharing knowledge which gives it a specific social meaning and legal character.⁹⁸

The term “traditional biocultural knowledge” is also in popular use and has been defined as the

knowledge of the medicinal or other practical uses of plants and animals. Holders of traditional biocultural knowledge include shamans, healers, bone-setters, midwives, herbalists, and farmers.⁹⁹

Another subset of traditional knowledge has been cited as “traditional agricultural knowledge.” The difference between crop and natural evolution is that the former is controlled by conscious selection. “Conscious selection implies knowledge systems about the crop and its environment, which are subsets of the more general traditional knowledge and indigenous knowledge.”¹⁰⁰

The marginalisation of communities holding this repository of knowledge and the disinclination on the part of western scientists to acknowledge it as a source of information is often an obstacle to bridging the gap between the two systems. Nevertheless scientists based in industrialised countries are increasingly relying on it for information in many areas, including knowledge regarding crop genetic resources, the medicinal properties of plant species, and the conservation of biological resources.¹⁰¹

⁹⁸ Posey (ed), above n 39, 4. See also Graham Dutfield, ‘The Public and Private Domains: Intellectual Property Rights in Traditional Knowledge’ (2000) 21 *Science Communication* 274; Jesse Ford and Dennis Martinez, ‘Traditional Ecological Knowledge, Ecosystem Science, and Environmental Management’ (2000) 10(5) *Ecological Applications* 1249; Francesco Mauro and Preston D Hardison, ‘Traditional Ecological Knowledge Traditional Knowledge of Indigenous and Local Communities: International Debate and Policy Initiatives’ (2000) 10(5) *Ecological Applications* 1263; Fikret Berkes, Johan Colding and Carl Folke, ‘Traditional Ecological Knowledge - Rediscovery of Traditional Ecological Knowledge as Adaptive Management’ (2000) 10(5) *Ecological Applications* 1251.

⁹⁹ Craig D Jacoby and Charles Weiss, ‘Recognizing Property Rights in Traditional Biocultural Contribution’ (1997) 16 *Stanford Environmental Law Journal* 74.

¹⁰⁰ Stephen B Brush, ‘The Demise of “Common Heritage” and Protection for Traditional Agricultural Knowledge’ in Charles McManis (ed), *Biodiversity and the law: intellectual property, biotechnology and traditional knowledge* (2007) Chapter 20. Another term which has been coined is “traditional knowledge of the uses of plants” (TKUP) – Ikechi Mgbefji, *Global Biopiracy - Patents, Plants and Indigenous Knowledge*, (2006). See also UNEP/CBD/WG8J/3/INF/4- Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(J) and Related Provisions of the Convention on Biological Diversity, Third Meeting, 8-12 December 2003, Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities - Regional Report: Australia, Asia and the Middle East, page 26.

¹⁰¹ Stephen B Brush, ‘Indigenous Knowledge of Biological Resources and Intellectual Property Rights: The Role of Anthropology’ (1993) 95(3) *American Anthropologist, New Series* 653.

The contemporary nature of the knowledge systems of indigenous and local communities has been emphasised by the United Nations Environment Programme (UNEP). It has noted that the term “traditional knowledge” is problematic as it “suggests that the body of knowledge concerned, being ‘traditional,’ is something of the past, is immutable, and passed on from generation to generation with little or no change.” It notes that on the contrary, the knowledge is clearly contemporary and dynamic and “subject to a continuous cultural process of adaptation and development and therefore constantly evolving through experimentation and innovation, fresh insight and external stimuli.”¹⁰² However, since it is the term in most common usage it will be used in this thesis within the meaning as discussed in this section.

The relationship between biological and cultural diversity was first acknowledged at the Earth Summit in 1992. The Rio Declaration,¹⁰³ the Earth Charter¹⁰⁴ and Agenda 21¹⁰⁵ refer to it rather obliquely, while the CBD does so in more explicit terms. The CBD reiterates the importance of cultural diversity in the conservation and sustainable use of biodiversity, identifying the need to preserve and maintain the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles.¹⁰⁶ Since then, the question of conserving and protecting such knowledge from free use and exploitation by others has been taken up in various international fora and will be further explored in this thesis.

2.6.2 *Loss of cultural diversity*

Biodiversity loss is often connected with the loss of cultural diversity which is also taking place at significant levels. Cultural diversity has contributed to the diversity of crops, livestock and habitats, and consequently the loss of this diversity can lead to the extinction of species.¹⁰⁷ As discussed above, an important aspect of cultural diversity is the TEKW which has been

¹⁰² UNEP/GC.23/INF/23, above n 88, 10.

¹⁰³ Rio Declaration, above n 43.

¹⁰⁴ For a history of the Earth Charter see <http://earthcharterinaction.org/about_charter.html> at 28 March 2008.

¹⁰⁵ Agenda 21, U.N. Conference on Environment and Development, U.N. Doc.A/CONF.151/26/Rev.1 (1992).

¹⁰⁶ CBD, Articles 8 (j) and 10 (c).

¹⁰⁷ *Global Biodiversity Strategy*, above n 2, 11.

accumulated over a period of over 300,000 years in the search for plant based food and medicine.¹⁰⁸ The extinction of cultures and the languages they represent will necessary result in the permanent loss of this knowledge base.¹⁰⁹

The consequences of loss of cultural diversity are not confined to its impacts on biological resources and have human impacts as well. A UNEP report has noted that:

the loss of biological diversity, weakening of cultural diversity and the poverty phenomenon, which have been dealt with separately, are in fact closely connected. Dealing with this requires a holistic and more comprehensive approach for action at all levels, including the respect for culturally diverse societies.¹¹⁰

These negative impacts are not confined to those who possess such diversity alone, but also constitute a loss to humanity as a whole. This is particularly so in the case of the traditional ecological knowledge held by communities which relate to PGRFA, as well as to other uses of biodiversity. The instrumental value of this knowledge has been acknowledged by the CBD in Article 8(j) which promotes the sharing of the benefits arising from it.¹¹¹ The fact that this knowledge is being appropriated for commercial gain is a further indication of its value and is one of the contentious issues in the debate on PGRFA.

2.7 PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE (PGRFA)

2.7.1 Introduction

While the CBD deals with all three aspects of biological diversity, this thesis will focus on a specific element of genetic diversity, namely PGRFA. PGRFA constitute a component of agricultural biodiversity or agro-biodiversity. The latter has been defined as:

¹⁰⁸ Arturo Gome-Pampa, 'The Role of Biodiversity Scientists in a Troubled World' (2004) 54(3) *BioScience* 217, 220.

¹⁰⁹ For example, it is estimated that almost half of the world's 6000 languages may die out in the next century. Of the remainder nearly half will probably not last much longer – *Global Biodiversity Strategy*, above n 2, 11.

¹¹⁰ UNEP/GC.23/INF/23, above n 88, 8.

¹¹¹ This Article refers to the "knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity."

that part of biodiversity that feeds and nurtures people. It includes genetic resources for food and agriculture, such as harvested crop varieties, livestock breeds, fish species and non-domesticated resources within field, forest, rangeland and in aquatic ecosystems. It also refers to activities in the fields of agriculture, animal husbandry, aquaculture and agroforestry including pests, microbial resources and the management of agro-ecosystems, wildlife and protected areas. Agro-biodiversity exists because of the wide range of varying climates, habitats and farming practices found within the centres of diversity and the natural selection caused by the presence of different pests and diseases.¹¹²

PGRFA as a component of agrobiodiversity

comprise the diversity of genetic material contained in traditional varieties and modern cultivars, as well as crop wild relatives and other wild plant species that can be used now or in the future for food and agriculture.¹¹³

Agricultural biodiversity therefore encompasses all levels of biodiversity, ecosystem, species, and genetic, and this thesis focuses on the third element. However, the terms “PGRFA” and “agricultural biodiversity” have been used interchangeably in the literature and where used in this thesis will indicate the former.

PGRFA comprise wild species of plants as well as cultivated varieties. Wild species are important both as a source of food in themselves, and also as the natural resource base from which other species are developed and improved upon.¹¹⁴ Cultivated species are broadly classified into “modern varieties” and “farmers’ varieties.” Modern varieties are the products of “formal” or “scientific” systems of plant breeding, usually conducted by private companies or publicly funded research institutes. While these varieties are often “high yielding varieties” (HYVs), they also typically have a high degree of genetic uniformity.¹¹⁵

¹¹² A P Kameri-Mbote and P Cullet, ‘Agro-biodiversity and International Law - a Conceptual Framework’ (1999) 11(2) *Journal of Environmental Law* 257, 259. See also Lori Ann Thrupp, ‘Linking Agricultural Biodiversity and Food Security: the Valuable Role of Agrobiodiversity for Sustainable Agriculture’ (2000) 76(2) *International Affairs* 283. The CBD has identified the features of agricultural biodiversity - CBD/UNEP – *Handbook on the Convention on Biological Diversity* (3rd ed. 2005), 584 (hereinafter *CBD Handbook*). See also UNEP/CBD/SBSTTA/13/2 - Subsidiary Body on Scientific, Technical and Technological Advice, Thirteenth Meeting, 18–22 February 2008, *In-Depth Review of the Implementation of the Programme of Work on Agricultural Biodiversity*, 26 November 2007, 7.

¹¹³ *State of the World’s PGRFA*, above n 81, Chapter 1. For a discussion on the links between agriculture and biodiversity see *Global Environmental Outlook 4*, above n 72, 171.

¹¹⁴ *State of the World’s PGRFA*, above n 81, Chapter 1.

¹¹⁵ *Ibid.*

Farmers' or traditional varieties also known as "landraces," have evolved over centuries of selection and breeding carried out by farmers, either deliberately or not. They have a high level of genetic diversity and are therefore the focus of conservation efforts. They are also often difficult to define precisely or to distinguish as a particular variety. These different characteristics of "modern" and "traditional" crop varieties have given rise to disputes in regard to the legal recognition which should be accorded to them in the national and international spheres, as will be seen from the discussion in this thesis.

2.7.2 *The Values of PGRFA*

The values of PGRFA are multiple, and the fact that they are a fundamental necessity for food security and human survival need hardly be stated. Much of the potential benefits of biological resources that may be derived for food production have yet to be exploited. It has been estimated that there are about 300,000 to 500,000 species of higher plants of which about 30,000 are edible. Approximately 7,000 plants have been cultivated or collected for food by humans at some point in history. Of the latter, 20 species provide 90 percent of the world's food, and three, namely, wheat, maize and rice, supply more than half.¹¹⁶ Crop plants also have a direct monetary value, as can be seen for example, from the fact that agricultural yields in the United States have increased by an estimated value of \$1 billion in 50 years as a result of plant breeding and a broader genetic base.¹¹⁷

PGRFA also have more intangible values, for instance as an aspect of human cultures. There is often an interconnection between the agricultural practices of traditional societies and their cultural and religious practices.¹¹⁸ There is, for example, an interconnection between the diversity of PGRFA and traditional food systems. Vandana Shiva has observed that "[t]he diversity of soils, climates and plants has contributed to a diversity of food cultures across the world," and cites the maize based food systems of Central America, the rice based Asian systems, the teff based Ethiopian diet and the millet based foods of Africa as examples. She

¹¹⁶ Wilson, above n 9, 287.

¹¹⁷ *Global Biodiversity Strategy*, above n 2, 5.

¹¹⁸ June Starr and Kenneth C Hardy, 'Not by Seeds Alone: the Biodiversity Treaty and the Role for Native Agriculture' (1993) 12 *Stanford Environmental Law Journal* 85, 120. For a discussion of cultural beliefs and practices related to bioresources in Sri Lanka see *Sri Lankan Women and Men as Bioresource Managers*, above n 84, Chapter 6.

notes that in India, a country rich in biodiversity and cultural diversity, people in the arid and semi arid areas of the west live on millets, while eastern India has a rice and fish based food culture. Each region also has its specific edible oil.¹¹⁹ Food diversity and biodiversity thus mutually reinforce each other.

2.7.3 Diversity of PGRFA

While the number of species used in agriculture is small, the diversity within them is extensive. For instance, it has been estimated that the number of distinct varieties of the rice species, *Oryza sativa*, may range from thousands of varieties to over 100,000. Similar variation may be found in many other different crops, such as the over 200 varieties of sweet potato which have been identified in the Philippines and the thousands of varieties of potatoes in the Andes.¹²⁰

Genetic diversity contributes to sustainable agriculture in three ways. First, it provides stability for farming systems by maintaining a range of diversity of crops. Therefore losses caused by the failure of one crop can be made up by the yields of others. Second, genetic diversity provides an option value against future adverse conditions by characteristics which could be adapted to, for example, changing climatic conditions or blights. Over centuries, farmers have tapped the genetic diversity in plants to breed new varieties which increase yields and adapt to external conditions such as drought, salinity or pests. Third, such diversity potentially constitutes a repository of unknown resources of use to humanity. As noted by the UN Food and Agriculture Organisation (FAO) “[t]his is the reason for maintaining both wild ecosystems and traditional farming systems, as plants in these habitats are likely to contain and develop new and valuable genetic characteristics.”¹²¹

Genetic diversity of PGRFA is of particular importance to small farmers in developing countries. Such farmers often operate in poor natural conditions and are generally unable to afford inputs such as pesticides and fertilizers which are required by the modern varieties. Farmers’ varieties are also adapted to difficult environmental conditions and using a range of crop varieties spreads

¹¹⁹ Vandana Shiva, *Stolen Harvest – The Hijacking of the Global Food Supply* (2000).

¹²⁰ *State of the World’s PGRFA*, above n 81, Chapter 1; *Global Biodiversity Strategy*, above n 2, 4.

¹²¹ *State of the World’s PGRFA*, above n 81, Chapter 1.

the risk of crop failure.¹²² The FAO has noted that “farming systems based on diversity also provide a range of products with multiple uses, including varied food and other products,” and that “[f]armers also often use intercropping and agroforestry techniques that employ mixtures of species with complementary requirements, such as cereals with pulses.”¹²³ Therefore the loss of genetic diversity in PGRFA will have particular impacts on agriculture in developing countries and this is one of the issues which has been raised in the current debate on these resources.

Genetic diversity of PGRFA is also important in modern varieties of crops which have been bred by using the diversity in farmers’ landraces, as well as wild species. Landraces have provided individual traits that have been introduced into existing varieties.¹²⁴ These in turn have contributed immensely to the commercial value of crop genetic resources and the FAO estimates that the annual turnover of the commercial seed industry in OECD countries is \$13,000 million.¹²⁵

2.7.4 Loss of plant genetic diversity

While there are many reasons for genetic erosion,¹²⁶ one of the leading causes relevant to this discussion is the replacement of traditional varieties with homogenous commercial ones. The FAO has stated that the “main cause of genetic erosion in crops, as reported by almost all countries, is the replacement of local varieties by improved or exotic varieties and species.”¹²⁷ The newer varieties do not contain all the genes and gene complexes found in the farmers’ varieties and further, the tendency to monoculture based agriculture reduces the numbers of

¹²² Ibid.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Ibid.

¹²⁶ These include other agricultural changes, lack of sustainable resource management, deforestation and land clearance, environmental effects, introduction of new pests and diseases, population pressures, urbanisation and other factors, wars, policy and legislation and economic processes – Ibid.

¹²⁷ Ibid.

varieties planted in the field.¹²⁸ The uniformity of crops results in genetic vulnerability which has been defined as “the condition that results when a widely planted crop is uniformly susceptible to a pest, pathogen or environmental hazard as a result of its genetic constitution, thereby creating a potential for widespread crop losses.”¹²⁹ These concerns have been raised by developing countries in the context of the debate over PGRFA and will be considered in the course of this thesis.

2.7.5 Location of PGRFA

PGRFA is found both *in situ* and *ex situ*. The CBD has defined *in situ* conditions as

conditions where genetic resources exist within ecosystems and natural habitats, and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.¹³⁰

The CBD has acknowledged that

the fundamental requirement for the conservation of biological diversity is the in-situ conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings.¹³¹

Most major agricultural crops were domesticated for thousands of years in developing countries, and, historically most genetic diversity was located in them.¹³² While *in situ* conservation is

¹²⁸ For a discussion of monoculturation see Scott C Lucas, ‘Halting the downward culture of monoculturation and genetic vulnerability; towards a sustainable and biodiverse food supply’ (2002) 17 *Journal of Environmental Law and Litigation* 161.

¹²⁹ *State of the World’s PGRFA*, above n 81, Chapter 1.

¹³⁰ CBD, Articles 2 and 8.

¹³¹ CBD, Preamble.

¹³² There are different theories regarding the identification of centres/areas of diversity. See CGRFA – Background Study Paper No. 12 - *Crops Proposed For the Multilateral System: Centres of Diversity, Locations of Ex Situ Collections, and Major Producing Countries* (2001). See also *State of the World’s PGRFA*, above n 81, 20; Cary Fowler, Melinda Smale and Samy Gaiji, ‘Unequal Exchange? Recent Transfers of Agricultural Resources and their Implications for Developing Countries’ (2001) 19(2) *Development Policy Review* 181; Stephen B Brush, ‘Protecting Traditional Agricultural Knowledge’ (2005) 17 *Washington University Journal of Law & Policy* 59. For a definition of centres of diversity and centres of origin see the Preamble of the International Treaty on Plant Genetic Resources for Food and Agriculture, adopted at the 31st Session of the FAO Conference on 3 November 2001 available at <<http://www.fao.org/ag/cgrfa/itpgr.htm>> last accessed 30 April 2008 and the website of the Treaty at <<http://www.planttreaty.org/>> last accessed 30 April 2008 (hereinafter FAO Treaty).

obviously the preferable means of maintaining plant genetic diversity, many factors including habitat loss and the increasing uniformity of cultivated crops has reduced the natural diversity of such resources in these locations. Consequently it has become necessary to also ensure that such diversity is maintained *ex situ*.

2.7.5.1 *Ex situ* collections of PGRFA

Ex situ conservation refers to the conservation of seeds, plants, microbes and other forms of life held outside their natural habitat.¹³³ Plant collection, transportation and storage in countries other than those of origin had been carried on for centuries, but the amassing of genetic resources *ex situ* accelerated significantly during the sixteenth to the nineteenth centuries, in the period of European colonial expansion. Another period of extensive collection took place in the latter half of the 20th century. Most material stored *ex situ* today was collected during the 1970s and 1980s from developing countries.¹³⁴ It has been noted that while the original accumulation was that of species, modern biotechnology has shifted the focus of interest to the genes necessary for breeding new varieties of crops.¹³⁵

International initiatives to systematically collect and conserve PGRFA began in the 1940s and have been carried forward primarily by the Food and Agriculture Organization (FAO). The FAO was established in 1945 as a specialized United Nations agency.¹³⁶ Its mandate is to “raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy.”¹³⁷ Fowler and Hodgkin record that its work on PGRFA was initiated in the light of the concern which was raised over the conservation, exchange and utilization of these resources. In 1962 the FAO established a Panel of Experts on Plant Exploration and convened international technical conferences on this issue in 1967, 1973, 1981 and 1996. The early conferences recommended the establishment of a global network of

¹³³ UNEP/CBD/ISOC/4 - Inter Sessional Meeting on the Operations of the Convention, 28 - 30 June 1999, *Report on the Information on Ex-Situ Collections in Accordance with Decisions IV/8*, 12 May 1999.

¹³⁴ Fowler, Smale and Gaiji, above n 132, 186.

¹³⁵ Ibid 182; Cary Fowler and Toby Hodgkin, ‘Plant Genetic Resources for Food and Agriculture: Assessing Global Availability’ (2004) 29 *Annual Review of Environment & Resources* 143.

¹³⁶ <http://www.fao.org/UNFAO/about/history_en.html> at 4 March 2008.

¹³⁷ <http://www.fao.org/UNFAO/about/mandate_en.html> at 4 March 2008.

genebanks.¹³⁸ Rose notes that although there was an intensification in PGRFA activity in the 1970s, this was done mainly through national genebanks and botanic gardens, sidestepping the FAO and the UN framework. It was in the 1980s that the FAO assumed the initiative for plant collection.¹³⁹ The International Plant Genetic Resources Institute (IPGRI)¹⁴⁰ had the mandate for co-ordinating the global process to collect and conserve PGRFA.¹⁴¹

Conservation off site is now carried out by almost every country in the world and PGRFA are now being increasingly stored in collections maintained by various types of institutions - international, national/regional and private. Large collections are located in the International Agricultural Research Centres (IARC) of the Consultative Group on International Agricultural Research (CGIAR).¹⁴² In addition, many countries have networks of genebanks which can have either a national or local focus.¹⁴³ It has also been noted that:

[a]nother important holder of germplasm is the network of private breeders who use plant genetic resources as the raw material for their work. The private breeders hold significant collections, which are in some cases, more representative than those controlled by public institutions.¹⁴⁴

Fowler et al cite the existence of more than 1,300 genebanks containing more than six million accessions.¹⁴⁵ Of these the majority are in North America and Europe combined, while Asia,

¹³⁸ Fowler and Hodgkin, above n 135, 151.

¹³⁹ Gregory Rose, 'International Law of Sustainable Agriculture in the 21st Century: The International Treaty on Plant Genetic Resources for Food and Agriculture' (2003) 15 *Georgetown International Environmental Law Review* 583, 587.

¹⁴⁰ Originally the International Board for Plant Genetic Resources (IBPGR) established in 1974.

¹⁴¹ Fowler and Hodgkin, above n 135, 151. See also the website at <http://www.biodiversityinternational.org/About_Us/index.asp> at 29th May 2008.

¹⁴² The CGIAR was created in 1971 and describes itself as an informal association of public and private sector CGIAR Members from the South and North. It is jointly sponsored by FAO, the International Bank for Reconstruction and Development (World Bank), the International Fund for Agricultural Development (IFAD) and the United Nations Development Programme (UNDP). Its activities are closely focused on enhancing agricultural productivity, and ensuring food security and poverty alleviation in developing countries. See Consultative Group on International Agricultural Research (CGIAR) – The Charter of the CGIAR System, November 8, 2004 and <<http://www.cgiar.org/who/history/origins.html#top>> at 18 April 2008.

¹⁴³ UNEP/CBD/ISOC/4, above n 134. For a discussion on the role and functions of genebanks see Nigel J. H. Smith, 'Genebanks: A Global Payoff' (1987) 39 (1) *Professional Geographer* 1.

¹⁴⁴ UNEP/CBD/ISOC/4, above n 134, Paragraph 11. There is very little information regarding these collections and the report notes that private breeders were not contacted for this purpose.

Latin America and the Caribbean and Africa also have significant collections. Botanical gardens also comprise important repositories of germplasm.¹⁴⁶ The majority (61%) are located in Europe, the U.S. and the countries of the former Soviet Union. About 11% are privately owned. Worldwide, 47% can be considered to have germplasm collections. About 75% of the germplasm conserved in botanical gardens is in North America and Europe.¹⁴⁷

In view of estimates that there is now in fact greater genetic diversity in *ex situ* collections than *in situ*,¹⁴⁸ their importance to national economies and food security cannot be underestimated. The FAO Global Plan of Action¹⁴⁹ had recognized the importance of networks of *ex situ* collections of PGRFA, and its objectives under this section include developing and strengthening national, regional and international networks and ensuring the free flow of germplasm globally. These networks fall into two broad categories - the *Ex situ* Network under the auspices of FAO and other international networks.

2.7.5.2 The International Network of *Ex Situ* Collections under the auspices of FAO

Probably the most important collections of the Network are those of the IARCs maintained by the CGIAR. In 1989, the Commission on Genetic Resources for Food and Agriculture (CGRFA)¹⁵⁰

¹⁴⁵ As at 1998 - Fowler, Smale and Gaiji, above n 132, 185-186.

¹⁴⁶ Germplasm “refers to seeds, plants or plant parts that are useful in crop breeding, research or conservation because of their genetic attributes” – *ibid* footnote 2.

¹⁴⁷ *State of the World's PGRFA*, above n 81, 126.

¹⁴⁸ Fowler, Smale and Gaiji, above n 132, 187.

¹⁴⁹ *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture and the Leipzig Declaration* adopted by the International Technical Conference on Plant Genetic Resources, 17–23 June 1996 - Action 16 and paragraphs 7 and 10. See also FAO Treaty, Article 16.

¹⁵⁰ The Commission on Genetic Resources for Food and Agriculture (CGRFA) is a permanent inter-governmental forum where matters relevant to genetic resources for food and agriculture are discussed. It was originally established in 1983 as the Commission on Plant Genetic Resources (CPGR) by the FAO Conference, (Resolution 9/83) to deal with plant genetic resources. In 1995 it was re-named the CGRFA and by Resolution 3/95 its mandate was broadened to cover all components of agro-biodiversity of relevance to food and agriculture. The European Community and 168 countries are members at present. See the website at <<http://www.fao.org/ag/cgrfa/#secretariat>> at 28th March 2008. See also CGRFA-11/07/Inf.2 – CGRFA, Eleventh Regular Session, 11-15 June 2007, *Statutes of the Commission on Genetic Resources for Food and Agriculture*.

called for the development of the FAO International Network, the reason being cited as “the uncertainty of the legal situation of *ex situ* germplasm in genebanks, and of the lack of appropriate agreements to ensure its safe conservation.” In 1994, twelve of these Centres entered into a series of agreements with FAO whereby they placed around 500,000 accessions in the International Network.¹⁵¹ By these agreements the Centres agreed to hold the designated germplasm “in trust for the benefit of the international community” and “not to claim ownership, or seek intellectual property rights, over the designated germplasm and related information.” The collection of the International Coconut Genetic Resources Network (COGENT), held by the governments of India, Indonesia and Cote d’Ivoire was subsequently brought into the Network in 1998.¹⁵²

2.7.5.3 Other International Networks of *Ex Situ* Collections of PGRFA

There are other *ex situ* collections of PGRFA that are not part of the FAO network.¹⁵³ These are held in seed genebanks, field genebanks and in vitro collections.¹⁵⁴ A report prepared by Botanic Gardens Conservation International¹⁵⁵ estimates that there are 2,178 botanic gardens throughout the world in 153 countries. They contain a total of 42 million herbarium specimens in botanic garden herbaria and 6.13 million accessions in their living collections. While the majority of botanic gardens are in the developed countries of Europe and North America, significant numbers are also found in developing and tropical countries. While several national collections have been placed within the FAO system, other collections have voluntarily developed principles and

¹⁵¹ CGRFA-9/02/11 - CGRFA, Ninth Regular Session, 14 – 18 October 2002, *Report on the International Network of Ex Situ Collections Under the Auspices of FAO*, Paragraphs 2-3. See also CGRFA-10/04/6 - CGRFA, Tenth Regular Session, 8 – 12 November 2004, *Report on the International Network of Ex situ Collections under the Auspices of FAO*, Part 1.

¹⁵² CGRFA-10/04/3 - CGRFA, Tenth Regular Session, 8-12 November 2004, *Overview of the FAO Global System for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture and its Potential Contribution to the Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture*, paragraphs 15-20.

¹⁵³ *CBD Handbook*, above n 112, 194. By Decision V/26 C the Conference of the Parties of the CBD had decided to call for information on these collections – *CBD Handbook*, 681.

¹⁵⁴ *State of the World’s PGRFA*, above n 81, 84.

¹⁵⁵ *An International Review of the Ex Situ Plant Collections of the Botanic Gardens of the World: - Reviewing the Plant Genetic Resource Collections of Botanic Gardens Worldwide, as a contribution to Decision V/26 on Access to Genetic Resources of the Conference of the Parties to the Convention on Biological Diversity* <<http://www.biodiv.org/doc/ref/bot-gard-overview.pdf>> at 28th March 2008.

guidelines to facilitate access and benefit sharing of their holdings.¹⁵⁶ Several of the significant botanic gardens throughout the world have joined in an initiative to develop a harmonised set of principles in this regard, which also include those on best practices on acquisition of such resources.¹⁵⁷ These principles and common policy guidelines will be applicable, where possible, to collections acquired both before and after the CBD.¹⁵⁸ However, private collections which constitute a significant proportion of material may still exclude themselves.¹⁵⁹

Together with the shifting of crop diversity from *in situ* to *ex situ* conditions, the flow of crops between developed and developing countries has also become more multi-directional. The FAO International Network and the voluntary placing of accessions in international networks have ensured a certain degree of accessibility to these collections, including by developing countries. In fact, it has been pointed out that developing countries have received more genetic materials than they have contributed to the Centres, and an open access system of germplasm flows will materially benefit them.¹⁶⁰ Fowler et al note that while historical transfers were mainly directed at crop introduction, recent flows of PGRFA have been for the purpose of crop improvement.¹⁶¹ Therefore unimpeded access to these resources is crucial to maintain both food security and crop diversity in all countries.

¹⁵⁶ For an overview of networks see CGRFA - Background Study Paper No. 16, Electra Kalaugher and Bert Visser, *A Summary and Analysis of Existing International Plant Genetic Resources Networks* (date not available).

¹⁵⁷ *Principles on Access to Genetic Resources and Benefit-sharing for Participating Institutions and Explanatory Text*, document available at <<http://www.kew.org/conservation/agrbs-policy.html>> at 18th April 2008. The participants were from 28 botanic gardens from 21 developing and developed countries.

¹⁵⁸ The reason for developing these guidelines is also pragmatic. As pointed out in the Explanatory Text the reasons why botanical institutions should bring themselves in line with the CBD include, continuing to access and exchanging materials, to build partnerships and to attract funding - Paragraph 2.1. It should also be noted that these principles are not legally binding. See also UNEP/CBD/WG-ABS/1/INF/1 - Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, First meeting, 22-26 October 2001, *Results of the Pilot Project for Botanic Gardens: Principles on Access to Genetic Resources and Benefit-Sharing, Common Policy Guidelines to Assist with their Implementation and Explanatory Text*, 12 September 2001.

¹⁵⁹ For a brief overview of networks see Gerald Moore and Witold Tymowski, *Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture* (2005) 129. See also *State of the World's PGRFA*, above n 81, Chapters 3 and 4.

¹⁶⁰ Fowler, Smale and Gaiji, above n 132.

¹⁶¹ *Ibid* 182.

2.8 ISSUES OF EQUITY IN REGARD TO PGRFA

No country in the world is self sufficient in PGRFA and there is a high level of interdependence among them in regard to these resources. Both developed and developing countries have come to rely heavily on non-indigenous crops to meet their food needs. For example, North America is completely dependent on species from other parts of the world for its major food and industrial crops, while sub-Saharan Africa is estimated to be 87% so dependent.¹⁶²

Fowler and Hodgkin observe that:

[m]ost countries and their farmers are now also dependent on modern, improved varieties of rice, wheat, maize, and other crops. For example, in Asia, 67% of the rice, 88% of the wheat, and 45% of the maize area is planted in modern varieties, and in Latin America, 58% of the rice, 68% of the wheat, and 46% of the maize area is planted in modern varieties. At one time, a single rice variety, IR36, accounted for 10% of the world's rice area, occupying more than 11 million hectares in its heyday, and selections from a single wheat cross at the International Maize and Wheat Improvement Center (CIMMYT) accounted for one seventh of the area sown to wheat in developing countries.¹⁶³

Given this interdependence on crop plants, it is essential that the free movement of these resources is maintained. Notwithstanding the fact that there is a certain degree of accessibility to plant germplasm in *ex situ* collections, controversies still remain in regard to the equitable distribution of new varieties. The outflow of crop varieties from the old to the new world during the period of colonial expansion, and then from developing to developed countries in the latter part of the 20th century, was made possible in part by the fact that access to them was unrestricted. Many modern varieties of crops have been developed using these traditional varieties as a base and they are now in widespread use in all countries

The inequity in regard to crop plants is alleged to arise from the fact that while the original varieties were freely accessed, property rights are being claimed over the modern varieties, which are being marketed in the countries of origin by corporate entities located in technologically developed countries. The widespread use of these modern varieties has resulted in increased dependence upon them and consequently a greater need to freely access them. Monopolistic control over these varieties by a few entities would have potential negative consequences on food security, particularly in developing countries. The impacts on farmers and traditional

¹⁶² *State of the World's PGRFA*, above n 81, 22. See also CGRFA - Background Study Paper No.7 Rev.1, Ximena Flores Palacios, *Estimation of Countries' Interdependence in the Area of Plant Genetic Resources* (date not available)

¹⁶³ Fowler and Hodgkin, above n 135, 147.

communities have also been identified as a related concern. This scenario has resulted in calls (mainly from developing countries) for a more equitable system of access to and distribution of these resources. However, as will be argued in this thesis, international law has put in place a mechanism that facilitates the appropriation and control of crop plants and enables the application of property rights over them by entities engaged in biotechnological processes and agribusiness. The current international debate on PGRFA therefore centres around strategies to counteract this position, and this thesis will analyse the extent to which this has succeeded.

CHAPTER 3

BIOTECHNOLOGY AND THE USES OF BIOLOGICAL RESOURCES

3.1 INTRODUCTION

In the previous chapter I considered the values of biological resources to humans. In this chapter I will examine the means by which these resources have been utilized for human benefit, focusing on biotechnology and its significance for plant diversity, including PGRFA. Biotechnology is the enabling factor in developing new crop varieties in a relatively short space of time and with specific, desired characteristics. It has also provided the means by which physical control of these varieties can be ensured. These factors have, to a large extent, contributed to the current conflict over the acquisition and subsequent propertisation of the natural resources that often form the raw material of this technology.

This chapter will provide a background to these developments, placing in context the use of biotechnology in regard to PGRFA and the issues relating to the acquisition of the raw material for further plant breeding. It will also consider the past impacts of agricultural biotechnology on developing countries (with the Green Revolution being cited as an illustration), in order to explain the current concerns regarding possible future effects in this area. This will provide the context to the debate on PGRFA in international fora.

3.2 THE DEVELOPMENT OF BIOTECHNOLOGY

Throughout human history people have exploited and used the earth's natural resources for survival and sustenance. In the process they have also adapted and modified many naturally occurring species to produce new varieties of plants and livestock, primarily for agriculture.¹ Traditionally, this process was conducted typically by trial and error. In the past fifty years or so, due to modern scientific techniques and novel technological developments, its intensity, speed, and accuracy have accelerated to extraordinary levels. Consequently, the modifications that can be made to natural species and the uses to which they can be put have also increased.

¹ Bongo Adi, 'Intellectual Property Rights in Biotechnology and the Fate of Poor Farmers' Agriculture' (2006) 9 (1) *Journal of World Intellectual Property* 91.

These developments are largely due to the growing use of modern biotechnology. Biotechnology has been defined in the Convention on Biological Diversity (CBD) as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use”.² On a broad interpretation of this definition it is obvious that biotechnology has been carried on for centuries for many purposes, including the improvement of domesticated plants and animals, breeding, utilising micro-organisms in processing food and drink, control of disease by inoculation and the biological control of pests.³ While the traditional methods involved human intervention within essentially natural processes and environments, modern biotechnology is usually conducted in laboratories and often involves changes in natural species that may not take place in the normal courses of events.⁴

It has been noted that biotechnology differs from other technologies in three ways.⁵ First, it is not defined by products or services. Rather, it is a means of production for already existing industries by the “use of microbial, animal, or plant cells or enzymes to synthesize, breakdown or transform materials.”⁶ Biotechnology can therefore be utilised commercially in products and processes in a wide range of industries including pharmaceuticals, chemicals, agriculture, aquaculture, food processing, forestry, and waste disposal.⁷ Second, it is heavily dependent on basic research in molecular biology including recombinant DNA and genetic engineering techniques. Third, it is a controversial process due to the uncertainty of its potential effects on people and the environment, and since it often involves the creation and patenting of new life forms.

² *Convention on Biological Diversity* (1992) 31 ILM 818 - Article 2 (hereinafter CBD).

³ United Nations Environment Programme, *Global Biodiversity Assessment* (1995), 677 (hereinafter *Global Biodiversity Assessment*).

⁴ Dutfield classifies biotechnology into three generations. The first included traditional technologies such as beer brewing and bread making which goes back centuries. The second begins with the microbiological applications developed by Louis Pasteur, including the mass production by fermentation of antibiotics, tissue culture and modern plant and animal breeding. The third generation includes the various genetic engineering techniques for transferring one life form to another to create new transgenic organisms with specific and useful traits - Graham Dutfield, *Intellectual Property, Biogenetic Resources and Traditional Knowledge* (2004), Chapter 2.

⁵ Susan Bartholomew, ‘National Systems of Biotechnology Innovation: Complex Interdependence in the Global System’ (1997) 28(2) *Journal of International Business Studies* 241.

⁶ *Ibid* 245.

⁷ The four main categories of biotechnologies are agricultural, pharmaceutical, environmental and industrial - Philip A Reed, ‘Bioprospecting’ (2005) 64(4) *Technology Teacher* 14.

A very narrow definition of biotechnology restricts it to the sense of gene manipulation, particularly genetic engineering, for commercial gain.⁸ The most visible and also the most contentious of the areas involving gene manipulation are those of health and agriculture. The health biotechnology industry is concerned with developing new drugs and diagnostic processes, and also with drug discovery which is its main objective.⁹ Agricultural biotechnology focuses on the development of new seed varieties, often with specific, introduced traits.¹⁰ It is the latter which will be the subject of this thesis.

3.3 THE BIOTECHNOLOGY INDUSTRY

The potential economic gains of biotechnology have transformed scientific research from a primarily academic exercise into an industrial and entrepreneurial one. The breakthrough that took place in DNA technology resulted in the “commercialization of the biological sciences,” “the commodification of scientific knowledge” and “the growth of entrepreneurship in scientific research.”¹¹ Within ten years from 1973 to 1983, funding of academic research and development in the United States increased from \$84 million to \$370 million, thus cementing the relationship between scientific research and industry.¹² Within two decades 700 biotechnology firms had been established in the U.S. alone.¹³

⁸ However, the *Global Biodiversity Assessment* points out that this interpretation disregards its importance for our understanding, management and conservation of biodiversity - *Global Biodiversity Assessment*, above n 3, 677.

⁹ Dutfield, above n 4, 15.

¹⁰ Ibid.

¹¹ Sheldon Krinsky, ‘The Profit of Scientific Discovery and Its Normative Implications’ (1999) 75 *Chicago-Kent Law Review* 15, 18.

¹² Ibid 19. See Lynne G Zucker, Michael R Darby and Marilyn B Brewer, ‘Intellectual Human Capital and the Birth of US Biotechnology Enterprises’ (1998) 88(1) *American Economic Review* 290 for a discussion on the inter-relationship between the scientific developments and the rise of the industry. See Michael J Phillips, ‘Social Science Implications of Agricultural Science and Technology: Discussion’ (1983) 65(5) *American Journal of Agricultural Economics* 976 for a discussion of the potential conflicts which may arise in the university industry linkage.

¹³ Zucker, Darby and Brewer, above n 12. See also L Christopher Plein, ‘Popularizing Biotechnology: The Influence of Issue Definition’ (1991) 16(4) *Science, Technology, & Human Values* 474 for a general discussion on the rise of the industry.

The commercial development and use of biotechnology and the marketing of its products has varied among countries. To date most of the basic research has been conducted by governments, universities and private foundations. Private sector funding has increased in recent times, particularly in the U.S. which has also been the most successful in marketing the end products. It has been noted that Europe and Japan lag behind the U.S. in this regard although these countries have exerted themselves to catch up with the latter in the last few decades.¹⁴ A recent phenomenon in the biotechnology industry is the emergence of a transnational global industry whereby large corporations are forging networks across countries to advance their technological capabilities and consequently over riding national technological spheres.¹⁵

Developing countries are now entering the biotechnology arena but their research and commercial capacities vary to a great extent. Many developing countries give preference to agricultural biotechnology rather than health which is prioritised in the U.S. and Europe, and countries such as China, Mexico and Costa Rica are aggressively pursuing technological innovations in this area.¹⁶

The potential profits to be derived from biotechnology also influence the directions taken by both research and commercial institutions. In 1999 it was estimated that the annual market for products derived from natural resources was between US\$500 and US\$800 billion.¹⁷ This involved products from industries such as pharmaceuticals, botanical medicines, agricultural produce, ornamental horticultural products, crop protection products, other biotechnologies,

¹⁴ Dutfield, above n 4, Chapter 2. The United States, the United Kingdom, Germany and Japan have been identified as the countries that have the largest scale of biotechnology in the world – Bartholomew, above n 5, 242.

¹⁵ Bartholomew, above n 5, 242; Elisa Mutia Buktuanon, 'Globalisation of biotechnology; the agglomeration of dispersed knowledge and information and its implications for the political economy of technology in developing countries' (2001) 20(1) *New Genetics and Society* 25.

¹⁶ Anne Simon Moffat, 'Developing Nations Adapt Biotech for Own Needs' (1994) 265 (No 5169) *Science, New Series*, 186; Susmita Sengupta, L K Sengupta and P S Bisen, 'Bioengineered crops - the commercial and ethical considerations' (2001) 2 *Current Genomics* 181.

¹⁷ Kerry ten Kate and Sarah A Laird, *The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit-Sharing* (1999), Chapter 1.

personal care and cosmetic products. The annual commercial seed market has been estimated at US\$ 32 billion.¹⁸

The commercial biotechnology sector is largely profit motivated and is working in areas where such profits can be maximized. This includes the agricultural sector and the breeding of new varieties of plants. It is in the interests of the industry to establish an international institutional and legal framework to establish property rights over the end products of these processes so as to ensure maximum returns on its investments. This thesis will illustrate the way in which this is being achieved.

3.4 THE APPLICATION AND USE OF BIOTECHNOLOGY FOR AGRICULTURAL DEVELOPMENT

Biotechnology is primarily used in the field of pharmaceuticals, agriculture and industry. To its advocates it is the panacea for the problems of global food scarcity and the health needs of the world's population.¹⁹ These are also the spheres that provide the greatest economic returns on investments. A considerable amount of resources in the biotechnology industry has therefore been channeled into the development and production of pharmaceuticals and the creation of new crop varieties.²⁰ These processes involve tapping the vast resources of species and genetic diversity and engaging in genetic engineering of both plants and animals.

Plant biotechnology is used for the breeding of new plant varieties and therefore the value of plants for agricultural development remains undiminished. This process involves the crossbreeding of plants to produce new varieties which contain useful characteristics. It can be used for

¹⁸ Devlin Kuyek, *Intellectual property rights: Ultimate Control of Agricultural R&D in Asia* (2001) <http://www.grain.org/briefings_files/asiaipr.pdf> at 25th February 2008.

¹⁹ Gordon Conway, 'Food for All in the 21st Century' (2000) 42(1) *Environment* 8; Roger Beachy, 'The gene business' (2002) 173(2337) *New Scientist* 52; Roger Beachy and Elizabeth Schell-Fredrick, 'Plant biotechnology in the service of human health' (1995) 43(4) *Diogenes* 93.

²⁰ For example, research and development on pharmaceuticals amounted to around US\$21.1 billion globally in 1998 and the costs of developing a single drug have been estimated at between US\$ 231 and 500 million – ten Kate and Laird, above n 17, Chapter 3.

the accurate selection and delivery of desired characteristics, to transfer genes from one species into another, to remove undesirable characteristics such as allergenic and toxic compounds and to produce varieties that require less input of pesticides, fertilisers and even water and energy.²¹

The techniques involved in achieving these include traditional methods such as cross pollination,²² but a range of modern techniques such as embryo rescue, cell and tissue culture and molecular genetics are now available to facilitate the process.²³ Genetic engineering now allows breeders to incorporate characteristics from one species into another, a process which could not have happened under natural conditions and within such constricted time frames.²⁴

Plant biotechnology is touted by its advocates as the only viable strategy to ensure that global food production keeps pace with population growth and meets the nutritional needs of the world's peoples. The increases in food production which resulted from the Green Revolution are now diminishing, and degraded agricultural lands and water scarcity make conventional agriculture less productive. Biotechnology can facilitate alternative strategies to achieve food security, such as increasing the nutritional content of staple foods like rice,²⁵ making crops resistant to drought, pests and virus borne diseases, and producing plants which are more productive with fewer inputs.²⁶ While the Green Revolution produced high yielding varieties of food crops through conventional plant breeding methods, the "Gene Revolution," by way of genetic engineering can produce what are virtually designer crops, much faster.²⁷

²¹ Ibid 128.

²² I.e. shaking or brushing pollen from the male plant onto the female plant.

²³ Ten Kate and Laird, above n 17, 127.

²⁴ Examples of this include the introduction of a gene from the flounder fish into wheat to produce a variety of the crop that could withstand cold temperatures – Ibid 128.

²⁵ For example, the Swiss Federal Institute of Technology in Zurich has genetically modified rice so that it contains beta carotene, which is necessary for the human body to produce vitamin A. For information on the benefits of biotechnology see the website of the Council for Biotechnology Information (CBI), available at <www.whybiotech.com> at 28th March 2008.

²⁶ Author not cited, 'Biotechnology and World Hunger' (2001) 80(3) *Congressional Digest* 73.

²⁷ Conway, above n 19.

3.5 BIOTECHNOLOGY AND AGRICULTURE IN DEVELOPING COUNTRIES

3.5.1 *The Green Revolution*

Agriculture is perhaps the area in which biotechnology can potentially have the greatest socio-economic consequences on all countries for better or for worse.²⁸ The global impacts of agricultural biotechnology were first manifested in the phenomenon known as the Green Revolution, and this was perhaps the precursor to the present debate on this issue in the developing world. The economic and socio-political impacts of this phenomenon on developing countries are relevant in assessing the possible impacts on them of the new generation of biotechnology.²⁹

The Green Revolution was essentially a transition from indigenous or traditional agriculture to industrial or “scientific” systems. It originated and was fostered in the U.S., and implemented in Asia and Latin America. It has been described in these terms:

Narrowly defined, the Green Revolution is the rapid growth in Third World grain output associated with the introduction of a new package of tropical agricultural inputs. The package consists essentially of a combination of improved grain varieties, mainly rice and wheat, heavy fertiliser usage and carefully controlled irrigation. Without fertiliser and without controlled irrigation, the new varieties usually yield no more and sometimes less than traditional strains. With them, they give substantially higher yields per acre.³⁰

The Green Revolution has provoked some of the most contentious debates in regard to its actual impacts on developing countries. To its enthusiasts it is “a validation of the basic ideas of evolutionary or institutional economics,”³¹ “the apotheosis of technology” and only rivaled by the Marshall Plan.³² It is the development which economically transformed many areas of Asia and

²⁸ The other area in which this would be so is that of health, which is beyond the scope of this thesis.

²⁹ See Stephen B Brush, ‘Genetically Modified Organisms in Peasant Farming: Social Impact and Equity’ (2001) 9 *Indiana Journal of Global Legal Studies* 135 where the author notes that owing to the lack of data on the impacts of genetically modified organisms (GMO), the impacts of the Green Revolution are reviewed as an exercise in what to expect from them.

³⁰ Harry M Cleaver, ‘The Contradictions of the Green Revolution’ (1972) 62(1/2) *American Economic Review* 177 providing a detailed history of the conception and implementation of the Green Revolution. See also Gordon Conway, *The Doubly Green Revolution – Food for all in the 21st Century* (1997).

³¹ Thomas R DeGregori, ‘Green Revolution Myth and Agricultural Reality?’ (2004) 38(2) *Journal of Economic Issues* 503, 507.

³² Nick Cullather, ‘Miracles of Modernization: The Green Revolution and the Apotheosis of Technology’ (2004) 28(2) *Diplomatic History* 227, 227.

Latin America, averted mass starvation in the latter half of the 20th century, and ensured food security for the populations of the developing countries where it was implemented.³³ It has also been argued that it had environmental benefits as it minimised the amount of land brought under cultivation since the high yielding varieties of staple crops (HYV) produced a greater harvest per land area cultivated. Therefore more land could be freed up for other crops or for environmental conservation.³⁴ However, given its adverse impacts, the question whether the trade off was ultimately worthwhile is one that has been intensely debated.

It is undeniable that the Green Revolution did result in a dramatic increase in food production in the short term, but its long term costs and negative impacts may have obviated these benefits. To its detractors, it represents the cultural and technological dominance of the West, which overrode the traditional livelihoods of the peoples of developing countries and which has had detrimental impacts on their agriculture, environment and economies. Its origins have been described as a strategy of U.S. foreign policy which aimed to control the economic and social development of Asian countries.³⁵ At best its beneficial impacts were temporary, although they continued for a few decades, and there are now diminishing returns on the HYVs.³⁶ It did enable many developing countries to maintain food production at the same levels as population growth and so avert mass starvation. However, these benefits have been achieved at the expense of economic equity, agricultural stability and sustainability, and environmental degradation.³⁷

³³ However, it has however been pointed out that if world food production were to be divided by its population, each person would receive a daily average of over 2,700 calories of energy which is enough to prevent hunger and sufficient to lead an active and healthy life - Gordon Conway 'Food for All in the 21st Century' (1999) 66(1) *Social Research* 351. See also Peter Straub, 'Farmers in the IP Wrench - How Patents on Gene-modified Crops Violate the Right to Food in Developing Countries' (2006) *Hastings International and Comparative Law Review* 187, 192.

³⁴ DeGregori, above n 31.

³⁵ This strategy had two aims. The first was to ensure the expansion of U.S. multinational commercial interests overseas. Secondly, it served to ensure the stability of those markets which were being threatened by social and political upheavals in the countries concerned, as well as by a rapidly growing population - Cleaver, above n 30. See also Cullather, above n 32.

³⁶ Gordon R Conway and Edward B Barbier, *After the Green Revolution – Sustainable Agriculture for Development* (1990). It has been observed that the term high yielding varieties is a misnomer as it implies that the varieties are high yielding in and of themselves. In actual fact they are highly responsive to key inputs such as fertiliser and irrigation – Vandana Shiva, *Monocultures of the Mind - Perspectives on Biodiversity and Biotechnology* (1993), 42. Conway notes that the increase in production was due to three factors in equal measure, i.e. availability of the new crop varieties, increased fertiliser use and the growth of irrigation – Conway, above n 30, 61.

The importance of biodiversity for food and agriculture particularly plant genetic resources, was discussed in Chapter 2. The traditional crop varieties or landraces developed by farmers over thousands of years, formed the backbone of indigenous agriculture until the latter half of the 20th century.³⁸ Since the success of the Green Revolution was based upon the cultivation of uniform HYVs to the exclusion of the traditional landraces which had been cultivated up till then, it eroded the crop diversity that had been built up over centuries.³⁹ This has been one of its most adverse effects. It has also been noted that while it did significantly increase yields, this sometimes came at the expense of crop stability.⁴⁰

The political and socio-economic repercussions of the Green Revolution are still in effect today, primarily because its benefits were not shared equitably. To begin with, it was implemented in the best potential lands, which were irrigated. However, since only a small percentage of agricultural lands in developing countries are in fact irrigated, this resulted in marginalising a large proportion of small scale farmers. Further, even within the areas in which the projects were implemented, given their inherently technical bias they accentuated inequalities, favouring wealthy landowners over small scale subsistence farmers.⁴¹ As such, the benefits of the Green Revolution in regard to food production and the livelihoods of resource poor farmers have been uneven at best.⁴² Finally, it did not solve the problem of large scale hunger since this does not depend on production alone.⁴³ Wider issues of poverty such as adequate employment and income are also decisive. The

³⁷ Conway and Barbier, above n 36, Chapter 1; Conway, above n 30, Chapter 5; C Peter Timmer, 'Biotechnology and food systems in developing countries' (2003) 133(1) *Journal of Nutrition, Bethesda* 3319. For an opposing view see Brush, above n 29.

³⁸ For a discussion of indigenous as opposed to industrial agriculture see David A Cleveland and Stephen C Murray, 'The World's Crop Genetic Resources and the Rights of Indigenous Farmers (1997) 38(4) *Current Anthropology* 477, 479.

³⁹ Vandana Shiva, *The Violence of the Green Revolution – Third World Agriculture, Ecology and Politics* (1991) Chapter 2. See also *Global Biodiversity Assessment*, above n 3, 745.

⁴⁰ Conway and Barbier, above n 36. For a discussion on the importance of plant diversity for food security see Scott C Lucas, 'Halting the downward culture of monoculturation and genetic vulnerability; towards a sustainable and biodiverse food supply' (2002) 17 *Journal of Environmental Law and Litigation* 161. See also Jack R Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000* (1988) Chapter 7.

⁴¹ Cleaver, above n 30.

⁴² Conway, above n 30, Chapter 5.

conceptualisation of the Green Revolution did not address these issues and thus fell short in this respect.

3.5.2 *The Gene Revolution*

The Green Revolution has been succeeded by what has been dubbed the Gene Revolution, brought about by further developments in agricultural biotechnology. The Gene Revolution refers to the use of genetically engineered (GE), genetically modified (GM), and transgenic crops which have significant impacts on agriculture globally. These crops, which have been created for higher yield, herbicide tolerance or insect-resistance, once again promise higher productivity for farmers, and the means to combat world hunger. In addition, it is also claimed that some varieties have improved nutrient traits that have been incorporated into them to combat specific health and nutritional problems.⁴⁴ The question is whether this second phase will trigger a repetition of the experiences of the Green Revolution in developing countries.⁴⁵

Genetically modified crop varieties are now in widespread use in both developed and developing countries and the global proportion of transgenic crops has increased rapidly since 1996. Among developed countries, the U.S and Canada, and among developing countries, Argentina and China, have the highest percentage of acreage planted with transgenic crops. Countries such as India, Indonesia, the Philippines, Thailand, Vietnam, Singapore and Malaysia have also conducted field trials of some crops which are likely to be commercialised in the next few years.⁴⁶

Notwithstanding the potential benefits of genetically modified crops, several concerns have been raised as to their possible negative impacts. These have been generally in regard to food safety and human health, adverse environmental impacts, particularly on ecosystems,⁴⁷ as well as the

⁴³ For example it has been pointed out that India is facing a crisis of over production concurrently with starvation – Glenn Davis Stone, ‘Both Sides Now’ (2002) 43(4) *Current Anthropology* 611. See also Conway, above n 19.

⁴⁴ See above footnote 25. Straub, above n 33, 189; Sengupta, Sengupta Bisen, above n 16; Karen A. Goldman, ‘Labeling of Genetically Modified Foods: Legal and Scientific Issues’ (2000) 12 *Georgetown International Environmental Law Review* 717, 718.

⁴⁵ Brush, above n 29.

⁴⁶ Sengupta, Sengupta and Bisen, above n 16, 185.

⁴⁷ Goldman, above n 44, 719. This issue has now been addressed by the *Cartagena Protocol on Biosafety* UNEP/CBD/ExCOP/1/3, 42 (2000), 39 ILM 1027 (2000) (entered into force 11 September 2003) and the

negative socio-economic effects on agriculture and farmers in developing countries. While the first two issues are beyond the scope of this thesis, the third raises questions of equity.⁴⁸

While biotechnology has the potential to enhance food security in developing countries, the technology and the propagation of GE crops in these countries should be viewed in the realities of their social and political context.⁴⁹ In this regard too, past experiences of the Green Revolution would be relevant. Perhaps the most enduring consequence of the Green Revolution was the entrenchment of the economic and technological dependence on the West in developing countries brought about by the change over from traditional to industrial agriculture. Industrialisation of agriculture necessarily increases the capacity of the industrial sector to control agricultural production since it is this sector that provides the inputs such as fertilizers and pesticides necessary to ensure the high yields. While the development of Green Revolution crops was funded by public institutions, the Gene Revolution and its products are, by and large, funded and controlled by corporate interests also generally based in developed countries.⁵⁰ Dependence on these entities would potentially have even greater ramifications for agriculture in developing countries.

The control exerted by developed country based corporate interests can potentially operate in several ways. As it has been pointed out, the primary motive of private sector organizations is maximizing profits for shareholders. The development of new seed varieties by biotechnology corporations to be marketed in the developing countries is thus motivated by profit rather than public interest. Therefore the crops and traits that are developed are those that will provide maximum returns on investments and may not be necessarily appropriate for developing countries

WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) 1867 U.N.T.S. 493 (entered into force 1 January 1995).

⁴⁸ Brush comments that the negative impacts of GMOs will be greater in developing rather than in developed countries because of the formers' social and environmental conditions – Brush, above n 29.

⁴⁹ Timmer, above n 37; Glenn Davis Stone, 'Both Sides Now' (2002) 43(4) *Current Anthropology* 611. The Food and Agriculture Organisation has also expressed its support of genetically modified crops in its report *Agricultural Biotechnology: Meeting the needs of the poor* (2004). For a comment on the report see Robert Paarlberg, 'From the Green Revolution to the Gene Revolution Agricultural Biotechnology: Meeting the Needs of the Poor?' (2005) 47(1) *Environment* 38.

⁵⁰ Shari L. Boyd, William A. Kerr and Nicholas Perdakis, 'Agricultural Biotechnology Innovations versus Intellectual Property Rights. Are Developing Countries at the Mercy of Multinationals?' (2003) 6(2) *Journal of World Intellectual Property* 211.

or resources poor farmers.⁵¹ Further, the marketing of these plant varieties may also enable the marketing of other products. For example, Shiva points out that one of the myths of biotechnology is that it will reduce the need for pesticides and herbicides. While the potential to do so exists, it has been noted that biotechnology research is in fact directed at increasing the use of chemicals.⁵² Most work in agricultural biotechnology has been undertaken by chemical multinational corporations whose strategy is to develop plant varieties tolerant to specific chemicals, usually which they own.⁵³ Falcon and Fowler also note that “74 percent of the transgenic crops grown commercially between 1996 and 2000 had herbicide resistance as the trait of primary interest,” and much of the research of these companies “has focused on innovations that could generate linked sales of seeds and chemicals.”⁵⁴ This therefore serves to increase sales of their supplementary products.

The private sector also needs to protect its products from unauthorized use in order to prevent losses in revenue. While it is promoting such protection by way of a legal and institutional framework (discussed further), new technologies have given biotechnology corporations the technical ability to control the extent to which seeds can be used. Non-hybrid plants reproduce themselves and historically farmers were always able to save seeds for re-use in succeeding years. As a result private seeds companies were unable to control the use and re-use of open pollinated crops such as wheat and rice. Therefore they had no incentive to develop new varieties and this was left to the public sector. In contrast, hybrid varieties have some limitations on re-use as subsequent generations deteriorate, and therefore seed companies were able to control their

⁵¹ Mary Arends-Kuenning and Flora Makundi, ‘Agricultural Biotechnology for Developing Countries: Prospects and Policies’ (2000) 44 *American Behavioral Scientist*, 318.

⁵² David S Tilford, ‘Saving the Blueprints: The International Legal Regime for Plant Resources’ (1998) 30 *Case Western Reserve Journal of International Law* 373, 398.

⁵³ Shiva, above n 36. An example of such a crop is the genetically engineered soya bean sold as Round Up developed by Monsanto which is resistant to the chemical herbicide glyphosate and which Monsanto developed to increase its herbicides sales – Vandana Shiva, *Biopiracy - The Plunder of Nature and Knowledge* (1997) 37. See also Tilford, *ibid*.

⁵⁴ W P Falcon and C Fowler, ‘Carving up the commons - emergence of a new international regime for germplasm development and transfer’ (2002) 27(3) *Food Policy* 197, 205. It has also been asserted that control of biotechnology by chemical companies is a strategy to promote biotechnology products that complement chemical products and the former can be used to enhance demand for the latter - Richard E Just and Darrell L Hueth, ‘Multimarket Exploitation: The Case of Biotechnology and Chemicals’ (1993) 75(4) *American Journal of Agricultural Economics* 936.

use to some extent.⁵⁵ The development of DNA technology has enhanced this control since “varieties can be genetically fingerprinted and identified with a very high level of certainty. This makes it technically feasible to differentiate seeds of one genetic composition from those of another,”⁵⁶ enabling seed companies to track the unauthorised usage of their seeds.⁵⁷

The interests of biotechnology companies in protecting their seed varieties and ensuring a constant market for them has seen the further development of biotechnology based mechanisms which restrict the unauthorized use of genetic material. This technology, known as Genetic Use Restriction Technologies (GURTs) prevents the use of genetic material by either causing the subsequent generation of seeds to be sterile (variety use restriction or V-GURTs) or by restricting the use of a specific trait in the seed (T-GURTs). While the principle of restricting the use of seeds is not novel (for example as noted above, hybrids have similar effects), unlike hybrids GURTs are perceived as restricting access without adding value to the seeds. Their primary purpose is rather to mitigate the loss of profits caused by farmers using saved seed for subsequent harvests. Concerns have been raised as to their impacts on biodiversity, agricultural practices, seed security and rural economies.⁵⁸ Although these technologies are not fully functional as yet, they have already generated a heated debate.⁵⁹

⁵⁵ Robert W Herdt, ‘Reflections on Keeping Asia’s Food Baskets Full’ (1998) 80(5) *American Journal of Agricultural Economics* 969. See also Anthony J Stenson and Tim S Gray, *The Politics of Genetic Resource Control* (1999), Chapter 2.

⁵⁶ Herdt, above n 55, 970.

⁵⁷ See below Chapter 11 for a further discussion of this issue.

⁵⁸ UNEP/CBD/COP/7/INF/31 – CBD CoP, Seventh meeting, 9-20 and 27 February 2004, *Thematic Programmes of Work: Progress Reports on Implementation and Consideration of Proposals for Future Action: Agricultural Biological Diversity, Potential impacts of Genetic Use Restriction Technologies (GURTs) on Agricultural Biodiversity and Agricultural Production Systems: Report Submitted by the Food and Agriculture Organization of the United Nations*, 12 January 2004, 2.

⁵⁹ For a comprehensive analysis of GURTs see UNEP/CBD/SBSTTA/4/9/Rev.1 - Subsidiary Body on Scientific, Technical and Technological Advice, Fourth meeting, 21-25 June 1999, *Consequences of the Use of the New Technology for the Control of Plant Gene Expression for the Conservation and Sustainable Use of Biological Diversity*, 17 May 1999. See also C S Srinivasan and Colin Thirtle, ‘Understanding the emergence of terminator technologies’ (2000) 12 *Journal of International Development* 1147.

3.5.3 Conclusion

Chapter 16 of Agenda 21 is devoted to the “Environmentally Sound Management of Biotechnology.”⁶⁰ It makes a distinction between modern and traditional biotechnology and it views the concept as the integration of both techniques. The document cautions that it is not the ultimate solution for all the problems of environment and development, but offers promises for better health care, enhanced food security through sustainable agricultural practices, more efficient industrial processes and the means for environmental protection. It also views biotechnology as offering new opportunities for global partnerships between the technologically rich developed countries and the biodiversity rich developing countries in order to promote sustainable development.⁶¹ The question is whether these aspirations can be realized under the present circumstances.

The implications of biotechnology for developing countries in the present context, particularly the adoption of industrial agricultural practices with their attendant trappings, must be carefully considered. The loss of the agrobiodiversity which has evolved over thousands of years and which is critical to sustainable agriculture is one of the negative environmental impacts, together with the potential risks to biosafety. Wholesale adoption of industrial agricultural practices will also lessen incentives to develop more sustainable practices that will benefit small farmers and the environment. Further, increased dependence upon necessary agricultural inputs will make developing countries vulnerable to corporate control of their food systems. These two factors will have serious consequences for their overall economic development. Finally, the benefits are debatable as in any case increased agricultural production alone does not reduce poverty or facilitate access to food.⁶²

This thesis takes the position that the current trends in agricultural biotechnology and the corporate dominance of this field are not always beneficial and may in fact be detrimental to the interests of developing countries. Nevertheless, as I will demonstrate, international agreements are being used to create an institutional and legal framework to facilitate the propertisation and

⁶⁰ *Agenda 21*, U.N. Conference on Environment and Development, U.N. Doc.A/CONF.151/26/Rev.1 (1992).

⁶¹ See also *Global Biodiversity Assessment*, above n 3, Chapter 10.

⁶² Stone cites the example of India which has a situation of farm overproduction but where a quarter of a billion people are malnourished and 1.5 million children die each year from diseases linked to malnutrition – Stone, above n 49, 614.

marketing at high cost of the products of this technology across the world, including in developing countries, regardless of potential negative impacts. In addition, there are several related issues in the biotechnological process which have given rise to concerns of equity and the sharing of the benefits of biotechnology. These include issues of bioprospecting and biopiracy discussed below.

3.6 RELATED ISSUES IN THE BIOTECHNOLOGY DEBATE

3.6.1 *Bioprospecting*

The use of biotechnology is often dependent upon a constant supply of natural resources which are analysed and manipulated to achieve the desired results. These resources are often (but not always) located in developing countries. The term “bioprospecting” refers to the search for plant and animal species from the wild to be screened for their potential application in manufacturing diverse products of use to humans.⁶³ Bioprospectors range from professionally trained botanists from multinational pharmaceutical companies through to village shamans.⁶⁴

Like biotechnology, bioprospecting is not a novel phenomenon and the screening of biological resources for their possible utility is a human activity that has been carried on since time immemorial.⁶⁵ Many of these materials, including PGRFA, were traded throughout the world for centuries. Modern bioprospecting however, originated with western scientists who accompanied the expeditions to the New World in the past five centuries,⁶⁶ and it was with the advent of the European colonial empires that the ensuing products gained extreme economic significance.⁶⁷

⁶³ Other terms include “gene hunting” which is the search for biological resources for use in medicines and agriculture - Valentina Tejera, ‘Tripping over Property Rights: Is it Possible to Reconcile the Convention on Biological Diversity with Article 27 of the TRIPS Agreement?’ (1999) 33 *New England Law Review* 967, and “natural products drug discovery” which has been described as “the search for bioactive compounds contained in natural sources such as plants, fungi, insects, microbes, and marine organisms,” – Edgar J Asebey and Jill D Kempenaar, ‘The Intellectual Property Perspective on Biodiversity: Biodiversity Prospecting: Fulfilling the Mandate of the Biodiversity Convention’ (1995) 28 *Vanderbilt Journal of Transnational Law* 703.

⁶⁴ Tejera, above n 63.

⁶⁵ Thomas Eisner, ‘Chemical Prospecting - A Global Imperative’ (1994) 138(3) *Proceedings of the American Philosophical Society* 385.

⁶⁶ Mary Garson, ‘Biodiversity and Bioprospecting’ in Natalie P Stoianoff (ed) *Accessing Biological Resources: Complying with the Convention on Biological Diversity* (2004), 17.

For centuries, during the period of colonialism, there was a flow of biological resources from the southern countries to the north and this has not changed in the present day.

The search for these raw materials is not objectionable per se, depending on the manner in which it is done and assuming that the interests of the host country and communities are duly accounted for. However, the increasing misappropriation of those resources, and the marginalising of the peoples and communities who possess and conserve them, have met with increasing opposition and have given rise to allegations of biopiracy.

3.6.2 “Biopiracy”

A comparison has been drawn between present day bioprospecting and past activities involving prospecting for other precious commodities. Biological resources have in fact often proved to be as valuable as these “non living” and non-renewable resources. Shiva argues that the metaphor suggests that as in the case of prospecting for substances such as gold, in bioprospecting the resources in question are perceived to lie unknown, unused and valueless, until they are “discovered,” and ownership after discovery then accrues to the prospector. Situations also often arise where the discovery of the benefits of natural resources is based upon the prior traditional knowledge and use of it held by local or indigenous communities, but this factor is disregarded when granting property rights over the resource to the prospector.⁶⁸ Thus the word “bioprospecting” in its present context has unpalatable connotations for many, bringing to mind colonialism and the exploitation of the biodiversity rich South by Northern countries. The search for and appropriation of, biological resources in developing countries and the use of traditional knowledge for this purpose, has been dubbed “biopiracy.”

Dutfield defines biopiracy as referring

either to the unauthorised extraction of biological resources and/or associated traditional knowledge from developing countries, or to the patenting of spurious ‘inventions’ based on such knowledge or resources without compensation.⁶⁹

⁶⁷ For an account of the rise of agricultural bioprospecting in the colonies see John Merson, ‘Bio-prospecting or Bio-piracy: Intellectual Property Rights and Biodiversity in a Colonial and Postcolonial Context’ (2000) 15(1) *Osiris* 282.

⁶⁸ Shiva, above n 53, Chapter 4.

⁶⁹ Dutfield, above n 4, 52.

According to Shiva, it refers to

the use of intellectual property systems to legitimise the exclusive ownership and control over biological resources and biological products and processes that have been used over centuries in non-industrialised cultures.⁷⁰

According to other definitions it is the “unauthorized and uncompensated expropriation of traditional knowledge and resources. Biopiracy tends to occur in LDCs [lesser developed countries] because they are rich in genetic resources, but poor in technology,”⁷¹ and the uncompensated exploitation of the plant genetic resources of developing countries “cloaked by the IPR system.”⁷²

There are therefore several common elements inherent in the issue of biopiracy. First, it takes place usually, but not invariably, in developing countries. Second, it involves the unauthorised and uncompensated extraction of biological resources for use in biotechnological processes in order to create new products or processes for commercial use. The third element is that the extraction may involve using the traditional knowledge of local communities in order to obtain leads as to the potential purposes for which these resources can be used. Fourth, exclusive private property rights are asserted over the end product or process to the exclusion of all others, including those from whom the knowledge and/or resource originated. This is done under the aegis of intellectual property (IP) systems, which have now become an integral part of both national and international law. This aspect is perhaps the decisive factor in the situation, and that, which has the greatest political, social and economic implications for developing countries.

Dutfield observes that the word biopiracy “is applied somewhat loosely to the extent it is not always clear who the victims actually are, or if indeed there are any.”⁷³ It is also not a legally defined concept in either national or international law.⁷⁴ It is merely an element in the wider

⁷⁰ Vandana Shiva, *Protect or Plunder - Understanding Intellectual Property Rights* (2001) 49.

⁷¹ Michael Woods, ‘Food for Thought: The Biopiracy of Jasmine and Basmati Rice’ (2002) 13 *Albany Law Journal of Science & Technology* 123, 134.

⁷² Lakshmi Sarma, ‘Biopiracy: Twentieth Century Imperialism in the Form of International Agreements’ (1990) 13 *Temple International and Comparative Law Journal* 107, 116.

⁷³ Dutfield, above n 4, 52.

⁷⁴ Odek observes that piracy is “a nebulous expression lacking a precise legal definition. Because international law has not defined the uncompensated extraction of plant genetic resources as piracy, the characterization of such acts as piracy serves as a normative assertion by developing countries that they

scheme of economic dominance by one part of the world over another. Its workings may affect, at different levels, the nation State, the general public, or indigenous and local communities in particular.⁷⁵ Nevertheless, as will be seen, it is now an issue that is being raised in international fora in the context of the propertisation of plant genetic resources.

As noted, the unauthorized appropriation of resources from developing countries takes place in relation to both biological resources as well as the traditional knowledge related to them. An early instance of the clandestine removal of a natural resource from the country of origin occurred in 1876 when an Englishman smuggled 70,000 rubber seeds out of Brazil and this has often been cited as the first example of modern day biopiracy.⁷⁶ More recent examples⁷⁷ include that of the hoodia cactus of the Kalahari Desert,⁷⁸ the neem tree found in South and South East Asia,⁷⁹ the quinoa from the Andean countries of South America, the ayahuasca vine from the Amazon⁸⁰ and the Enola bean from Mexico.⁸¹

have an entitlement to their plant genetic resources” - James O Odek, ‘Bio-Piracy: Creating Proprietary Rights in Plant Genetic Resources’ (1994) 2 *Journal of Intellectual Property Law* 141,145.

⁷⁵ Christopher J Hunter, ‘Sustainable Bioprospecting: Using Private Contracts and International Legal Principles and Policies to Conserve Raw Medicinal Materials’ (1997) 25 *Boston College Environmental Affairs Law Review* 129, 139. The author notes that biopiracy that victimises individuals involves the exploitation of the ethnopharmacological knowledge of indigenous communities to identify and study the effect of medicinal plants. Unauthorised resource extraction from developing countries victimises those countries.

⁷⁶ Klaus Bosselmann, ‘Plants and Politics: The International Legal Regime concerning Biotechnology and Biodiversity’ (1996) 7 *Colorado Journal of International Environmental Law and Policy* 111, 121; Kloppenburg, above n 40, Chapter 7.

⁷⁷ See generally, Graham Dutfield, *Intellectual Property Rights, Trade and Biodiversity* (2000) Chapter 5; Dutfield, above n 4, Chapter 5. For a list of the better known instances of biopiracy see Naomi Roht-Arriaza, ‘Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities’ (1996) 17 *Michigan Journal of International Law* 919.

⁷⁸ Rachel Wynberg, ‘Rhetoric, Realism and Benefit-Sharing Use of Traditional Knowledge of Hoodia Species in the Development of an Appetite Suppressant’ (2004) 7(6) *Journal of World Intellectual Property* 851.

⁷⁹ Emily Marden, ‘The Neem Tree Patent: International Conflict over the Commodification of Life’ (1999) 22 *Boston College International and Comparative Law Review* 279.

⁸⁰ Leanne M Fecteau, ‘The Ayahuasca Patent Revocation: Raising Questions about Current US Patent Policy’ (2001) 21 *Boston College Third World Law Journal* 69.

⁸¹ Gillian N Rattray, ‘The Enola Bean Patent Controversy: Biopiracy, Novelty and Fish-and-Chips’ (2002) *Duke Law & Technology Review* 8.

Examples of the misappropriation of traditionally bred varieties of PGRFA include that of tropical legume seeds developed in Australia which were based on indigenous Kenyan seeds, further developed and then commercially imported into Kenya.⁸² The Monellin and Thaumatin plants which African farmers used for centuries as sweeteners and flavour enhancers is yet another instance.⁸³ The products of these plants are now patented in the U.S. generating a \$900 million per year market for low calorie sweeteners. The African farmers were uncompensated. Other more well known and infamous examples of plant patenting involved two varieties of rice – basmati rice traditionally grown in India and Pakistan and jasmine rice in Thailand - where “new” variations of these varieties were bred with slight modifications and patented.⁸⁴ Although both these patents were challenged with some degree of success by the governments of the countries concerned, they raised concerns about the potential economic impact on the farmers of those countries and the loss of their export markets for these crops.⁸⁵

The traditional knowledge of indigenous and local communities in respect of their environment and natural resources has been discussed in Chapter 1. Such knowledge is often common knowledge and its uses are utilised for the benefit of the general community. Further, it has traditionally not been used for commercial purposes or for the enrichment of a few. It is also relatively unstructured, being usually passed down orally from generation to generation, unprotected by formal legal systems.⁸⁶ The fact that it is freely available makes it susceptible to exploitation without recompense to the communities from where it originated. This exploitation over the years has now given rise to one of the most contentious conflicts in the north south

⁸² Odek, above note 74, 145.

⁸³ Ibid 146.

⁸⁴ Woods, above n 71; Sumathi Subbiah, ‘Reaping What They Sow: The Basmati Rice Controversy and Strategies for Protecting Traditional Knowledge’ (2004) 27 *Boston College International and Comparative Law Review* 529; Muriel Lightbourne, ‘Of Rice and Men. An Attempt to Assess the Basmati Affair’ (2003) 6(6) *Journal of World Intellectual Property* 875.

⁸⁵ A more recent example is the patent obtained by the University of Hawaii on taro, a staple food crop of the Hawaiian people which was successfully challenged – Walter Rite and Bill Freese “Haloa” Seedling (2006) <http://www.grain.org/seedling_files/seed-06-10-3.pdf> at 18 April 2008.

⁸⁶ It has been noted that in view of the changes which indigenous communities are undergoing and the consequent loss of traditional knowledge, the documentation of this knowledge is important – Michael Heinrich, ‘Ethnobotany and Natural Products: The Search for New Molecules, New Treatments of Old Diseases or a Better Understanding of Indigenous Cultures?’ (2003) 3(2) *Current Topics in Medicinal Chemistry* 141.

debate. Writers have argued that Western concepts of what constitutes science and technology are based upon formal scientific knowledge systems and Western trained scientists disparage the more unstructured knowledge systems of other communities.⁸⁷ Therefore the products of the former are valued as a form of property which gives rise to legal rights. The latter on the other hand, since they were always in the public domain, are considered to be freely available for exploitation.

3.7 CONCLUSION

The uses of biotechnology are not per se beneficial or otherwise, and if used prudently and equitably, can be advantageous to both humans and the environment. Undeniably, the potential benefits of agricultural biotechnology can be used to develop agricultural systems in the global south and to ensure food security for the people of these countries. However, it has given rise to several contentious issues.

The development of agricultural biotechnology has resulted in the value of PGRFA being exponentially enhanced. Thus PGRFA have now become a source of potential profits to those who can acquire them and control their access and use. There are two dimensions to this issue.

The first is the fact that the natural resources which form the raw material of the technology were initially found largely in the countries of the global South. As discussed in Chapter 2, much of these resources are now stored in *ex situ* collections located in developed countries, while others are found *in situ*. The fact that these resources were collected without the informed consent of these countries and are now being used for further development of plant varieties without recompense to them, has given rise to allegations of biopiracy and injustice.

The second dimension is that the newly developed varieties are not freely available as the original resources or the Green Revolution varieties were. Notwithstanding the differences of opinion in regard to the Green Revolution, its plant varieties were developed by public sector institutions and made freely available to developing countries. While the new generation of Gene Revolution varieties are also being touted as the answer to enhancing agricultural productivity and combating world hunger, they are not readily accessible to these countries and farmers.

⁸⁷ Roht-Arriaza, above n 77, 929. See also generally, Shahid Alikhan and Raghunath Mashelkar, *Intellectual Property and Competitive Strategies in the 21st Century* (2004) Chapter 4.

These varieties are developed by corporate entities which are naturally motivated by profits rather than by the public interest. They therefore have a stake in controlling access to them and commercially marketing them, rather than making them freely available. Further, as discussed above, the development of new varieties will be guided by what will be most profitable and marketable rather than what will be most beneficial. Therefore the benefits of these varieties to developing countries are debatable.

Biotechnology corporations must necessarily ensure that their rights over their new plant varieties are protected internationally. They are therefore canvassing for legal and institutional frameworks to be put in place in both the national and international spheres to create property rights over new varieties of PGRFA. These regimes are currently being negotiated in the international sphere. Depending on how these international systems are devised, they can either result in further entrenching the economic and political control of southern countries by those of the developed world and the corporate interests based in them, or they can be used to achieve the economic development of the former. Past historical events such as the Green Revolution presage that the likelihood of the first scenario are very great. Current developments in international law indicate that a legal structure is being constructed to create property rights over new plant varieties to facilitate control over them by corporate entities. The conceptual basis and structure of these rights will be analysed in the next section.

Part 2

Concepts of Property Rights and their Applicability to PGRFA

CHAPTER 4

THE THEORETICAL BASIS OF PROPERTY RIGHTS

4.1 INTRODUCTION

Natural resources exist within a particular technical and institutional environment.¹ “The technical environment provides the tools and knowledge which define how a resource is used as a factor of production. The institutional environment defines who can control the resource and how the technique is applied.”² Biotechnology is a relevant example of the technical environment within which biological resources can now be used and exploited. The institutional arrangements in this context would be the conventions and rules that societies establish to define the relationships of their members to resources, thereby translating interests in resources into claims, and claims into property rights. These relationships influence resource-use patterns worldwide.³

The institutional relationship of societies and communities with their natural resources including plant genetic resources for food and agriculture (PGRFA) has varied throughout the world and over time. While there was originally free access to these resources, this is changing with the imposition of property rights over modern crop varieties. This trend is often at variance with traditional concepts of property in relation to these resources and has kindled a great deal of opposition in the international arena. In order to analyse developments in international law in this regard, it is necessary to first consider the conceptual foundations of property systems applicable at the community, national, and international spheres. This chapter will therefore examine the theoretical and legal basis of property in general.

4.2 THE MEANING OF PROPERTY

Property is a legal, social, and political institution which is central to human society. It has been observed that “[p]roperty rights lie at the intersection of law, economy, the state, and culture,” and since property in modern societies is maintained by the legal system it directly involves law

¹ Christopher J N Gibbs and Daniel W Bromley, ‘Institutional Arrangements for Management of Rural Resources: Common-Property Regimes’ in Fikret Berkes (ed.), *Common property resources: ecology and community-based sustainable development* (1989) Chapter 2.

² Ibid.

³ Ibid.

and the State.⁴ Property is also an institution which seems to have eluded precise definition, being more receptive to description than definition.⁵ The attempts to explain property relate more to what it does than to what it is, making it more difficult to understand.⁶ To most non-lawyers the word conjures up images of various objects, movable and immovable, corporeal and incorporeal, which may be owned or possessed with legal or social sanction. To lawyers, it refers to the legal regimes which lay down rules regarding the rights, privileges and duties which pertain to those objects. Therefore from the viewpoint of the law, “[p]ut simply, property *is* what the law defines it to be.”⁷

Writers have divided property into two categories, namely, “ordinary property” and “legal property” and these would be an appropriate starting point from which to analyse this tricky question of what property is.⁸ Allen says that the “ordinary, non-legal meaning of property would probably limit it to ownership interests in tangible objects.”⁹ Underkuffler observes that the layperson’s view is that property is things, “tangible things, such as land, chattels, and body parts, and intangible things, such as patents, copyrights, stocks, and bonds.”¹⁰ The layperson claims a thing as his or hers when he/she has socially sanctioned rights to use it in a particular way, together with the capacity to exclude others from doing so without consent.¹¹ Therefore these are situations where social practices have established that certain things are property.¹²

However, problems arise in the situations where such social practices regarding property have not been established, and these situations usually concern what has been described as “legal

⁴ Bruce G Carruthers and Laura Ariovich, ‘The Sociology of Property Rights’ (2004) 30(1) *Annual Review of Sociology* 23.

⁵ Abraham Bell and Gideon Parchomovsky, ‘A Theory of Property’ (2005) 90 *Cornell Law Review* 531.

⁶ Laura S Underkuffler, *The Idea of Property - Its Meaning and Power* (2003); J W Harris, *Property and Justice* (1996) Chapter 1.

⁷ Donald G Richards, *Intellectual Property Rights and Global Capitalism – The Political Economy of the TRIPS Agreement* (2004) Chapter 2.

⁸ Tom Allen, *The Right to Property in Commonwealth Constitutions* (2000) Chapter 5.

⁹ *Ibid* Chapter 5.

¹⁰ Underkuffler, above n 6, Chapter 1.

¹¹ Allen, above n 8, Chapter 5.

¹² Carruthers and Ariovich, above n 4.

property.” Allen places legal property into two categories. The first includes all forms of intangible property such as intellectual property, choses in action and social welfare benefits. The second includes interests in tangible property which do not amount to full ownership, such as leaseholds or communal interests in land. Courts may give protection to legal property in some circumstances and the decision whether to do so would depend on the issue before them. Therefore on the basis of this analysis of property, ordinary property is that which is socially sanctioned and protected by the courts. Legal property is that which is not socially sanctioned and may or may not be so protected.¹³ In other words it would be new forms of property which may be specifically created and which require a stamp of approval by courts (and other institutions of the State) in order to make them socially acceptable and legally enforceable. Intellectual property rights would be an appropriate example of such property.

The definition of property in terms of whether it is socially sanctioned, usually over a historical period of time, or legally sanctioned by formal institutions of the modern State, is a first step in attempting to understand the concept. The next step is to understand how, why, and to what extent this sanction takes place, and what its consequences and implications are. This is an area where social norms, ideologies and values will come into play. As Underkuffler points out, the rights, privileges and powers associated with property have been invoked by those on both sides of the divide on issues such as environmental law, land reform and reparation for historical injustices. Therefore concepts of property within a particular society will vary according to its political, social and economic ideology.¹⁴

4.3 WHAT CONSTITUTES PROPERTY?

Having agreed that the social and legal sanction of property is an intrinsic aspect of both traditional and modern societies and legal systems, the next question which arises is what constitutes property. The word has been defined on the one hand in terms of the objects of property or what can be owned, and on the other, as the rights which accrue to those objects.

¹³ Allen, above n 8, Chapter 5.

¹⁴ Underkuffler, above n 6, Chapter 1.

4.3.1 *Property as things or objects*

4.3.1.1 **Classification of things**

An appropriate starting point for the analysis of property as things would be the notion of property in Roman law. To the Romans, things or *res* as the objects of property were units of economic value.¹⁵ The primary classification of property in Roman law was that of things subject to private ownership¹⁶ and those that were not.¹⁷ The latter in turn were classified into *res communes* or things owned in common,¹⁸ *res publicae* or things public,¹⁹ *res universitatis* or things belonging to a corporate body or to the community,²⁰ and *res nullius* or things belonging to no one. The last included wild animals, birds and fish, and ownership vested in any person who caught them, converting them into private property.²¹ Plant genetic resources in that period would therefore potentially fall into the category of either *res communes* or *res nullius* since it would not be possible to convert them into private property.

The Romans also classified property as corporeal or incorporeal - the former being tangible things that could be touched, and the latter, intangible things such as an inheritance, usufructs or obligations - and also less importantly, as things immovable and movable.²² To a large extent, these classifications have permeated most systems of law grounded in western traditions.

¹⁵ See R W Lee, *The elements of Roman law* (4th ed. 1956) Book II. Lee also quotes Buckland as describing *res* as “any economic interest guaranteed by law, any right or rights having a money value, any interest expressible in terms of money which the law will protect.” The Roman law of things thus encompassed the law relating to property, obligations and succession.

¹⁶ *Res patrimonio*.

¹⁷ *Res extra patrimonium*.

¹⁸ These included the air, running water, the sea and the seashore.

¹⁹ These were the property of the public held by the State for the benefit of the people. They included rivers and harbours - Peter Spiller, *A Manual of Roman law* (1986) Chapter 4.

²⁰ For example, theatres, racecourses and similar buildings in cities.

²¹ See Spiller, above n 19, Chapter 4. They also included sacred things (*res sacrae*) such as churches, religious things (*res religiosae*) such as graves and graveyards, and sanctioned things (*res sanctae*) i.e. things that were protected by sanctions imposed by law such as city walls and gates - Lee, above n 15, Book II.

²² Spiller, above n 19, Chapter 4; Lee, above n 15, 110.

4.3.1.2 What things can be owned?

The question which arises in regard to property as objects relates to what can be owned and this depends for the most part on the society or community in question. It has been noted that no society permits all things to be the subject of private property and “[t]he inclusion of new objects or the exclusion of old ones is a process variably shaped by political, cultural, economic, and technological factors.”²³ The earliest objects of property were land which was the basis of production and survival, and other physical things such as livestock. Things which are susceptible of ownership and therefore also marketable have now been extended to include intangible things such as stocks, bonds, patents and pollution permits.²⁴ The question as to whether knowledge can or should be owned is still a matter of dispute and now of international debate. In recent times, the factor which has had the greatest impact on the expansion of knowledge as something which can be owned is technological developments and biotechnology in particular.²⁵ This has resulted in the commodification of things such as technological processes, biological life forms, domain names,²⁶ and the human genome,²⁷ which were upto now considered outside the realm of property.

The evolution of laws creating and enforcing rights in property developed concurrently with the recognition of things as being the objects of property. Therefore, laws relating to property developed in the first instance to protect interests in land and other physical objects. As the objects of property became more diversified to include intangible things, these rules were adapted to accommodate them.

²³ Carruthers and Ariovich, above n 4, 25.

²⁴ Sonya Dewan, ‘Emissions Trading: A Cost-Effective Approach to Reducing Nonpoint Source Pollution’ (2004) 51 *Fordham Environmental Law Journal* 233.

²⁵ It has also been noted that the advancing technology has created new challenges for international law, particularly in the area of resource management. The development of enabling technology led to the international regulation of activities in Antarctica, the oceans, marine resources and offshore oil resources - Joseph W. Dellapenna, ‘Law in a Shrinking World: The Interaction of Science and Technology with International Law’ (1999/2000) 88 *Kentucky Law Journal* 809, 839.

²⁶ Anupam Chander, ‘The New, New Property’ (2003) 81 *Texas Law Review* 715.

²⁷ Melissa L Sturges, ‘Who Should hold Property Rights to the Human Genome? An Application of the Common Heritage of Humankind’ (1997) 13 *American University International Law Review* 219.

4.3.2 *Property as rights*

The alternative explanation of property is not defined by the things or objects which comprise it, but rather emanates from the perspective of the relationships which it creates among people. Underkuffler argues that the idea of “property as things” is awkward and incomplete and that property has meaning only when human relations and conflicting claims are involved.²⁸ Society sanctions property primarily by recognising certain rights in those who hold it. In modern society property as an institution is dependent on legal rather than social sanction. Modern conceptions of property as rights are therefore not limited to objects and form the basis of relations among people in many different contexts.²⁹ Accordingly, a more complex view of property perceives it as relations, specifically legal relations, among people or entities in regard to things.³⁰ This concept has been articulated as property being a “bundle of sticks” or a “bundle of rights.”³¹

The bundle of rights concept can serve as the dominant paradigm by which to analyse Western conceptions of property.³² On the basis of this concept it has been said that property “involves rights, privileges, powers, and immunities that govern the relative power of individuals over tangible and intangible things.”³³ Put another way, the metaphor is said to express the notion that “property constitutes a legal complex of various normative relations, not simply rights.”³⁴ The concept of the “thingness” of property has therefore been marginalised and “attention falls on market and power relationships among people.”³⁵

²⁸ Underkuffler, above n 6, Chapter 1.

²⁹ Ibid Chapter 2.

³⁰ Stephen R Munzer, *A Theory of Property* (1990) Chapter 2; Underkuffler, above n 6, Chapter 2.

³¹ J E Penner, ‘The “Bundle of Rights” Picture of Property’ (1996) 43 *UCLA Law Review* 711. For a critical view of the bundle of rights theory see Adam Mossoff, ‘What is Property? Putting the Pieces Back Together’ (2003) 45 *Arizona Law Review* 371.

³² Ibid 712.

³³ Underkuffler, above n 6, Chapter 2.

³⁴ Penner, above n 31, 713.

³⁵ Craig Anthony Arnold, ‘The Reconstitution of Property: Property as a Web of Interests’ (2002) 26 *Harvard Environmental Law Review* 281.

Arnold points out that the bundle of rights concept materialised as a result of social and political forces which demanded a reconceptualisation of property to serve these needs. He notes that the transformation of the U.S. economy from agrarian to industrial to information based,

required an understanding of property that could encompass complex legal and financial relationships, disaggregate ownership into a variety of interests held by a variety of stakeholders, and accommodate rights in intangibles.³⁶

Since there had been a transition in things of value from land and other physical objects to more intangible things,³⁷ new conceptions of property were required to legally accommodate them. Arnold also argues that the rise of the regulatory State necessitated a more flexible definition of property to enable the State to define it in the light of social needs and values.³⁸ Property now has several features. To begin with it is a positivist creation, i.e. it was re-conceptualised by scholars, courts, and the regulatory state. It is also incorporeal,³⁹ disaggregable,⁴⁰ commodifiable,⁴¹ malleable and adaptable⁴² and also functional.⁴³

4.3.3 *Conclusion*

Therefore the two minimum requirements of property rights are a legally recognised object and recognised conditions of ownership. After these two requirements are satisfied, the question of relations between people in regard to that resource would come into play. In response to the possible objection that ownership of physical objects as a definition of property is inadequate

³⁶ Ibid 288.

³⁷ Arnold cites these as “business goodwill; business identity; franchises; licenses; employment; government benefits and services; inventions; technological and scientific developments; expressions of ideas; and investments in bank accounts, insurance policies, employee benefits, and the like” – Ibid.

³⁸ Ibid.

³⁹ Arnold notes that “property rights can be held in intangible forms of wealth and value, not just tangible things” – ibid 289.

⁴⁰ I.e. the various rights can be separated and transferred and held by different people – ibid. See also Penner, above n 31, 734.

⁴¹ I.e. the various rights in the bundle are marketable.

⁴² I.e. new rights in property, new objects of property can be identified and the concept can adapt to changing social, economic and political needs – Penner, above n 31, 723.

⁴³ “It serves social needs and values, unhindered by formalistic constraints or narrow conceptions” - Arnold, above n 35, 290.

under modern economic conditions, it has been pointed out that the objects of property need not be physical but need only to be sufficiently defined so as to be identifiable. Even intangible things can be the subject of property rights, but in defining them attention must be given to the relationships between people and those things.⁴⁴ Therefore the three factors which should be considered in determining property rights are “(1) the type and characteristics of the object of the property rights at issue; (2) the nature of the claimant's relationship with, or interest in, the object; and (3) the nature of others’ relationships with, or interests in, the object.”⁴⁵ Importantly, property is also a fluid concept which evolves to encompass new “things” or objects within its ambit.

4.4 WHO CAN OWN PROPERTY?

As communities regulate the objects of property or what can be owned, they also regulate who can own them. As with the former, this issue also depends on the social and political structure of the community in question. It has been observed that a variety of ownership units exists to which property rights may be assigned – these units are in the singular but may be composed of one or more persons. “The range of ownership units can be examined along a continuum, or scale, gradated by social, legal, or political level.”⁴⁶

Traditional communities recognised ownership capacity generally in natural persons and ownership of resources was usually vested in communities rather than in individuals. Many communities specifically excluded categories of its members from rights of ownership or limited their privileges in this regard. The rights of non-members or foreigners would also often be limited. The exclusions may impose absolute denial of ownership rights or limitations on those rights, depending on what could be owned by them. The categories of people excluded from

⁴⁴ Emily Sherwin, ‘Two- and Three-Dimensional Property Rights’ (1997) 29 *Arizona State Law Journal* 1075, 1088. See also David Lametti ‘The Concept of Property: Relations through Objects of Social Wealth’ (2003) 53 *University of Toronto Law Journal* 325.

⁴⁵ Arnold, above n 35.

⁴⁶ Mark Giordano, ‘The Geography of the Commons: The Role of Scale and Space’ (2003) 93(2) *Annals of the Association of American Geographers* 365, 367. The author cites these levels as individual, family/clan, corporation, village/city, nation State and world, at 368.

ownership rights could be, for example, women, minors, foreigners and slaves.⁴⁷ Consequently, laws relating to property often overlap with those relating to marriage, inheritance and contracts.

Property ownership is not limited to natural persons and fictive or legal persons also have the legal capacity to own property.⁴⁸ In the present day these legal persons are mainly corporate bodies.⁴⁹ The ownership capacity of corporations has been further enhanced with the development of intellectual property laws and it has been noted that sometimes institutional changes produce new combinations of owners and property.⁵⁰

4.5 THE IMPLICATIONS OF PROPERTY

Whichever form of property prevails in a particular society, it has social, political and economic implications which are defined and governed by that society's legal structure. As noted above, property defines relations between persons in a society or community. There is a wide range of theories as to how these relationships arise among individuals on the one hand, and between individuals and society on the other, in regard to objects of property.

4.5.1 *The notion of scarcity*

The notion of scarcity has been cited by law and economics scholars as the primary rationale for property rights regimes.⁵¹ When resources are abundant and sufficient for all, there would be no need of property. However, when two or more people require the same good for their needs, their use of the good becomes rivalrous. Since "distributive scarcity" is unavoidable, three potential outcomes are possible, namely, violence, withdrawal from the resource, or rules by which rights

⁴⁷ Carruthers and Ariovich, above n 4, 26.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Ibid 27. The authors cite as an example the Bayh-Dole Act of 1980 of the U.S. which specifically enabled American universities to now own patent rights in intellectual property produced by federally funded research. See Bayh-Dole Act, Pub. L. No. 96-517, 94 Stat. 3019 (codified as amended at 35 U.S.C. 200-212 (1980)).

⁵¹ Carol M Rose, 'The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems' (1998) 83 *Minnesota Law Review* 129.

over the resource are allocated to individuals or groups.⁵² A property rights regime is essentially the third option. It ensures the optimal efficient use of the resource and its conservation on the one hand, and also enables the maintenance of social stability on the other. However, a distinction has been made between natural and artificial scarcity. Natural scarcity occurs without any human, institutional or contractual arrangements and follows from the relationship between people and nature. Artificial scarcity on the other hand, is the deliberate outcome of such arrangements and may be caused by the legal regime which also justifies it.⁵³

It can be argued that creating private property rights over PGRFA which was by and large freely accessible to all would amount to the deliberate creation of artificial scarcity. The monopolistic control over such resources granted to some individuals or groups would cause the resources to become rivalrous where they were previously not so. Their scarcity would also increase their value, thus making them a source of wealth to those who control them.

4.5.2 Property as an object of social wealth

The notion of scarcity as a justification of property has been extended into the idea that property is an object of social wealth. Harris defines social wealth as comprising “all those things and services for which there is a greater potential total demand than there is a supply.”⁵⁴ He goes on to say:

Property has a dual function, since it governs both the use of things and the allocation of items of social wealth. It is in this duality of function that its controversiality principally resides. It is one thing to say that a society ought to afford an individual the use of some resource. It is another to say that the individual should be armed with power over others by virtue of a capacity to dictate the use of the resource. ‘Property’ encompasses both.⁵⁵

It can be argued that the sanction of intellectual property rights over PGRFA also amounts to an allocation of social wealth since those who own such resources have the power to dictate their use

⁵² Boudewijn Bouckaert, ‘What is property?’ (1990) 13(3) *Harvard Journal of Law & Public Policy* 775; Giordano, above n 46; Terry L Anderson and Peter J Hill, ‘The Evolution of Property Rights’ in Terry L Anderson and Fred S McChesney (eds), *Property rights: cooperation, conflict, and law* (2003) Chapter 5.

⁵³ Bouckaert, above n 52.

⁵⁴ Harris, above n 6, 3. See also Lametti, above n 44.

⁵⁵ Harris, above n 6, 4.

by others.⁵⁶ This sanction is rooted in the justification of private property in western jurisprudence which contends that private property rights have social benefits since they add value to the objects of property. It has been asserted that value as synonymous with utility or welfare is the central concept uniting the law of property. Therefore a property system benefits both individuals and society at large, as protecting the property of individuals will contribute towards the overall strengthening of property value.⁵⁷ Consequently, property rights over modern varieties of PGRFA would be justified on the basis that protecting the entrepreneurial enterprise which creates them (and thus also acquires wealth) ultimately benefits humanity as a whole by enabling the development of new plant varieties required for human nutrition and food security. Whether this justification has validity remains to be seen.

4.6 CONCLUSION

The foregoing discussion demonstrates that there is no absolute conception of property. The ways in which it is defined would depend on the ideologies and the economic and socio-political context of the society or community in question. It would also depend on the attributes of the objects of property, including their value and degree of scarcity. These attributes may change over time, sometimes due to a particular technical environment. This in turn may result in changes to the institutional environment within which these objects exist.

In the present context, the object of property is PGRFA. It can be argued that the technical environment within which PGRFA exists, namely biotechnology, has caused changes to its attributes, in particular increasing its potential value. As noted in Chapter 3, biotechnology (i.e. Genetic Use Restriction Technologies) may also make it possible to physically control the distribution of PGRFA, thus also increasing its scarcity and again, in turn, its value. PGRFA is now a potential source of extreme wealth and institutional changes are taking place in the national and international sphere to make it a form of legal property. The specific concepts and structures by which this may be done are examined in the next chapter.

⁵⁶ The economic value of PGRFA has increased to immeasurable levels and it is now a source of extreme wealth - Chetan Gulati, 'The "Tragedy of the Commons" in Plant Genetic Resources: The Need for a New International Regime Centered around an International Biotechnology Patent Office' (2001) 4 *Yale Human Rights & Development Law Journal* 63.

⁵⁷ Bell and Parchomovsky compare a property system to a communications network "whose value increases with each additional subscriber while the corresponding value each subscriber derives from the network also increases" – Bell and Parchomovsky, above n 5, 559.

CHAPTER 5

PROPERTY REGIMES OVER BIOLOGICAL RESOURCES

5.1 INTRODUCTION

The previous chapter examined the theoretical basis of the concept of property. It noted that the institutional relationships of societies and communities with regard to objects of property including natural resources varied, and these could also vary at different periods of time. This chapter will consider specific institutional arrangements or property regimes which are applicable to biological resources. The three regimes which will be discussed in this chapter are of particular relevance since they each form the basis of the various international agreements which impact on plant genetic resources for food and agriculture (PGRFA). The current international debate over rights to PGRFA by and large revolve around the question as to whether these resources should be governed as an open access regime as set out in the International Treaty on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organisation of 2001 (FAO Treaty), be subject to State sovereignty as set out in the Convention on Biological Diversity of 1992 (CBD), or be subject to private property rights as set out in the international property rights regime under the International Union for the Protection of New Varieties of Plants (1978 and 1991) (UPOV), the Agreement on Trade Related Aspects of Intellectual Property Rights (1994) (TRIPS Agreement) and the various agreements of the World Intellectual Property Organization (WIPO).

5.2 COMMON PROPERTY RESOURCES

John Locke acknowledged that natural resources “belong to mankind in common, as they are produced by the spontaneous hand of nature.”¹ It can be assumed that most resources were originally used in common, but as communities evolved, regulatory mechanisms for governing common-pool or common property resources (CPR)² necessarily became more formalized.

¹ John Locke, *Two Treatises of Government and a Letter Concerning Toleration* (first published 1690, Ian Shapiro ed., 2003), “The Second Treatise: An Essay Concerning the True Original, Extent, and End of Civil Government, Chapter V, ‘Of Property’”.

² The terminology in relation to such resources, includes “common pool resources”, common-property institutions”, “the commons” and “commoners” – Nives Dolšák and Elinor Ostrom, ‘The Challenges of the Commons’ in Nives Dolšák and Elinor Ostrom (eds.), *The commons in the new millennium: challenges and adaptations* (2003) 3, 7.

Appropriate management of CPRs has been cited as including two elements, on the one hand, restrictions on access, and on the other, incentives or regulations for users to invest in the conservation and improvement of the resources as opposed to merely over-exploiting them.³

It has been asserted that CPRs will continue as a core type of resource which has major theoretical and policy significance as long as humans depend on ecosystem services ranging from individual biodiversity components through to the oceans and the atmosphere.⁴ Thus they exist at the community, national, regional, and international level, and CPRs as institutions continue to evolve in various forms.⁵

It has been suggested that there are four broad systems for the management of CPRs.⁶ These are open access systems,⁷ group property systems,⁸ individual property systems,⁹ and government property systems.¹⁰ Of these, open access systems are in fact unregulated, while the latter three are regulatory systems. These four systems will be taken as the basis on which to develop the present analysis of property regimes over natural resources.

³ Elinor Ostrom, Joanna Burger, Christopher B Field, Richard B Norgaard and David Policansky, 'Revisiting the Commons - Local Lessons, Global Challenges' (1999) 284 (No 5412) *Science New Series* 278, 279.

⁴ Dolsak and Ostrom, above n 2. In addition to natural resources, CPRs include such human constructed resources as irrigation systems, the Internet and space for air traffic – *ibid* 279.

⁵ Dolsak and Ostrom, above n 2. The authors point out that in addition to the already existing forms of CPRs new forms are continuously being created. For example, although the modern corporation is often thought of as the embodiment of private property, a public corporation is in fact more representative of common property. A relatively recent example of a common property institution is the urban condominium which is a combination of private and common property. Bromley observes that a private club is a common property regime, being joint management regimes which control assets and allocate use rights among co-owners or members - Daniel W Bromley, *Environment and economy: property rights and public policy* (1991) Chapter 1, note 1 at page 13.

⁶ Above n 3. See also James A Swaney, 'Are Democracy and Common Property Possible on Our Small Earth?' (2003) 37(2) *Journal of Economic Issues* 261, 278 and Bromley, above n 5.

⁷ I.e. systems with no property rights.

⁸ I.e. resource rights held by a group of users who can exclude others.

⁹ I.e. resource rights held by individuals or firms who can exclude others.

¹⁰ I.e. resource rights held by a government that can regulate or subsidise use.

5.3 OPEN ACCESS OR UNREGULATED SYSTEMS

It has been suggested that open access constitutes the initial status of biological resources. In such a system there are no constraints to using and exploiting the resource so long as the supply is greater than the demand. Consequently, there is also no gain in conserving or improving it.¹¹ Even when the supply becomes scarce, the users yet have little incentive to conserve it as they will not get the benefit of doing so as long as others do not practice conservation. Therefore the likely consequences are that exploitation will increase and intensify until the resource is exhausted. Thus unrestricted open access will typically result in resource depletion.¹² On the demand side, open access invites excessive withdrawal of the resource as a result of competing interests to extract as much as possible, as quickly as possible, before others do.¹³ The elements of the environment affected by such open access include freshwater and marine resources, land and the atmosphere.

Therefore if the resource is to be conserved, access must be regulated. Such regimes have now emerged at both national and international levels. At national level an appropriate regime would depend on many factors, including social, cultural, economic and political. At international level such factors would include international trade and market forces.

5.3.1 *The public domain and public goods*

A concept that is related to unregulated or open access systems is that of the public domain. The public domain contains what are known as public goods which include “the non-tradable social goods sector that exists in every society” and which has socially binding importance, existing in all spheres of a community.¹⁴ Although several characteristics have been attributed to public

¹¹ Louis De Alessi, ‘Gains from Private Property: The Empirical Evidence’ in Terry L Anderson and Fred S McChesney (eds), *Property rights: cooperation, conflict, and law* (2003), Chapter 4; Magnus Wijkman, ‘Managing the Global Commons’ (1982) 36(3) *International Organization* 511.

¹² Examples of the exhaustion of open access resources have been cited as the extinction of animal species by Paleoindian hunters in the Pleistocene period and by early Polynesian settlers in Hawaii and New Zealand – De Alessi, above n 11, Chapter 4. The near extinction of the American bison has been cited as another example – Terry L Anderson and Fred S McChesney (eds), *Property rights: cooperation, conflict, and law* (2003) Part II, Introduction 59, 61

¹³ Anderson and McChesney, above n 12, Part II, Introduction 59, 69.

¹⁴ Daniel Drache ‘The return of the public domain after the triumph of markets - Revisiting the most basic of fundamentals’ in Daniel Drache (ed), *The Market or the Public Domain? Global Governance and the Asymmetry of Power* (2001) Chapter 1.

goods,¹⁵ the term is understood as meaning a good “that can be shared non-rivalrously by many, and from whose use non-payers are not easily physically excluded.”¹⁶

It can be argued that PGRFA is a resource that can in fact be maintained within an open access system or within the public domain without the threat of resource depletion. It is a resource which being renewable is intrinsically non-rivalrous, i.e. its free use by some will not inhibit its use by others. In fact its unrestricted availability will result rather in resource multiplication than in depletion since it is subject to a continuous process of evolution and development, which in turn contributes to maintaining food security and genetic diversity. On the other hand, a property regime which makes it rivalrous would potentially result in the decrease of crop diversity and increased scarcity.

Intellectual property rights and the commodification of PGRFA have contributed to the debate on the public domain. The controversy takes two forms, firstly, in situations where those asserting ownership rights over certain goods wish to keep them out of the public domain, and secondly, in situations where goods are extracted from the public domain and ownership rights established over them. The first situation would arise where ownership is established over modern plant varieties which are important for agriculture and genetic diversity. The second and related situation would arise where landraces and traditional knowledge which were in the public domain are used to develop these new varieties which are then propertised. Both situations would result in PGRFA being removed from an open access system into one of private property.

5.4 GROUP OR COMMON PROPERTY SYSTEMS

Common property which has been equated to the *res communes* of Roman law refers to a system whereby a group of people share rights of ownership and use of a resource.¹⁷ There are several

¹⁵ W Ver Eecke, ‘Public goods: An ideal concept’ (1999) 28(2) *Journal of Socio-Economics* 139.

¹⁶ Wendy J Gordon, ‘Authors, Publishers, and Public Goods: Trading Gold for Dross’ (2002) 36 *Loyola of Los Angeles Law Review* 159, 164. Stone analyses the difference between public goods and private goods with regard to a metaphor of a tropical forest. The berries produced by a tropical forest are potentially private goods since their consumption is rival. On the other hand the atmosphere enhancing attributes of a forest are a public good since they are non-rivalrous - Christopher D Stone, ‘What to do about Biodiversity: Property Rights, Public Goods, and the Earth's Biological Riches’ (1995) 68 *Southern California Law Review* 577. Drache also notes that the constitutive elements of the public domain include “social goods that benefit everyone and cannot be considered like private property belonging to the individual,” Drache above n 14, 44.

specific characteristics of this system.¹⁸ Common property is a variation of private property since it is the property of a group of co-owners. It can potentially come into existence at various points of the socio-political scale, for example, the household, the village or the nation State,¹⁹ and also internationally. There can be extensive variation between and among the groups in relation to their nature, size and internal structure, but they are social units with definite membership and boundaries, with certain common interests, with at least some interaction among members, with some common cultural norms, and often their own authority systems.²⁰

A second characteristic of common property is that individuals within the group have rights and duties in regard to the resource. The rights of use and of exclusion of non-members have been particularly emphasised. However, the members of the group may not transfer the use or ownership of the land to any other person.²¹ Effective common property regimes also have regulatory mechanisms by which the extraction and use of the resource are controlled.²²

Although common property regimes are vulnerable to breaking down due to various factors (as discussed below), it is important to note the distinction between these regimes and open access

¹⁷ See James A Swaney, 'Common property, reciprocity, and community' (1990) 24(2) *Journal of Economic Issues* 451, 452.

¹⁸ Common property regimes have been organised on the basis of rules of access, withdrawal, management, exclusion and alienation - Craig Johnson, 'Uncommon Ground: The "Poverty of History" in Common Property Discourse' (2004) 35(3) *Development & Change* 407.

¹⁹ Mark Giordano, 'The Geography of the Commons: The Role of Scale and Space' (2003) 93(2) *Annals of the Association of American Geographers* 365.

²⁰ Bromley, above n 5, 26. He goes on to cite tribal groups, or subgroups, or subvillages, neighbourhoods, small transhumant groups, kin systems, or extended families as possible examples. See also Thomas Dietz, Nives Dolsak, Elinor Ostrom and Paul C Stern, 'The Drama of the Commons' in Elinor Ostrom et al (eds) *The drama of the commons / Committee on the Human Dimensions of Global Change* (2002) Chapter 1 at 12 where the authors note that research has stressed that most users of a common-pool resource in developing countries live in the same village where their families have lived for generations. This chapter also provides an account of the development of the literature on the commons.

²¹ Bromley, above n 5, Chapter 2.

²² Swaney, above n 17, 452; Bromley, above n 5, Chapter 1; Jules Pretty, 'Social Capital and the Collective Management of Resources' (2003) 302 (5652) *Science* 1912; Elinor Ostrom, 'Constituting Social Capital and Collective Action' in Robert O Keohane and Elinor Ostrom (eds), *Local commons and global interdependence: heterogeneity and cooperation in two domains*, (1995) Chapter 6; Regina Birner and Heidi Wittmer, 'Using Social Capital to Create Political Capital: How Do Local Communities Gain Political Influence? A Theoretical Approach and Empirical Evidence from Thailand' in Nives Dolsak and Elinor Ostrom (eds), *The commons in the new millennium: Challenges and Adaptations* (2003) Chapter 10.

systems. The confusion in this regard is largely due to a misleading metaphor in the seminal article by Garrett Hardin.²³ In this article Hardin described the workings of common property by using the metaphor of a pasture open to all. He argued that it is to be expected that each herdsman will seek to keep as many cattle on the land as possible in order to maximize his personal gain. The negative impacts of overgrazing on the other hand are not borne by him alone but are shared among all. This situation continues until the commons breaks down.

Hardin's theory has been refuted by writers who point out that "common property resources are often taken to be those for which markets are absent or poorly developed," but in fact in the past these resources have been effectively managed by communities.²⁴ However, these regimes can be susceptible to external pressures and competing philosophical and political views on alternative uses of property.²⁵ The problems described by Hardin would rather tend to arise due to increased intensity of use or when these traditional management systems have been weakened by modernisation.²⁶ If the modern State is indifferent or opposed to the system, it will not protect or uphold it. The willingness of the State to uphold these systems depends on its political ideologies and perceptions of the group involved, which may be farmers, indigenous communities or others. Technological change may also pose great challenges to common property, as it may lead to greater pressure to exploit common resources or commercialise their benefits.²⁷ These changes may cause the common property system to disintegrate or to become dysfunctional. When this takes place, common property can effectively revert to open access or no property, thus also permitting other property regimes to be established. It can also be pushed towards privatisation.²⁸

²³ Garrett Hardin, 'The Tragedy of the Commons' (1968) 162 (No 3859) *Science, New Series* 1243.

²⁴ Gillespie notes that western definitions of common property generally equate it to open access rather than communal property - Alexander Gillespie, *The Illusion of Progress – Unsustainable Development in International Law and Policy* (2001), 57.

²⁵ Bromley, above n 5, Chapter 6.

²⁶ Ibid; Ronald E Lee, 'The Second Tragedy of the Commons' (1990) 16 *Population and Development Review* 315, 316; Swaney, above n 17.

²⁷ S V Ciriacy-Wantrup and Richard C Bishop, 'Common Property' as a Concept in Natural Resources Policy' (1975) 15(4) *Natural Resources Journal* 713 and Thrainn Eggertsson, 'Open Access versus Common Property in Terry L Anderson and Fred S McChesney (eds), *Property rights: cooperation, conflict, and law* (2003) Chapter 3.

²⁸ Eggertsson, above n 27, Chapter 3.

Some scholars have argued that it is in the developing countries of the tropics that one sees property regimes which most closely resemble the commons. They argue that the real tragedy of the commons is the process by which indigenous property systems were undermined and delegitimised, first by colonialism and then by the new nation-States. They are pessimistic about the will or the ability of national governments in developing countries to effectively manage their natural resources for the greater good, and cite the failure of post colonial nations to establish “the implicit and explicit legal foundations of an economy and society that will guide individual actions toward social betterment.”²⁹ This in turn leads to a situation of fluidity and uncertainty, where social sanctions and conventions regarding land and natural resource use break down, leading to the destruction of the common property and threatening the communities that depend on it.

The importance of applying (or rather maintaining) a common property regime in regard to PGRFA is indisputable in view of global interdependence on these resources. It has already been argued that PGRFA is sustainable even in an open access regime. It can be asserted that PGRFA was, in fact, an open access regime and not subject to even the ownership found in common property systems. Communities and traditional farmers did not restrict the free flow of these resources and, before the advent of modern biotechnology, it would have been practically impossible to do so.

The question whether PGRFA is found within an open access or common property regime is however, of less importance than the fact that it is now being removed from both.³⁰ While the FAO Treaty is based upon free access to these resources, its workings are being challenged by restrictions being imposed at both national and international levels. This is being done by State property as well as private property systems.

²⁹ Bromley, above n 5, Chapter 6.

³⁰ W P Falcon and C Fowler, ‘Carving up the commons -emergence of a new international regime for germplasm development and transfer’ (2002) 27(3) *Food Policy* 197.

5.5 STATE PROPERTY SYSTEMS

State property has been likened to the *res publicae* of Roman law and constitutes another form of public property, that which is owned and controlled by the State.³¹ In Roman times it included public structures, particularly the city walls and fortifications, which were essential to maintaining the security and integrity of the community. Under the circumstances they could neither be treated as open commons nor given over to private ownership, but had to be placed under the control of the central authority for the benefit of all. The same rationale would apply to resources under the control of modern States, including natural resources.

State property has been defined as a property regime in which

in principle, material resources are answerable to the needs and purposes of society as a whole, whatever they are and however they are determined, rather than to the needs and purposes of particular individuals considered on their own. No individual has such an intimate association with any object that he can make decisions about its use without reference to the interests of the collective.³²

Therefore, as under Roman law, in the case of State property in the present context, the ownership and control over the resources in question rests with the State, whatever its form and structure.³³ The rights exercised by the State importantly include the right of controlled inclusion and exclusion of its own citizens in the overall public interest. In regard to natural resources, protected areas are perhaps the archetypal example of this.

State control over property may be exercised in two ways. Firstly, as discussed above property may be vested in the State. A feature of the colonial era of many countries was the conversion of common property regimes including communally held lands and village forests into State property.³⁴ Consequently, in some countries, a large proportion of land is, even now, State

³¹ Richard A Epstein, 'On the Optimal Mix of Private and Common Property' in Ellen Frankel Paul, Fred D Miller and Jeffrey Paul (eds), *Property rights* (1994) 17.

³² Jeremy Waldron, *The Right to Private Property* (1988) 40.

³³ These resources of course would not be limited to natural resources and include other economic resources owned by the State, including harbours, airports, railways, highways and public corporate entities. Depending on the distribution of authority in the particular State, ownership can also vest in different levels of the State, i.e. central, regional, municipal, etc.

³⁴ Gregory Barton, 'Keepers of the Jungle: Environmental Management in British India, 1855-1900' (2000) 62(3) *Historian* 557. This was a repetition of the enclosure movement which took place in

owned.³⁵ The second aspect of State control of property is the power vested in the State to regulate the types of ownership which may prevail within its jurisdiction, including the ownership rights of those holding individual and common property.

There are diverse implications of State property systems. To begin with, if the people of a country are equated with their government, it can be argued that theoretically, State property is in fact a common property regime in a larger dimension, with the State apparatus holding the reins of management and regulation.³⁶ Perhaps the archetypal State property system as a form of common property is that expounded by Karl Marx. He argued against property relations “that are the conditions for the existence of the bourgeoisie and of its rule” and called for the abolition of private property which represents the exploitative system of production and appropriation of products. In direct opposition to Locke³⁷ he rejected the notion of the right of personally acquiring property as the fruit of a person’s own labour, arguing that wage labour does not create any property for the labourer, but creates capital which is a means of exploiting wage labour. Since bourgeois private property is the final and most complete expression of doing so, he called for its abolition. He also advocated that all instruments of production should be centralized in the hands of the State which he defined as “the proletariat organised as the ruling class.”³⁸

Problems would arise where the people do not identify with the State regime and its policies, and may in fact be potentially at odds with it in regard to the resources in question, including PGRFA. Nonetheless, in a political institution where the State is at least theoretically accountable to the people and reflects the view of the majority, certain rules of management may be applicable,

Europe in the 15th – 19th centuries - James Boyle, ‘The Second Enclosure Movement and the Construction of the Public Domain’ (2003) 66 *Law and Contemporary Problems* 33.

³⁵ For example more than 60 years after independence over 80 per cent of land in Sri Lanka is still under some form of State control – Ministry of Forestry and Environment, Sri Lanka, *Biodiversity Conservation in Sri Lanka, A Framework for Action* (1998) 10. The situation has not changed since this report was written.

³⁶ Carol Rose takes the view that this would be merely a variant on private property where an organised body takes exclusive control over property – Carol M Rose, ‘The Comedy of the Commons: Custom, Commerce, and Inherently Public Property’ (1986) 53 *University of Chicago Law Review* 711, 730. See also Heller, above n 32, 420.

³⁷ See below Section 5.6.

³⁸ Karl Marx and Friedrich Engels, *The Communist Manifesto* (A.J.P. Taylor trans. first published 1848, 1967 ed).

particularly where it acquires property or divests itself of it. There is however, no guarantee that those who have acquired political power will act according to the wishes of their constituents.³⁹ The position becomes further complicated when the interests of various segments of the people are at variance with each other and specific groups are excluded or exploited. Such situations may arise, for example, in the case of indigenous and farming communities in relation to PGRFA.

Nevertheless, the State, as an owner and regulator of property, is a factor which now has to be contended with in the present debate on access to natural resources including PGRFA and the equitable sharing of their benefits. This position has been reinforced by the CBD which has stated that:

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.⁴⁰

Therefore it is the State property regime which has been given explicit recognition in the international sphere and in the debate on PGRFA. Writers have argued that State sovereignty over PGRFA amounts to closing off the commons of the global spread of these resources.⁴¹ In doing so, States may also threaten the common property regimes within their jurisdiction, thus impacting adversely on farmers and other communities.⁴²

5.6 INDIVIDUAL OR PRIVATE PROPERTY SYSTEMS

The discourse on private property must necessarily begin with a question regarding original ownership, namely why a particular object or thing including something intangible should belong to a particular individual, and how that individual acquired that object or thing in the first place. This question is usually answered with reference to Locke's labour theory of property.

³⁹ Boudewijn Bouckaert 'What is property?' (1990) 13(3) *Harvard Journal of Law & Public Policy* 775.

⁴⁰ CBD, Article 3.

⁴¹ Falcon and Fowler, above n 30.

⁴² For a discussion of the legal status of genetic resources in national law in some countries see UNEP/CBD/WG-ABS/5/5 - Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, Fifth meeting, 8 - 12 October 2007, *Report on the Legal Status of Genetic Resources in National Law, Including Property Law, Where Applicable, in a Selection of Countries*, 30 August 2007.

Locke started from the position that all the resources of the earth are produced spontaneously by nature and that nobody has an original private and exclusive dominion over them in their natural state.⁴³ He maintained that there must necessarily be some means to appropriate them before they can be of use to any individual. The means of doing so are by using the labour of one's own body to remove it out of the state of nature, thereby making it one's own property. This position is justified on the basis that every man owns his own person, and therefore "the labour of his body, and the *work* of his hands ... are properly his."⁴⁴ Therefore if he removes something out of the state of nature by means of the labour of his own body, that thing becomes a part of his body and exclusively his own. The consent of "all mankind" is not a pre-requisite for this acquisition, the labour that was expended in doing so being sufficient. Locke also held that a person can assert property claims over resources only "where there is enough, and as good, left in common for others," and that the fair share of an individual is limited to whatever he/she can make use of and enjoy before it spoils, anything beyond this belonging to others.

Locke's hypothesis of private property is that it is a natural phenomenon which exists prior to, and distinct from, the State and civil society. The latter in fact have the primary roles of protecting these pre-existing rights. Contrary to this hypothesis however, it has also been argued that private property regimes do not emerge out of a vacuum but are in fact deliberate decisions made on a specific socio-political basis and enforced by the State.⁴⁵ In other words they are legal property.

The question of whether the resources of the earth to which Locke was referring indicate communal property or open access regimes is ambiguous. Locke's initial theory of acquisition of resources seems to be analogous to the Roman law concept of *res nullius*, by which some things were unowned, but could become the private property of any person who acquired actual control

⁴³ Locke, above n 1, Book II Second Treatise, Chapter V, paragraph 26.

⁴⁴ Ibid paragraph 27.

⁴⁵ See for example, Bradley Bryan, 'Property as Ontology: On Aboriginal and English Understandings of Ownership' (2000) 13 *Canadian Journal of Law & Jurisprudence* 3, 6. Intellectual property rights are an appropriate example of this.

over them, by whatever means. Similarly, in open access or no property regimes, any person who acquired a component of the resource could establish a property claim over it.⁴⁶

It can also be argued that private property rights over natural resources are fundamentally a political and social construct which can simply be justified on pragmatic and utilitarian grounds, rather than grounds of natural rights or of efficient utilisation of resources. This construct has been extended from the regimes which permitted the propertisation of physical resources, from land to genetic resources, and subsequently to the more intangible resources of information.

5.6.1 *Intellectual property*

The development and expansion of private property laws has most recently been visible in the area of intellectual property. Intellectual property is a form of private property which gives individuals or specific groups exclusive rights over intangible and incorporeal objects such as knowledge, ideas, and processes. Hughes states:

A universal definition of intellectual property might begin by identifying it as nonphysical property which stems from, is identified as, and whose value is based upon some idea or ideas. Furthermore, there must be some additional element of novelty. Indeed, the object, or res, of intellectual property may be so new that it is unknown to anyone else. The novelty, however, does not have to be absolute. What is important is that at the time of propertization the idea is thought to be *generally* unknown.⁴⁷

It has also been described as representing “the commodification of creativity or innovation,”⁴⁸ and the commodification of information and knowledge, which is often the principal source of wealth generation.⁴⁹

Intellectual property has historically developed into two branches. It originally dealt with copyrights, which protected the creative expression of ideas termed literary and artistic

⁴⁶ Some scholars take the view that that Locke was in fact referring to common property rather than open access systems - Kristin Shrader-Frechette, ‘Locke and Limits on Land Ownership’ (1993) 54(2) *Journal of the History of Ideas* 201; Rebecca P Judge, ‘Restoring the Commons: Toward a New Interpretation of Locke's Theory of Property’ (2002) 78(3) *Land Economics* 331. However, his reference to America seems to categorise it as *terra nullius* rather than as the communal property of the peoples who inhabited it.

⁴⁷ Justin Hughes, ‘The Philosophy of Intellectual Property’ (1988) 77 *Georgetown Law Journal* 287, 294.

⁴⁸ Renée Marlin-Bennett, *Knowledge power: Intellectual Property, Information, and Privacy* (2004) 5.

⁴⁹ Shahid Alikhan and Raghunath Mashelkar, *Intellectual Property and Competitive Strategies in the 21st Century* (2004), Chapter 1.

property.⁵⁰ The other branch deals with industrial property comprising technological inventions, used in commerce and industry, and registered as patents.⁵¹ Intellectual property laws grant temporary property rights over such creative works to the “inventor” on the rationale that those who put time and effort into new creations should be rewarded for their efforts. It is assumed that the expectations of such rewards will provide incentives for individuals to engage in creative activities for the ultimate benefit of society as a whole.

Intellectual property has been defined as “nonphysical property which stems from, is identified as, and whose value is based upon some idea or ideas.”⁵² Within this value there must be some element of novelty, which though not absolute, requires that the object of the idea must have been generally unknown at the time of the claim. Thus the object or *res* of intellectual property is “a product of cognitive processes and can exist privately, known only to its creator.”⁵³ This is what differentiates the objects of intellectual property from other forms of intangible property such as stocks and bonds. The second aspect of intellectual property is that it is not the idea per se which is granted protection, but rather the use and value to be derived from it. Therefore although the idea is intangible, what is in fact protected is the tangible manifestation of it.⁵⁴ This could range from machinery or medicinal drugs to computer programmes or biotechnological processes. Intellectual property thus draws an analogy between intangible assets and corporeal property in order to provide the former with the protection given to the latter. Intellectual property is therefore essentially a private property regime which grants certain economic rights to the property holder and like other forms of private property it also encompasses the notion of exclusion.⁵⁵

⁵⁰ Copyright provides protection of literary, musical, artistic, photographic and audiovisual works, computer programmes, software, multimedia creations, and others – Ibid Chapter 1. See also Bouckaert, above n 39.

⁵¹ Forms of industrial property include patents and utility models, industrial designs, trademarks, collective and certification marks, trade names and trade secrets, geographical indications, layout designs of integrated circuits, database protection, protection of plant varieties and plant breeders’ rights and copyright – Alikhan and Mashelkar, above n 49, Chapter 1.

⁵² Hughes, above n 47.

⁵³ Ibid 294.

⁵⁴ Ibid. Intellectual property systems provide exclusive protection for the subject matter of the property for a specific period of time, usually 15 -20 years.

⁵⁵ For a discussion of some economic and non-economic rights see Adam D Moore, ‘Intellectual Property: Theory, Privilege, and Pragmatism,’ (2003) 16 *Canadian Journal of Law & Jurisprudence* 191, 201. A

Historically, intellectual property is relatively recent in origin and in its present form is generally concentrated in the western legal tradition. It is now also the property regime which has the most widespread global impacts, and in a contemporary context is probably the most contentious. It has rightly been said that the 21st century is often called the century of knowledge, and leadership will be in the hands of those who create and harness it. Knowledge can also potentially be converted into wealth, and a country's ability to do so will determine its future in the comity of nations.⁵⁶

The Lockean/labour theory of property fits well with intellectual property rights as it can be argued that a novel and original product emerged out of the labour of the creator.⁵⁷ However, directly opposing views have been taken by writers. For example, Richards points out that the Lockean theory of property as applied to intellectual property does not hold water as it is based on the assumption that ideas and inventions are the products of isolated individuals.⁵⁸ He argues that ideas are the result of social creations rather than individual ones and must work on an accumulation of existing ideas which are the result of social processes.⁵⁹ Thus claims of novelty are over rated. This argument would also apply to modern varieties of plants which have been developed out of traditional varieties bred by farmers over centuries and over which intellectual property rights are now being claimed.

significant change, which has emerged in the last few decades, is that much of the protection is being claimed by corporations rather than individuals.

⁵⁶ Alikhan and Mashelkar, above n 49. The authors note that trade and industry are becoming more knowledge driven as can be seen in international trade. This has changed from an emphasis on commodities to high technology goods which have doubled their share of world merchandise exports.

⁵⁷ See for example Hughes, above n 47.

⁵⁸ Donald G Richards, *Intellectual Property Rights and Global Capitalism – The Political Economy of the TRIPS Agreement* (2004) 41. This notion has been termed the idea of the “romantic author” or individual creative genius. It has also been argued that scholars show that “the romantic ideal ignores the actual process of creation, where individuals often work within corporate settings, an audience collaborates with authors to infuse work with meanings, and authors draw upon earlier creations. Despite its flawed premise, the trope of the romantic author helps justify broad intellectual property rights.” – see Anupam Chander and Madhavi Sunder, ‘The Romance of the Public Domain’ (2004) 92 *California Law Review* 1331, 1339.

⁵⁹ Given the fact that in the present day those who produce new technology are employed by large corporations, intellectual property does not necessarily benefit those who laboured over it, but the corporate interests for whom they work.

This perception is also consistent with that held by many non-western cultures. It has been pointed out that intellectual property rights are “fundamentally Western rules, emerging from medieval Europe and, later from Industrial Age Europe and North America,” and may be inconsistent with traditional non-Western social and philosophical systems.⁶⁰

The justification of intellectual property must also be viewed in the light of the notion of “distributive scarcity” discussed earlier. Bouckaert argues that the rights assigned to holders of intellectual property must necessarily differ from those holding corporeal property. The latter pertain to resolving problems of natural distributive scarcity and give the holders exclusive rights over a specific good as a solution. The former on the other hand, does not address problems of natural scarcity and in fact serves to artificially create it. Bouckaert points out that if the holder of the idea does not disclose it he/she remains the sole owner and no question of property arises. If he/she does disclose it, it gives rise to an obligation on the part of third persons to refrain from using it except under the specified conditions. As he notes,

[t]hese obligations do not have any relationship with a physical control over something, as is the case with real rights on corporeal goods. They are merely intended to create an artificial scarcity to the advantage of the author and of the persons to whom he alienates his monopoly.⁶¹

The argument of artificial scarcity extends into the idea of the “anticommons” put forward by Heller and Eisenberg.⁶² Heller defines the anticommons as a situation where several owners each possess the right to exclude others from a scarce resource, in direct contrast to Hardin’s commons where there were no owners and no rights of exclusion at all. Too much ownership in a resource therefore results in no one having an effective privilege of use. The resource is subject to under utilisation, which he calls the “tragedy of the anticommons” and he notes that it can appear whenever governments create new property rights.⁶³ Heller and Eisenberg analyse recent developments in biomedical research on the basis of this theory, and point to the fact that excessive propertisation in the form of intellectual property rights of this field has resulted in

⁶⁰ Marlin-Bennett, above n 48, Chapter 2.

⁶¹ Bouckaert, above n 39. See also Richards, above n 58, Chapter 2. See also Christopher May, *The World Intellectual Property Organization: resurgence and the development agenda* (2007), Chapter 1.

⁶² See Michael A Heller, ‘The Tragedy of the Anticommons: Property in the Transition from Marx to Markets’ (1998) 111 *Harvard Law Review* 621.

⁶³ *Ibid.*

under use and a tragedy of the commons in research which was once available in the public domain.⁶⁴

Properitisation of PGRFA is now taking place by way of intellectual property rights under the aegis of the TRIPS Agreement and UPOV. The question which arises is whether these resources too will be subject to a tragedy of the anticommons. When exclusion from plant varieties takes place, the further development of these resources and the enhancement of their diversity would be restricted. Restrictions on access to crop varieties critical for food security would also have negative impacts on farmers and developing countries. These concerns underly the international debate on PGRFA which will be discussed further in this thesis.

5.7 INTERNATIONAL PROPERTY REGIMES OVER BIOLOGICAL RESOURCES

Certain principles of international law have evolved in relation to natural resources over the last few decades. These principles and their applicability have been re-assessed in the light of decolonisation and the assertion of sovereign rights by countries which were previously under colonial rule. They relate both to resources within the boundaries of nations as well as those beyond their jurisdiction. The principles applicable in international law are analogous to those discussed at national level. In this section I will examine the concepts of the global commons and the common heritage of humankind, which are essentially international common property regimes, and the principle of State sovereignty as a form of private property rights in the international sphere.

5.7.1 International Common Property Systems

5.7.1.1 The Global Commons

International common property resources are the territories over which no one nation has exclusive jurisdiction. They traditionally include the atmosphere, the oceans beyond territorial

⁶⁴Michael A Heller and Rebecca S Eisenberg, 'Can patents deter innovation? The anticommons in biomedical research' (1998) 280(5364) *Science* 698; Jonathan Michael Berger, 'Tripping over Patents: AIDS, Access to Treatment and the Manufacturing of Scarcity' (2002) 17 *Connecticut Journal of International Law* 157.

seas and the marine resources contained in them, Antarctica and outer space.⁶⁵ Until a few decades ago these territories and their resources were unregulated and free for use and exploitation.⁶⁶ As in the case of other common property resources, this exploitation had two primary aspects, namely, the extraction of resources from the environment and the addition of wastes and pollutants into it.⁶⁷ Now termed the global commons, these resources were, until regulation took place, the archetypal open access regimes which best represented the analogy of the tragedy of the commons. On the one hand resources such as marine fish stocks were open to excessive exploitation⁶⁸ and on the other the atmosphere⁶⁹ and oceans⁷⁰ were free dumping grounds for discommodities such as wastes and pollution.

Genetic resources and traditional knowledge were also originally considered as falling within the global commons. Many of the countries and communities which possessed these resources had not staked formal proprietary claims to them, and in the absence of such claims of ownership they were assumed to be free for the taking. In the period in which many of these countries were under colonial domination such claims would, in any event, have been irrelevant. However, in the post-colonial period countries which were now sovereign entities began asserting their own claims over the resources within their jurisdiction and mounting a challenge to the assumption

⁶⁵ Christopher C Joyner, 'Global Commons: The Oceans, Antarctica, the Atmosphere, and Outer Space' in P J Simmons and Chantal de Jonge Oudraat (eds.) *Managing global issues: lessons learned* (2001) Chapter 9. The term "common space areas" and "global common spaces" has also been used by Joyner – Christopher C Joyner, 'Legal Implications of the Concept of the Common Heritage of Mankind' (1986) 35(1) *International and Comparative Law Quarterly* 190.

⁶⁶ Historically, spaces outside the political boundaries of sovereign States in Europe were also considered *terra nullius* and available for expropriation - M Chemillier-Gendreau, 'The Idea of the Common Heritage of Humankind and its Political Uses' (2002) 9(3) *Constellations: An International Journal of Critical & Democratic Theory* 375.

⁶⁷ William M Ross, 'The Management of International Common Property Resources' (1971) 61(3) *Geographical Reviews* 325.

⁶⁸ Now regulated by the *Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of 10 December 1982, Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*, UN Document A/CONF.164/37, September 8, 1995; 34 I.L.M. 1542 (entered into force 11 December 2001).

⁶⁹ Now regulated by the *Vienna Convention for the Protection of the Ozone Layer* (1987) 26 ILM 1516 (entered into force 22 September 1988) and the *Framework Convention on Climate Change* (1992) 31 ILM 849 (entered into force 21 March 1994) and their Protocols.

⁷⁰ Now regulated by the *United Nations Convention on the Law of the Sea* 1833 U.N.T.S. 3, 397, 21 ILM 1261 (entered into force 10 December 1982) (hereinafter UNCLOS).

that these were common property available to all. In relation to biological resources these claims were concretized in the CBD with the acknowledgement that States have sovereign rights over the biological diversity within their jurisdiction.⁷¹

Thus, international common property systems in regard to natural resources including PGRFA, would be generally premised on two opposing principles, namely the common heritage of humankind and State sovereignty over natural resources.

5.7.1.2. The common heritage of humankind

The primary concept upon which the regulation of international common property resources is based is that of the common heritage of humankind (CHH). A CHH regime repudiates the notion of State sovereignty over these resources in favour of allocating them equitably to all of humanity.⁷² It would not assign ownership rights over them, but would rather allot rights of access and management⁷³ and also rights of common regulation to all States.⁷⁴

Although international common property resources have generally been designated the common heritage of humankind,⁷⁵ it has also been argued that this concept has less to do with the conservation of these resources, than in ensuring access by States to their beneficial uses.⁷⁶ Baslar cites two important factors that have determined the motivation to formulate such a

⁷¹ CBD, Article 3.

⁷² J M Spectar, 'Elephants, Donkeys, or Other Creatures? Presidential Election Cycles & International Law of the Global Commons' (2000) 15 *American University International Law Review* 975.

⁷³ Joyner, 'Legal Implications' above n 65.

⁷⁴ It has been argued that because the principle is susceptible to varying interpretations this prevents it from becoming a principle of customary international law. Further, it is only binding on the countries that have signed the treaties in which it is incorporated. Therefore it is based on an unstable premise - Jennifer Frakes, 'The Common Heritage of Mankind Principle and the Deep Seabed, Outer Space, and Antarctica: Will Developed and Developing Nations reach a Compromise?' (2003) 21 *Wisconsin International Law Journal* 409. For a historical analysis of the principle see Chemillier-Gendreau, above n 66.

⁷⁵ See for example the UNCLOS, above n 70, Preamble and Part I Article 1 read with Article 136. See also *Agreement Governing the Activities of States on the Moon and Other Celestial Bodies*, Resolution 34/68, annex—adopted on 5 December 1979, opened for signature on 18 December 1979, (entered into force 11 July 1984) (hereinafter Moon Treaty).

⁷⁶ Erin A Clancy, 'The Tragedy of the Global Commons' (1998) 5 *Indiana Journal of Global Legal Studies* 601; J M Spectar, 'Saving the Ice Princess: NGOs, Antarctica & International Law in the New Millennium' (1999) 23 *Suffolk Transnational Law Review* 57.

regime.⁷⁷ These are the technology parameter and the scarcity parameter. As some nations became technologically powerful, their ability to exploit and appropriate resources (for example marine resources) in common spaces increased, to the exclusion of other countries. The example relevant to this thesis would be the development of biotechnology, which enables such nations to exploit genetic resources. Further, increasing global populations and increased exploitation consequent to technological development resulted in increasing scarcity of once abundant resources. This inevitably resulted in new demands for an international regime to govern them.

Therefore the evolution of the concept was essentially grounded in political negotiations regarding the global commons, based on the differing positions of various blocs of countries. These were mainly divided between those in the northern and southern hemispheres, the latter including, in earlier decades, the Communist States. The positions of these blocs on the concept of the CHH were based in large part on their perceptions as to how it could be interpreted to best protect their strategic interests.⁷⁸ To the countries of the global south the CHH principle was intrinsically tied up with the establishment of a new international economic order and “served as a means of allocating global wealth through non-market mechanisms.”⁷⁹ As it has been pointed out, the South was trying to achieve through law what it had failed to achieve in the market place, and these countries interpreted the principle to mean common ownership of common property with an equal voice in its use and exploitation.⁸⁰

The North by contrast viewed the CHH principle as constituting a free and open access regime which facilitated commercial exploitation of the resources to which it applied, within a free enterprise system.⁸¹ The development of CHH regimes was therefore perceived in large part by technology rich countries as a context within which they could exploit these resources within a structured system, while avoiding conflicts.⁸² The United Nations Convention on the Law of the

⁷⁷ Kemal Baslar, *The Concept of the Common Heritage of Mankind in International Law* (1998) Chapter 2.

⁷⁸ The north south divisions at these negotiations reflected to a large extent the negotiations of the CBD including the demands of southern countries for technology transfers in return for acceptance of northern positions – Spectar, above n 72.

⁷⁹ Spectar, above n 76, 62.

⁸⁰ Ibid 61.

⁸¹ Ibid; Frakes, above n 74.

⁸² Joyner, above n 65, Chapter 9; Spectar, above n 72.

Sea (UNCLOS), the Antarctic Treaty and the Moon Treaty have been cited as examples of this position.⁸³ These Conventions have taken differing positions on an importance aspect of the CHH concept, namely the prohibition on asserting sovereign rights over global common property.⁸⁴

As new resources originate or the value of existing resources increases, the issue of whether they should come within the purview of the CHH principle has given rise to considerable international polemics. While the original global commons were geographical spaces outside the territorial jurisdiction of States, the new contents consist of resources, natural or created, which exist within national boundaries and which are in the control of entities within them. The disputes are usually triggered by the development of new technologies which create new resources or which enhance the potential to exploit existing ones. As in the earlier debates, these debates also reflect the north/south disconnection in relation to such issues as equity, philosophy, and social and legal contexts. The debates on the human genome⁸⁵ and digitized information⁸⁶ have arisen relatively recently, while that over plant genetic resources has intensified in the last two decades.

⁸³ The Preamble to the UNCLOS does refer to promoting “the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.” The Preamble to the Moon Treaty states that the States Parties desire “to prevent the moon from becoming an area of international conflict.” Similarly the Preamble to the Antarctic Treaty 402 UNTS 71 (entered into force June 23, 1961) states that the Parties recognise “that it is in the interest of all mankind that Antarctica shall continue for ever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord.”

⁸⁴ Article 11 (2) of the Moon Treaty states that “[t]he moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means.” On the other hand Article 4 of the Antarctic Treaty specifically states that its provisions shall not be interpreted as “a renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica.”

⁸⁵ See for example J M Spectar, ‘Fruit of the Human Genome Tree: Cautionary Tales about Technology, Investment, and the Heritage of Humankind’ (2001) 23 *Loyola of Los Angeles International & Comparative Law Review* 1; Richard B Smith, Halla Thorsteinsdottir, Abdallah S Daar, E Richard Gold and Peter A Singer, ‘Genomics Knowledge and Equity: a Global Public Goods Perspective of the Patent System’ (2004) 82(5) *Bulletin of the World Health Organization* 385

⁸⁶ Pamela Samuelson, ‘The Public Domain: Mapping the Digital Public Domain: Threats and Opportunities’ (2003) 66 *Law and Contemporary Problems* 147.

Common heritage was originally applied to PGRFA as being in the public domain.⁸⁷ The debate on PGRFA as part of the global commons or the common heritage of humankind has been played out in the FAO. While the FAO International Undertaking on Plant Genetic Resources (IUPGR, discussed below) initially designated these resources as the common heritage of humankind, opposition to this arose both from plant breeders on the one hand and developing country governments on behalf of their traditional farmers on the other. Consequently the IUPGR was re-negotiated, resulting in the FAO Treaty which has now provided for the inclusion of specific and designated plant varieties within the public domain. This will be further explored in the following chapters.

5.7.2 *State sovereignty over natural resources*

It has been commented that the term “sovereignty” in international law has a long and troubled history and a variety of meanings. “In its most common modern usage, sovereignty is the term for the ‘totality of international rights and duties recognized by international law’ as residing in an independent territorial unit - the State.”⁸⁸ A comprehensive analysis of State sovereignty is beyond the scope of this thesis which will be confined to an examination of the principle in relation to natural resources.

The development of State sovereignty in the field of environment and natural resources also has a long and complex history. The principle was premised on the rather obvious fact that the natural wealth and resources of a country belonged to its people. The period of de-colonisation involved restructuring the legal arrangements by which natural resources had been inequitably exploited by colonial powers and foreign investors. The concept was initially linked to the human rights of the people of the former colonies. It was expressed in one of the early UN General Assembly resolutions on the subject which recognised that “the right of peoples to use and exploit their natural wealth and resources is inherent in their sovereignty.”⁸⁹ The notion was subsequently

⁸⁷ Stephen B Brush, ‘The Demise of “Common Heritage” and Protection for Traditional Agricultural Knowledge’ in Charles McManis (ed) *Biodiversity and the law: intellectual property, biotechnology and traditional knowledge*, (2007) Chapter 20.

⁸⁸ James Crawford, *The Creation of States in International Law* (2006), 32.

⁸⁹ Resolution 626 (VII) of 21 December 1952. See also Subrata Roy Chowdhury, ‘Permanent sovereignty over natural resources’ in Kamal Hossain and Subrata Roy Chowdhury, *Permanent sovereignty over natural resources in international law: principle and practice* (1984) Chapter 1.

incorporated in both the human rights Covenants with identical wording in Article 1.⁹⁰ The principle was also linked to the right of self determination on the basis that the right to the natural resources within one's country constituted an important component of that right.⁹¹

The economic dimensions of the principle are reflected in the multitude of documents which incorporated it, beginning with the General Assembly Resolution of 1962 on Permanent Sovereignty over Natural Resources.⁹² Subsequently, it became part of resolutions adopted by the United Nations Conference on Trade and Development (UNCTAD) in 1973,⁹³ the Declaration on the Establishment of a New International Economic Order,⁹⁴ the Programme of Action on the Establishment of a New International Economic Order⁹⁵ and in Article 2 of the Charter of Economic Rights and Duties of States adopted by the General Assembly in 1974.⁹⁶

Several factors are noteworthy in the early formulation of the concept. In the first place it referred to the extraction of non-renewable resources, most importantly petroleum and other minerals.⁹⁷ The inequitable terms under which such extraction was being carried out at the time were inherently disadvantageous to the newly independent countries. The many UN Resolutions on the topic provided several criteria by which to test the compatibility of the contractual

⁹⁰ See Articles 1 of both the *International Covenant on Economic, Social and Cultural Rights* GA res. 2200A (XXI), 21 UN GAOR Supp. (No. 16) at 52, UN Doc. A/6316 (1966); 999 UNTS 171; 6 ILM 368 (1967) (entered into force 3 January 1976) and the *International Covenant on Economic, Social and Cultural Rights* GA res. 2200A (XXI), 21 UN GAOR Supp. (No. 16) at 52, UN Doc. A/6316 (1966); 999 UNTS 171; 6 ILM 368 (1967) (entered into force 3 January 1976) which read "All peoples may, for their own ends, freely dispose of their natural wealth and resources without prejudice to any obligations arising out of international economic co-operation, based upon the principle of mutual benefit, and international law. In no case may a people be deprived of its own means of subsistence."

⁹¹ Chowdhury above n 89. This chapter also contains a list of the original Documents which contain references to this principle.

⁹² *Permanent Sovereignty over Natural Resources*, G.A. Resolution 1803 (XVII), 17 U.N. GAOR Supp. (No.17) at 15, U.N. Doc. A/5217 (1962).

⁹³ 88 (XII) of 19 October 1973 of the Trade and Development Board of UNCTAD.

⁹⁴ 3021 (S-VI) of 1 May 1974.

⁹⁵ 3202 (S-VI) of 1 May 1974.

⁹⁶ Resolution 3281 (XXIX) of 12 December 1974.

⁹⁷ After the 1974 Declaration on the New International Economic Order and the Charter of Economic Rights and Duties the principles covers all foreign economic activities - Kamal Hossain, 'Introduction' in Kamal Hossain and Subrata Roy Chowdhury, above n 89.

agreements with the principle, including that they must (1) be in the interests of national development and well-being of the State concerned; (2) be in accordance with the national legislation in force; and (3) be freely entered into.⁹⁸ In succeeding years several contracts were re-negotiated and new types of agreements formulated to ensure that the developing countries maximised the benefits derived from their natural resources.

Upto this stage in the history of the principle, the resources in question were non-renewable and therefore necessarily rivalrous in use. However, the need to access natural resources has now been extended to renewable resources such as genetic resources. These are by nature both renewable and non-rivalrous. Unlike mineral resources, large quantities do not have to be extracted in order to obtain the economic benefits to be derived from them, since their importance is contained in the information within them. Consequently, since very small amounts of original sources are often required for further development, it was more difficult for countries in possession of these resources to practically prevent them from being removed from their territories. As noted earlier, before recent biotechnological developments, PGRFA by their very nature were freely accessible, and traditional varieties are still open for the taking.

It has been noted that these factors “blinded both germplasm collectors and bio-diversity rich countries to the possibility that these resources might also be considered subject to national sovereignty.”⁹⁹ In fact as noted above, the IUPGR of 1983 held that genetic resources were the common heritage of humankind. It was with the advent of the “seed wars” of the 1980s that this position was challenged.¹⁰⁰ The principle of sovereignty was subsequently applied to plant genetic resources and this subject was brought within the realm of international law and politics.¹⁰¹ The concept as it now relates to these resources is embodied in both the CBD¹⁰² and the FAO Treaty.¹⁰³

⁹⁸ Ibid.

⁹⁹ Anthony J Stenson and Tim S Gray, *The Politics of Genetic Resource Control* (1999) 120.

¹⁰⁰ Keith Aoki, ‘Weeds, Seeds & Deeds: Recent Skirmishes in the Seed Wars’ (2003) 11 *Cardozo Journal of International and Comparative Law* 247.

¹⁰¹ Stenson and Gray, above n 99, Chapter 5.

¹⁰² See the Preamble which states that “States have sovereign rights over their own biological resources” and more importantly Article 15.

5.8 CONCLUSION

Natural resources “produced by the spontaneous hand of nature” can therefore be acknowledged as common property resources and four broad management regimes have been identified in relation to them. Of these, three are based on the premise that these resources constitute common property in varying forms and degrees. They range from open access or unregulated systems to those regulated at the community, State, and international spheres. In direct opposition to these are the individual or private property systems.

The question which arises is which of these systems is most conducive to the sustainable use of natural resources and PGRFA in particular, and to the equitable sharing of the benefits to be derived from them. It has been argued above that until recently PGRFA by its very non-rivalrous nature could not in fact be propertised and access to it could not be controlled. Therefore it necessarily fell within an open access regime. This did not result in resource depletion and in fact facilitated its enhancement and increased its diversity. PGRFA is therefore a natural resource which is perhaps most conducive to widespread use and sharing.

Modern technology has now provided the means by which the use and development of germplasm can be physically controlled and therefore converted into private property by those who possess it. This is being done in the context of both private property rights, specifically intellectual property, and State sovereignty. There are several ramifications of this development. First, the control of germplasm by a few raises issues of equity, particularly in regard to those who conserved and developed it for centuries. It also raises issues of food security and agricultural development for the world at large, but particularly for developing countries. Second, such control may have impacts on genetic diversity. Where unimpeded access to PGRFA is restricted, continuing development of new plant varieties will necessarily be hindered. The marketing and use of modern varieties to the exclusion of traditional landraces will also reduce crop diversity in the field. This may result in a “tragedy of the anticommons” in which over propertisation of a resource results in its depletion.

¹⁰³ International Treaty on Plant Genetic Resources for Food and Agriculture, adopted at the 31st Session of the FAO Conference on 3 November 2001 available at <http://www.fao.org/ag/cgrfa/itpgr.htm> and the website of the Treaty at <http://www.planttreaty.org/> last accessed 30 April 2008 (hereinafter FAO Treaty), - Preamble and Article 10.

The current debate over PGRFA revolves around which property regime should be applied to these resources. The application of private property rights to PGRFA, particularly by way of the TRIPS Agreement, is of especial concern to developing countries, which would be particularly affected by both impacts noted above. The response of these countries to this process has been to impose their own claims by asserting State sovereignty over the germplasm within their jurisdiction. This position has been validated by the CBD. However, the end result of both these systems is to remove PGRFA from the public domain and to restrict access to vital resources. The FAO Treaty offers a possible compromise by creating an open access system in regard to specific plant varieties selected for their significance to agriculture and food security. The international agreements which reflect these three property regimes will be discussed in the next part.

Part 3

The International Legal Regime applicable to Plant Genetic Resources for Food and Agriculture

CHAPTER 6

THE INTERNATIONAL ENVIRONMENTAL REGIME ON PLANT GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE

6.1 INTRODUCTION

This thesis will analyse two international legal regimes which deal with issues of access to plant genetic resources for food and agriculture (PGRFA) and traditional knowledge, i.e. the environmental/conservation regime and the trade and intellectual property rights regime. The primary objective of the former is universal access to genetic resources and the equitable sharing of the benefits arising out of them. Both treaties in this regime have devised systems to achieve this objective and to some extent they serve as a foil to the intellectual property regime whose aim is the imposition of private property rights over these resources. Consequently, they are perceived by developing countries as the preferred fora in which to further their goal of achieving equity in the use and benefits of PGRFA.

In this chapter I will consider the environmental/conservation regime consisting of the Convention on Biological Diversity of 1992 (CBD) and the FAO Treaty on Plant Genetic Resources for Food and Agriculture of 2001 (FAO Treaty) and the institutions relating to them. The purpose of this section is to provide an introductory overview of the two treaties, their evolution, conceptual framework, scope and structure. This will help to put in context the processes which have taken place within them in relation to PGRFA, and the way in which their respective fora have addressed the issue. This chapter will also consider their provisions on the conservation and use of PGRFA both *in situ* and *ex situ*.

6.2 THE CONVENTION ON BIOLOGICAL DIVERSITY

6.2.1 *The conceptual framework and structure of the Convention on Biological Diversity*

The CBD is unusual among international environmental treaties and there are many different objectives in the conceptual framework underlying it. It is first, a compromise between the widely divergent positions of developing and developed countries in regard to biodiversity. The text of the convention essentially reflects the economic and political divisions between the North and the South. Northern interests were primarily in the conservation of biological resources and

access to their uses and benefits. The South alternatively saw these resources, particularly those within their jurisdiction, as a tool by which to forge a more equitable international political and economic order in which economic capacity and technology would be more equitably distributed.¹ Second, it is a framework convention with little enforceability. It merely sets out guidelines for the conservation of biodiversity rather than imposing clearly defined and binding obligations on States Parties. The Articles setting out the duties and obligations of States are preceded by the words “as far as possible and as appropriate,”² or “in accordance with its particular conditions and capabilities.”³ As a result of this terminology there is a lack of consistent and clearly defined standards by which to measure the extent to which its goals have been achieved, or to facilitate enforcement of its provisions.

The North/South divisions on the CBD were primarily manifested by the U.S. refusal to sign the treaty. Notwithstanding the fact that the U.S. had supported the original suggestion for an umbrella biodiversity convention, the main opposition to it also came from this direction. It is to date the only country which has not ratified it. It has been noted that throughout the initial negotiations, while the U.S. endorsed the idea of such a convention, it remained opposed to proposals to include issues of biotechnology in it.⁴ Developing countries on the other hand refused to support a convention which did not include this subject.⁵ While there was considerable difference of opinion within the U.S. as to whether the CBD should be signed or not, the main areas of opposition related to the transfer of technology, intellectual property rights and the financing of conservation efforts.⁶

¹ Kal Raustiala and David G Victor, ‘The Future of the Convention on Biological Diversity’ (1996) 38(4) *Environment* 16.

² *Convention on Biological Diversity* (1992) 31 ILM 818 - Articles 5 to 11 (hereinafter CBD).

³ CBD, Article 6.

⁴ See the Declaration of the United States of America reproduced in the *Handbook on the Convention on Biological Diversity* (3rd ed, 2005), 394 (hereinafter *CBD Handbook*).

⁵ Fiona McConnell, *The Biodiversity Convention: A Negotiating History* (1996), 11.

⁶ For a detailed account of the debate within the U.S. in regard to the CBD, see Robert F Blomquist, ‘Ratification Resisted: Understanding America's Response to the Convention on Biological Diversity, 1989-2002’ (2002) 32 *Golden Gate University Law Review* 493. See also Valentina Tejera, ‘Tripping over Property Rights: Is it Possible to Reconcile the Convention on Biological Diversity with Article 27 of the TRIPS Agreement?’ (1999) 33 *New England Law Review* 967, 982; Raustiala and Victor, above n 1; Daniel T Jenks, ‘The Convention on Biological Diversity - An Efficient Framework for the Preservation of Life on Earth?’ (1995) 15 *Northwestern School of Law Journal of International Law & Business* 636, 637.

While previous “environmental” conventions were typically sectoral in nature,⁷ the CBD for the first time took a holistic overview of biodiversity and its management. This is reflected in the definition of biological diversity contained in Article 2.⁸ The CBD is also concerned with natural resources which are exclusively within the jurisdiction of States Parties and the sovereignty of States over them was explicitly recognized for the first time.⁹ Further, although the CBD is ostensibly a conservation based agreement, its provisions also potentially impact upon commercial arrangements between States.

The CBD is in fact rooted in an array of conflicting interests and its Preamble reflects this. To begin with, it acknowledges that biodiversity has both intrinsic and instrumental value. However, it is the instrumental value which is of greater concern and which pervades the document.¹⁰ This value relates most importantly to maintaining the life sustaining systems of the biosphere and for meeting the food, health and other essential needs of the global population. The various interests involved are also reflected in the range and construction of acknowledged actors in relation to biodiversity which are referred to in the Convention. A unique feature is its recognition that the actors in this process are not only nation States and there are explicit references to non-State

⁷ Upto that time global conservation agreements had focused on for example, the conservation of particular species (*International Convention for the Regulation of Whaling*, 62 Stat. 1716; 161 UNTS 72 (entered into force 10 November 1948); *Bonn Convention on the Conservation of Migratory Species of Wild Animals*, 23 June 1979, 19 I.L.M. 15 (1980) (entered into force 1 November 1983); or on particular types of ecosystems or identified sites (*Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)* 996 UNTS 245; TIAS 11084; 11 ILM 963 (1972) (entered into force 21 December 1975); *Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)* 1037 UNTS 151; 27 UST 37; 11 ILM 1358 (1972) (entered into force 17 December 1975); or on a particular form of protective action (*Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)* 27 UST 1087; TIAS 8249; 993 UNTS 243 (entered into force 1 July 1975). At the regional level there are some treaties which take a more holistic view of biodiversity protection, for example the *African Convention on the Conservation of Nature and Natural Resources* (1968) (entered into force 16 June 1969, revised 2003), *Convention for the Conservation of Biological Diversity and the Protection of Priority Wild Areas in Central America*, 5 June 1992 and the *ASEAN Agreement on the Conservation of Nature and Natural Resources*, opened for signature 9 July 1985, (not yet entered into force). For a general discussion of these conventions see Cyrille de Klemm, *Biological diversity conservation and the law: legal mechanisms for conserving species and ecosystems* (1993).

⁸ Article 2 states that “Biological diversity” means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”

⁹ Article 3 states that “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.”

¹⁰ CBD, Preamble. See also the discussion in Chapter 2 above.

actors. These include local and indigenous communities, women, and the non governmental sector.¹¹

6.2.2 *The scope and content of the CBD*

The stated objectives of the CBD 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.¹² While the first two objectives are generally desirable and uncontroversial, the uncertainty and contention surrounding the Convention revolves around the third. It could also be argued that it is the third objective that really pervades the Convention and which was the driving force behind its negotiation. Therefore it is not so much an agreement on biodiversity conservation as one which seeks to regulate access to the resources necessary for development and their attendant political and economic implications.¹³ Perhaps the most important of these resources are agricultural biodiversity including PGRFA.

Another notable feature of the CBD is that it recognizes the importance of human cultural diversity, more specifically the “knowledge, innovations and practices” of indigenous peoples, at least, insofar as they relate to the conservation of biological diversity. This aspect will be discussed in depth in Chapter 10.

The institutions of the CBD have been instrumental in giving practical effect to its provisions in regard to both PGRFA and traditional knowledge. While the CBD is concerned with biodiversity as a whole, the Conference of the Parties (CoP) has addressed agricultural biodiversity as one of its thematic areas.¹⁴ In its work on this area the CoP has taken up such issues as an international initiative for the conservation and sustainable use of pollinators, soil biodiversity, animal genetic resources, the impacts of trade liberalization on agricultural biodiversity, the impacts of GURTs

¹¹ CBD, Preamble, Paragraphs 12 and 13. The Preamble also notes the necessity for co-operation between States, inter-governmental and non-governmental organisations in the conservation and sustainable use of biodiversity – Preamble, Paragraph 14.

¹² CBD, Article 1.

¹³ For an analysis of the CBD see Catherine Tinker, ‘A ‘New Breed’ of Treaty: The United Nations Convention on Biological Diversity’ (1995) 13 *Pace Environmental Law Review* 191.

¹⁴ The other areas include marine and coastal biodiversity, forest biodiversity, biodiversity of inland waters and dry and sub-humid lands, mountain biodiversity and island biodiversity - *CBD Handbook*, above n 4, page xxx. The CoP Decisions on agricultural biodiversity are III/11, IV/6, V/5, VI/5, VII/3 and VIII/23.

on smallholder farmers, indigenous and local communities and farmers' rights.¹⁵ Most recently the CoP noted that the CBD is the key international instrument for the integration of biodiversity-related issues into the Millennium Development Agenda. It also noted the linkage between biodiversity, food and nutrition and the need to enhance the sustainable use of biodiversity to combat hunger and malnutrition and thereby contribute to achieving the targets of the MDGs. It has therefore decided to bring forward options for a cross cutting initiative on biodiversity for food and nutrition within its programme of work on agricultural biodiversity.¹⁶ Agricultural biodiversity will be further addressed at the Ninth CoP in May 2008.

The CoP has also taken steps to address issues of equity in the uses of PGRFA and traditional knowledge, dealing with the issue in several fora. Most importantly, it established two *ad hoc* working groups in this regard. The Working Group on Article 8(j) and Related Provisions was established by Decision IV/9 entitled "Implementation of Article 8(j) and related provisions" and the Working Group on Access and Benefit-sharing was established by Decision V/26 entitled "Access to genetic resources." The latter group would supplement the work of the Panel of Experts on Access and Benefit Sharing which had been established earlier by Decision IV/8. As will be further explore these fora have made important contributions to the debate on PGRFA.

6.3 THE GLOBAL SYSTEM FOR THE CONSERVATION AND SUSTAINABLE UTILIZATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE OF THE FOOD AND AGRICULTURE ORGANISATION (FAO GLOBAL SYSTEM)

While the early work of the FAO on the conservation of PGRFA has already been discussed,¹⁷ the turning point in its work came in 1983 when the FAO Global System on Plant Genetic Resources was established. The Global System is based on several principles including that nations have sovereign rights over the plant genetic resources in their territories, that genetic resources should be available without restriction on agreed terms for plant breeding and other

¹⁵ *CBD Handbook*, above n 4, Decision VI/5 'Agricultural biological diversity,' 703.

¹⁶ Decision VII/32 "The programme of work of the Convention and the Millennium Development Goals" and Decision VIII/23 "Cross cutting initiative on biodiversity for food and nutrition." See also UNEP/CBD/COP/8/26/Add.2 – CBD CoP, Eighth meeting, 20-31 March 2006, *Programme of Work on Agricultural Biodiversity, Options for a Cross-Cutting Initiative on Biodiversity for Food and Nutrition*, 20 January 2006

¹⁷ Above Chapter 2.

scientific purposes of human benefit, and that all nations are potential donors and users of plant genetic resources.¹⁸

The Global System comprises the following components¹⁹ - (a) International Agreements,²⁰ (b) Codes of Conduct and International Standards,²¹ (c) Global Mechanisms,²² and Global Instruments.²³ Some of these components constitute the supporting components of Part V of the FAO Treaty now in force.²⁴

6.3.1 International agreements on plant genetic resources

6.3.1.1 The International Undertaking on Plant Genetic Resources for Food and Agriculture of 1983 (IUPGR)

The IUPGR is no longer in force but will be discussed at this point in order to provide a historical perspective on the work of FAO in regard to the uses of PGRFA. As the precursor to the FAO

¹⁸ CGRFA-8/99/5 - Report of the Fifth Regular Session of the Commission on Genetic Resources for Food and Agriculture 19-23 April 1993, *Progress Report on the Global System for the Conservation and Utilization of Plant Genetic Resources*.

¹⁹ See Commission on Plant Genetic Resources for Food and Agriculture, "Plant Genetic Resources" available at <<http://www.fao.org/ag/cgrfa/PGR.htm#diagram>> at 28th March 2008.

²⁰ The FAO has identified the International Undertaking under this component. However, the FAO Treaty which now supersedes it will also be discussed.

²¹ These comprise the Code of Conduct for Germplasm Collecting and Transfer, Gene Bank Standards and Guidelines and the Code of Conduct on Biotechnology - CGRFA-10/04/13, CGRFA, Tenth Regular Session, 8-12 November 2004, *Progress on the Draft Code of Conduct on Biotechnology as it Relates to Genetic Resources for Food and Agriculture: Policy Issues, Gaps and Duplications*.

²² These comprise Crop and Thematic Networks, the International Network of *Ex situ* Collections and the World Information and Early Warning System.

²³ These comprise the Report on the State of the World's Plant Genetic Resources and the Global Plan of Action on Plant Genetic Resources. For information on these components see CGRFA-11/07/12 - CGRFA, Eleventh Regular Session, 11-15 June 2007, *Progress in the Preparation of the Second State of the World's Plant Genetic Resources for Food and Agriculture: A Basis to Update the Rolling Global Plan of Action*; CGRFA-11/07/11 - CGRFA, Eleventh Regular Session, 11-15 June 2007, *Follow Up to Recommendations of the Commission on Genetic Resources for Food and Agriculture Regarding Plant Genetic Resources for Food and Agriculture*.

²⁴ CGRFA-10/04/3 - CGRFA, Tenth Regular Session, 8-12 November 2004, *Overview of the FAO Global System for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture and its Potential Contribution to the Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture*, 2.

Treaty, it is also important to understand the issues which were raised in regard to its provisions, and the processes by which these debates contributed to the negotiations of the latter agreement.

The IUPGR was adopted at the Twenty-second Session of the FAO Conference in 1983 by Resolution 8/83. Although a non-binding one, it was the first international agreement to focus specifically on PGRFA.²⁵ It was based on the “universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction,” and its objective was “to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes.”²⁶ Since the IUPGR was focused on plant genetic resources found *ex situ*, it theoretically covered all *ex situ* collections of PGRFA whether national or international, public or private.

Perhaps due to its rather idealistic objectives, the IUPGR was fraught with controversy from the beginning and like the CBD became bisected along the divergent positions of developed and developing countries on the issue of natural resources.²⁷ At the time of adoption several developed countries reserved their positions in regard to both the Resolution and the IUPGR.²⁸ Their concerns centred on the effect that the IUPGR may have on the rights of plant breeders who were using biotechnology to develop commercial varieties of plants, i.e. formal innovators. The developing countries on the other hand sought recognition for informal innovators, i.e. farmers, who were also engaged in breeding new varieties of plants, although in an unstructured way. These disputes were resolved by a series of three agreed interpretations which effectively amended the IUPGR. The first two interpretations which followed very quickly upon each other

²⁵ Kerry ten Kate, and Carolina Lasén Diaz, ‘The Undertaking revisited: A commentary on the revision of the International Undertaking on Plant Genetic Resources for Food and Agriculture’ (1997) 6(3) *Review of European Community and International Environmental Law* 284. For an analysis of the Undertaking see David Cooper, ‘The International Undertaking on Plant Genetic Resources’ (1993) 2(2) *Review of European Community and International Environmental Law* 158.

²⁶ *International Undertaking on Plant Genetic Resources*, Resolution 8/83, Twenty-second Session of the FAO Conference, 5-23 November 1983, Article 1.

²⁷ Gregory Rose, ‘International Law of Sustainable Agriculture in the 21st Century: The International Treaty on Plant Genetic Resources for Food and Agriculture’ (2003) 15 *Georgetown International Environmental Law Review* 583, 600.

²⁸ These countries were Canada, France, Federal Republic of Germany, Japan, Switzerland, United Kingdom and the United States of America - Resolution 8/83, Twenty-second Session of the FAO Conference, Rome, 1983, International Undertaking on Plant Genetic Resources.

respectively recognised the rights of plant breeders as provided for in UPOV²⁹ on the one hand,³⁰ and on the other, conceptualised and recognised farmers' rights.³¹ The first interpretation, while reiterating the principle that plant genetic resources are the common heritage of humankind, in effect went on to restrict it. The third interpretation restricted the principle still further by endorsing the position that States have sovereignty over their plant genetic resources.³² The cumulative effect of the three interpretations was to drastically curtail the original objectives of the IUPGR as set out in Article 1 and was in effect a retreat from the position that plant genetic resources constitute the heritage of humankind.

Global developments also contributed to the need for continuous revision of the IUPGR.³³ In 1992, Agenda 21 in Chapter 14, identified the conservation and sustainable utilisation of PGRFA as a component of promoting sustainable agriculture and rural development.³⁴ The objectives of the programme area in this regard included taking “appropriate measures for the fair and equitable sharing of benefits and results of research and development in plant breeding between the sources and users of plant genetic resources.” The activities to implement the objectives were to be carried out at national, regional and international levels. At international level, the appropriate UN agencies were called upon to strengthen the Global System including realising farmers' rights, and also to adjust it in line with the outcome of the negotiations of a convention on biological diversity.

The almost simultaneous negotiation and coming into force of the CBD also gave the FAO Global System a new impetus. The inter-action between the two was made clear by Resolution 3 of the Nairobi Final Act entitled “The Interrelationship between the Convention on Biological

²⁹ The International Union for the Protection of New Varieties of Plants, discussed in Chapter 7.

³⁰ Resolution 4/89 - *Agreed Interpretation of the International Undertaking*, adopted on 29 November 1989.

³¹ Resolution 5/89 - *Farmers' Rights*, adopted on 29 November 1989

³² Resolution 3/91 - adopted on 25 November 1991.

³³ CPGR/93/REP - Report of the Commission on Plant Genetic Resources, Fifth Session, 19 - 23 April, 1993 – Appendix A *Resolution 93/1 Revision of the International Undertaking on Plant Genetic Resources*, Paragraphs 1-4.

³⁴ *Agenda 21*, U.N. Conference on Environment and Development, U.N. Doc.A/CONF.151/26/Rev.1 (1992).

Diversity and the Promotion of Sustainable Agriculture.”³⁵ The Resolution, referring to the importance of the conservation and sustainable use of PGRFA, also noted that the Preparatory Committee for the United Nations Conference on Environment and Development (UNCED) had recommended the strengthening of the Global System and its adjustment in line with the negotiations of the CBD. It further urged that ways and means should be explored to develop complementarity and co-operation between the CBD and the FAO Global System. The Resolution also recognised the need to seek solutions to outstanding matters concerning plant genetic resources with the Global System, particularly in regard to (a) access to *ex situ* collections not acquired in accordance with the Convention; and (b) the question of farmers’ rights. This was therefore an implied acknowledgement that the draft Convention had an omission in this respect.

Consequently in 1993, the FAO conference passed Resolution 7/93 entitled “Revision of the International Undertaking on Plant Genetic Resources” in which it referred to both Agenda 21 and the Nairobi Resolution.³⁶ It agreed that the IUPGR should be revised in harmony with the CBD and noted in particular the need to ensure the fair and equitable sharing of benefits with the countries providing plant genetic resources and the need to address the two issues raised in the Nairobi Resolution. The revision resulted in the FAO International Treaty on Plant Genetic Resources for Food and Agriculture of 2001.³⁷

6.3.1.2 The FAO International Treaty on Plant Genetic Resources for Food and Agriculture (the FAO Treaty)

As the records of the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) show, the fusion of the FAO and CBD processes began with the revision of the IUPGR.³⁸ The process required both making the revised document compatible with the CBD as

³⁵ On 22 May 1992, the agreed text of the CBD was adopted through the Nairobi Final Act of the Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity. See *CBD Handbook*, above n 4, Section IX for the text of the Act.

³⁶ Resolution 7/93, Twenty-seventh Session of the FAO Conference, 1993, “Revision of the International Undertaking on Plant Genetic Resources.”

³⁷ Rose is of the view that the status of the Undertaking is unclear after the adoption of the FAO Treaty. He observes that the CGRFA has not repealed it nor has the Treaty negated it. The Undertaking is therefore “technically operative but functionally defunct” – Rose, above n 27, 600.

³⁸ CPGR-Ex1/94/REP - Report of the Commission on Plant Genetics Resources First Extraordinary Session, 7 - 11 November 1994.

well as filling in the gaps contained in the latter. At the Fifth Regular Session of the CGRFA in 1993, it was agreed that such revision should address several questions. These included the consolidation of the annexes into the IUPGR and its harmonisation with the CBD, access to PGRFA especially those in *ex situ* collections not acquired in accordance with the CBD, farmers' rights, and funding of activities related to the conservation and sustainable use of PGR. Participants also agreed that the wording of the revised IUPGR must be aligned with that of the CBD as far as possible.³⁹ They further noted that the revised IUPGR should take account of other international agreements such as Agenda 21 and the WTO Uruguay Round, particularly the provisions on *sui generis* intellectual property systems for plant varieties within the context of TRIPS and that it should be a legally binding document.⁴⁰ Thus the strategy of synthesising the CBD with the IUPGR formed the basis of the FAO Treaty⁴¹ which was adopted in November 2001 at the 31st Session of the Conference of FAO. It entered into force on 29th June 2004 after the required ratification by forty States. A brief overview of the Treaty will be provided here, while specific issues will be discussed at later points in this thesis.

Unlike the IUPGR, the Treaty is a legally binding document. As in the case of the other international agreements on biological resources, its negotiations were characterized by the North South divide on access and benefit sharing of genetic resources. While twenty years previously the IUPGR had been formulated on the basis of universal, unrestricted and free access to PGRFA, the Treaty proceeded on the premise that this was no longer tenable. Therefore, while it grew out of the IUPGR, it has been heavily influenced by developments in the ensuing years, particularly the nature and scope of the CBD.

Unlike the CBD which addresses biological resources in general, as its name indicates, the Treaty deals very specifically with PGRFA. The Preamble reiterates the mutual interdependence of countries in regard to PGRFA and notes its importance to world food security and sustainable agricultural development.⁴² It also acknowledges the past, present and future contribution of

³⁹ Ibid Appendix C, Report by the Chairman of the Working Group on the Group's Ninth Meeting, paragraph 10.

⁴⁰ Ibid Appendix C, Report by the Chairman of the Working Group on the Group's Ninth Meeting, paragraph 10. This will be discussed in the next chapter.

⁴¹ Rose, above n 27.

⁴² FAO Treaty – Preamble, Paragraphs 4 and 9.

farmers in conserving and developing PGRFA and affirms the need to realise such rights at both national and international levels.⁴³ The very specific and deliberate omission in the CBD is also addressed in the Treaty, namely that of *ex situ* collections of PGRFA acquired before the former came into force.⁴⁴

Both the CBD and the FAO Treaty recognise the sovereign rights of nations over their biodiversity and PGRFA respectively, and acknowledge that the authority to determine access to such resources rests with national governments and is subject to national legislation.⁴⁵ This brings the latter in line with the CBD and consolidates the principle which was first enunciated in Resolution 3/91 of the IUPGR. While both call upon national governments to facilitate access to these resources and to share in a fair and equitable way the benefits arising from their utilisation, an important point of difference between the CBD and FAO Treaty is the system of access and benefit sharing. While the CBD proposes a bilateral system for biodiversity in general, the latter advocates a multilateral one for a select group of PGRFA.⁴⁶ The implications of these two systems will be further examined in the course of this thesis.

The objectives of the Treaty are the same as those of the CBD and these are to be attained by linking it to FAO and the CBD Secretariat.⁴⁷ Article 4 imposes a general obligation on States Parties to ensure the conformity of its laws, regulations and procedures with its obligations as provided in this Treaty. Article 5 requires States Parties to ensure the *in situ* and *ex situ* conservation of PGRFA and in doing so, to support the efforts of farmers and indigenous and local communities in this regard. Article 9 deals specifically with farmers' rights and will be discussed under that chapter. However, an inconsistency in the Treaty is seen in that while it follows the CBD in mentioning both farmers and indigenous and local communities in Article 9(1), the Article then goes on to analyse only the rights of the former. In the CBD on the other

⁴³ FAO Treaty – Preamble, Paragraphs 7 and 8.

⁴⁴ FAO Treaty – Article 15.

⁴⁵ CBD – Preamble, Paragraph 4 and Article 3; FAO Treaty – Preamble, Paragraph 14 and Article 10.

⁴⁶ See FAO Treaty - Part IV; CBD, Article 15.

⁴⁷ Article 1. See also CGRFA-11/07/Inf.11 – CGRFA, Eleventh Regular Session, 11-15 June 2007, *Memorandum of Cooperation between the Food and Agriculture Organization of the United Nations and the Secretariat of the Convention on Biological Diversity*.

hand, farmers are not mentioned at all and Article 8 of the CBD dealing with *in situ* conservation refers only to indigenous communities in the context of conserving biodiversity in general.

6.4 CONCLUSION

As will be further demonstrated in this thesis, the negotiating history and structure of the CBD had initially made it a rather ambivalent forum for resolving questions of equity in the uses of biological resources including PGRFA. The inclusion of provisions on access and benefit sharing of *in situ* biological resources, while excluding *ex situ* collections from its ambit, can be viewed as a set back for developing countries. However, the reality is that the Convention would not have been signed by countries possessing *ex situ* collections if these had been included within it.

Notwithstanding this omission, as will be shown, since its entry into force, the implementing mechanisms of the Convention have been instrumental in the efforts to negotiate equitable mechanisms by which benefit sharing of *in situ* resources should take place. Developing countries have largely opted for the CBD as the preferred institution by which to ensure that their interests in *in situ* genetic resources as well as traditional knowledge are safeguarded. Whether the processes of the CBD have helped to fulfill their objectives remains to be seen.

The FAO Treaty has subsequently addressed the omissions in the CBD in regard to benefit sharing of *ex situ* collections of PGRFA. A significant difference in the benefit sharing mechanisms of the two agreements is that under the CBD such resources are the property of States under the principle of State sovereignty and can be accessed only with their prior informed consent. The FAO system on the other hand, places specific germplasm in the public domain with open access to all. While the relative merits of the two systems require further examination, the following section will provide an introductory overview of the status of both *in situ* and *ex situ* PGRFA under international law.

6.5 PGRFA IN THE CONTEXT OF THE INTERNATIONAL ENVIRONMENTAL REGIME

6.5.1 *The International Regime on PGRFA in situ*

As noted earlier, a significant omission in the CBD is that it deals only with PGRFA *in situ* and not *ex situ*. Since the Convention places the onus on the countries which already have access to

genetic resources (i.e. providing countries), to share them with those that do not, it is important to be clear on these two categories. Articles 2 and 15 together explain what providing countries are. Article 15 (3) specifies that

[f]or the purpose of this Convention, the genetic resources being provided by a Contracting Party, ... are only those that are provided by Contracting Parties that are *countries of origin of such resources* (emphasis added) or by the Parties that have *acquired the genetic resources in accordance with this Convention* (emphasis added).

Therefore providing countries fall into two categories, i.e. (a) countries of origin of genetic resources, or (b) those that have acquired genetic resources in accordance with the Convention.

Category (a) is defined in Article 2 which states that “*country of origin of genetic resources*” means the country which possesses those genetic resources in *in situ* conditions.” Article 2 also specifies that

country providing genetic resources means the country supplying genetic resources collected from *in situ* sources, or taken from *ex situ* sources, which may or may not have originated in that country.

Read together with Article 15 (3) this means that if genetic resources contained in *ex situ* collections did not originate in that country, they should have been acquired in accordance with the provisions of the CBD. However, most *ex situ* collections pre-date the CBD. This therefore means that if a country possesses *ex situ* collections of germplasm which were acquired in a manner *not* in accordance with the CBD, (in other words the collection of which pre-dated the CBD), it does not fall within the provisions of Article 15. Such a country is therefore not bound to facilitate access to these resources by others. As noted in Chapter 2 there are large collections of PGRFA in developed countries which pre-date the CBD and therefore fall outside its purview.

6.5.2 *The International Regime on ex situ collections of plant genetic resources for food and agriculture*

Since the provisions of the CBD specifically exclude from its ambit *ex situ* collections of PGRFA which pre-date it, these collections (or pre-CBD material) must therefore necessarily be addressed by the FAO system.

As discussed earlier perhaps the most significant *ex situ* collections of germplasm are those of the International Agricultural Research Centres (IARCs) maintained by the Consultative Group on International Agricultural Research (CGIAR) which are now part of the FAO International Network and therefore under the jurisdiction of the international community. It has been noted that in the light of the CBD and the agreements signed between FAO and the Centres, the germplasm maintained by the CGIAR Centres can be categorized as follows:

- germplasm acquired prior to the entry into force of the CBD;
- material developed by a Centre from germplasm acquired prior to the entry into force of the CBD;
- germplasm acquired after the entry into force of the CBD but obtained with the agreement of the country of origin that such material will be conserved and utilized in accordance with mutually agreed terms; and,
- material developed by a Centre from germplasm acquired wholly or in part after the entry into force of the CBD.⁴⁸

The germplasm designated by the Centres to be placed under the auspices of FAO under the agreements fall into categories (i) and (ii) which are those that have been specifically excluded from the ambit of the CBD by virtue of Article 15(3). Germplasm in the latter two categories may also be designated if the country of origin has given written consent to do so. The CPGR noted that “[s]uch consent might be granted conditional on new arrangements for distribution and use coming into effect once international agreement has been reached on the issues of terms of access and the fair and equitable sharing of benefits.”⁴⁹

The status of the collections brought within the FAO International Network was initially determined by the agreements signed between the FAO and the IARCs.⁵⁰ These agreements were

⁴⁸ CPGR-6/95/12 ADD.1 - Commission on Plant Genetic Resources, Sixth Session, 19 - 30 June 1995, *The International Network of Ex Situ Collections, and the CGIAR Centres. Joint Report by FAO and the International Plant Genetic Resources Institute (on behalf of the CGIAR Centres) on the Implementation of the Agreement signed between FAO and the CGIAR Centres on 26 October 1994*, Paragraph 2.

⁴⁹ Ibid Paragraph 3.

⁵⁰ *Agreement between [Name of Centre] and the Food and Agriculture Organization of the United Nations (FAO) Placing Collections of Plant Germplasm under the Auspices of FAO signed in October 1994*, available at <http://www.irri.org/grc/GRCHome/FAO-Centre%20agreement.pdf> last accessed 18 April 2008.

signed in 1994 and renewed twice, on 26 October 1998 and 26 October 2002, and were to be operative until 26 October 2006. Several countries had also expressed their willingness to join the network and place their collections within it.⁵¹

Upon the coming into force of the FAO Treaty, on 16 October 2006 eleven CGIAR Centres entered into agreements with the Governing Body of the Treaty placing their in-trust collections within the purview of the Treaty.⁵² According to the terms of the Treaty, PGRFA listed in Annex 1 and held by the IARCs will be made available under the provisions of Part IV of the Treaty relating to the multilateral system of access and benefit sharing.⁵³ PGRFA which have not been listed in Annex 1 and which were acquired before the entry into force of the Treaty shall be made available in accordance with the provisions of the Standard Material Transfer Agreement

⁵¹ CGRFA-8/99/7 – CGRFA, Eighth Regular Session, 19 – 23 April 1999, *Progress Report on the International Network of Ex Situ Collections under the Auspices of FAO*, Paragraphs 3-4; CGRFA-9/02/11 – CGRFA, Ninth Regular Session, 14 – 18 October 2002, *Report on the International Network of Ex situ Collections Under the Auspices of FAO*, paragraphs 4-6; CGRFA-10/04/6 - CGRFA, Tenth Regular Session, 8 – 12 November 2004, *Report on the International Network of Ex situ Collections under the Auspices of FAO*, paragraphs 26-33. See also IT/GB-1/06/Report - *Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture*, First Session, 12 - 16 June 2006, paragraphs 30-34.

⁵² *Agreement between [Name Of Centre] and the Food and Agriculture Organization of the United Nations (FAO), Acting on Behalf of the Governing Body of the International Treaty on Plant Genetic Resources for Food And Agriculture* available at <http://www.cgiar.org/pdf/model_agreement_centers_2007.pdf> last accessed 18 April 2008, (hereinafter FAO Treaty/CGIAR Agreement). Article 15 of the Treaty calls upon the IARCs to sign agreements with the Governing Body with regard to such collections in accordance with the terms and conditions contained in it. The Ministerial Declaration of the First Session of the Governing Body also called upon the IARCs to sign these agreements in accordance with the Treaty. See - IT/GB-1/06/Report above n 51 page viii. See also IT/GB-1/06/9 - *International Treaty on Plant Genetic Resources for Food and Agriculture, First Session of the Governing Body, 12-16 June 2006, Draft Agreements Between the Governing Body and the IARCS of the CGIAR and Other Relevant International Institutions*, March 2006; CGRFA-11/07/19.2 - CGRFA, Eleventh Regular Session, 11-15 June 2007, *Reports from International Organizations on their Policies, Programmes, and Activities on Agricultural Biological Diversity: (2) International Agricultural Research Centres of the Consultative Group on International Agricultural Research (CGIAR)*, paragraph 12; IT/GB-2/07/17 - *International Treaty On Plant Genetic Resources For Food And Agriculture, Second Session Of The Governing Body, 29 October-2 November 2007, Report on the Status of Cooperation with Other International Organizations, including Agreements between the Governing Body and the International Agricultural Research Centers of the Consultative Group on International Agricultural Research and Other Relevant International Institutions*, paragraphs 8-12. See also Statement of the CGIAR Centres Regarding Implementation of the Agreements between the Centres and the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, available at <http://www.cgiar.org/pdf/CGIAR%20Alliance%20statement%20on%20Implementation%20Agree_October2006.pdf> last accessed 18 April 2008.

⁵³ FAO Treaty – Article 15.1(a).

(SMTA) currently in use pursuant to the agreements between the IARCs and the FAO.⁵⁴ Non-Annex 1 PGRFA received by Centres after the coming into force of the Treaty, shall be made available for access on terms consistent with those mutually agreed upon between the Centre and the country of origin.⁵⁵ Further, the Contracting Parties which are countries of origin of the PGRFA have the right to receive samples on demand without a Material Transfer Agreement (MTA).⁵⁶ These provisions are reflected in the agreement with the Governing Body. The revised agreement states that it is the intention of the Parties that this Agreement should remain in force in perpetuity, although there are provisions to terminate it under specified circumstances.⁵⁷

6.6 CONCLUSION

The FAO International Networks and the voluntary placing of accessions in the public domain have ensured a certain degree of accessibility to these collections including by developing countries. In fact it has been pointed out that developing countries have received more genetic materials than they have contributed to the Centres and an open access system of germplasm flows will materially benefit them.⁵⁸ The entry into force of the FAO Treaty and the placing of Annexe I germplasm in the public domain is expected to further facilitate the flow of germplasm to these countries and ensure equitable sharing of their benefits. Nevertheless, some concerns have been expressed as to whether the structure and processes of the Treaty are, while achieving this purpose, also facilitating the acquisition and proprietisation of germplasm. These concerns will be examined in Chapter 12.

⁵⁴ FAO Treaty – Article 15.1(b).

⁵⁵ FAO Treaty – Article 15.3.

⁵⁶ FAO Treaty/CGIAR Agreement - Article 2 (b) (ii).

⁵⁷ FAO Treaty/CGIAR Agreement - Article 6.

⁵⁸ Cary Fowler, Melinda Smale and Samy Gaiji, 'Unequal Exchange? Recent Transfers of Agricultural Resources and their Implications for Developing Countries' (2001) 19(2) *Development Policy Review* 181.

CHAPTER 7

THE INTERNATIONAL PROPERTY RIGHTS REGIME

7.1 INTRODUCTION

The previous chapter dealt with the environmental/conservation regime on plant genetic resources for food and agriculture (PGRFA). The second regime which impacts upon the use of these resources, is the international property rights regime. It is not concerned with the conservation and sustainable use of these resources or with the equitable sharing of their beneficial uses. Rather, its objective is to promote and enforce intellectual property protection globally, including in relation to PGRFA, and its functions have been directed towards this end. Consequently, it is at variance with the former regime, and the international debate on PGRFA has by and large focussed on efforts to achieve a compromise between the objectives of the two.

In this chapter I will provide an introduction to the three agreements which make up this system, and the international institutions which administer them. While these agreements and institutions deal with a broad range of issues, of which PGRFA is only one, it is necessary to understand their history, mandates and functions in order to analyse how they affect the use of these resources. The international property rights regime discussed in this chapter is intended and structured so as to enforce intellectual property rights (IPRs) globally, and this will necessarily affect access to and benefit sharing of the uses of PGRFA. This chapter will provide an overview of the three agreements, while their specific provisions in relation to PGRFA and related issues such as farmers' rights and traditional knowledge, will be examined in the following chapters.

The need to develop a global regime of intellectual property protection derives from the fact that IPRs are national in application, and a patent traditionally could not be recognised internationally. For example, a patent issued in the U.S. or a European country will not necessarily be honoured in any other country. In order to safeguard such patent the holder would need to apply for patent rights in all the countries where it may be needed and his/her ability to do so would depend on their laws. Since there is no legal concept of an "international patent," it would be in the interests of those who require some form of legal protection for their products to ensure that the national laws of all countries are harmonised to facilitate the recognition of patents or other forms of intellectual property protection. International treaties are therefore the means by which to develop a uniform global system of such protection, requiring of its signatories that they bring

their domestic laws into conformity with international standards in this regard.¹ This process has been played out in the International Union for the Protection of New Varieties of Plants (UPOV), the World Intellectual Property Organization (WIPO) and the World Trade Organisation (WTO) by way of the treaties administered by them.

7.2 THE INTERNATIONAL CONVENTION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV CONVENTION)

The International Convention for the Protection of New Varieties of Plants (UPOV Convention) was signed in 1961 and entered into force in 1968.² It is the agreement which deals solely and specifically with plant varieties and rights of ownership over them. The provisions of the UPOV Convention established a specific system of intellectual property tailored to protect plant breeders' rights (PBRs), also called plant variety protection (PVP).³ These rights are similar to patents and copyrights, giving the breeder of a new plant variety exclusive rights of ownership over the product.⁴ The Convention established the International Union for the Protection of New Varieties of Plants (UPOV) which is an international organization endowed with legal personality.⁵ The UPOV Convention and the creation of the International Union institutionalized

¹ Anne E Crocker, 'Will Plants Finally Grow Into Full Patent Protection on an International Level? A Look at the History of US and International Patent Law regarding Patent Protection for Plants and the Likely Changes after the US Supreme Court's Decision in JEM Ag Supply v Pioneer Hi-Bred' (2003) 8 *Drake Journal of Agricultural Law* 251.

² *International Convention for the Protection of New Varieties of Plants*, Act of 1961 adopted by the Diplomatic Conference on 2 December 1961, available at <<http://www.upov.int/en/publications/conventions/1961/act1961.htm>> at 28th March 2008.

³ For a comprehensive discussion of UPOV see Rolf Jördens, 'Progress of plant variety protection based on the International Convention for the Protection of New Varieties of Plants (UPOV Convention)' (2005) 27(3) *World Patent Information* 232; Graham Dutfield, 'Turning Plant Varieties into Intellectual Property: The UPOV Convention' in Geoff Tansey and Tasmin Rajotte (eds), *The future control of food: a guide to international negotiations and rules on intellectual property, biodiversity, and food security* (2008).

⁴ Max Thiele-Wittig and Paul Claus, 'Plant variety protection - A fascinating subject' (2003) 25(3) *World Patent Information* 243. The Article also sets out the differences between plant variety protection and patents at 247.

⁵ Act of 1978, *International Convention for the Protection of New Varieties of Plants*, of December 2, 1961, as Revised at Geneva on November 10, 1972, and on October 23, 1978, Article 24 ; International Convention for the Protection of New Varieties of Plants of December 2, 1961, as revised at Geneva on November 10, 1972, on October 23, 1978, and on March 19, 1991, available at <<http://www.upov.int/en/publications/conventions/1991/act1991.htm>> at 28th March 2008, (hereinafter UPOV Act 1991) Article 24. The website of UPOV is available at <http://www.upov.int/index_en.html> at 10th May 1008.

the process by which these rights would be enforced, and the latter serves as the forum to achieve the objective of implementing the commercial rights of plant breeders.

The UPOV Convention was revised in 1972, 1978 and 1991.⁶ After the 1978 Act entered into force States could no longer accede to the 1961 Convention. The Convention was again revised in 1991, creating the 1991 UPOV Act and after this came into force in 1998, the 1978 Act was closed for further accession. As of October 2007, 24 States are bound by the 1978 Act and 40 States are bound by the 1991 Act.⁷

The debate on PGRFA has not been significantly carried out in the fora of UPOV, but the provisions of the UPOV Convention are being upheld as the appropriate standard of plant variety protection, which should be adopted by all countries. Therefore a detailed examination of these provisions is important to this thesis and will be done in Chapter 11.

7.3 THE WORLD INTELLECTUAL PROPERTY ORGANISATION

7.3.1 Introduction

The second institution whose treaties have a direct impact on the uses of PGRFA is the World Intellectual Property Organisation (WIPO). WIPO was established in 1970 by the WIPO Convention,⁸ and by 1974 it had become a specialised agency of the United Nations.⁹ As its name indicates, its strategic goals are to promote the development and use of intellectual property

⁶ See UPOV Act 1991.

⁷ See <http://www.upov.int/export/sites/upov/en/about/members/pdf/pub423.pdf> last accessed 18th April 2008.

⁸ The Convention establishing the World Intellectual Property Organisation was signed at Stockholm on 14 July 1967 and amended on 28 September 1979, available at http://www.wipo.int/treaties/en/convention/trtdocs_wo029.html at 28th March 2008 (hereinafter WIPO Convention). See also Sisule F Musungu and Graham Dutfield, *Multilateral agreements and a TRIPS-plus world: The World Intellectual Property Organisation (WIPO)* (2003) Quaker United Nations Office and Quaker International Affairs Programme, Chapter 2 http://www.iprsonline.org/ictsd/docs/WIPO_Musungu_Dutfield.pdf at 25th February 2008.

⁹ See *Agreement between the United Nations and the World Intellectual Property Organisation* (entered into force 17 December 1974), available at http://www.wipo.int/treaties/en/agreement/pdf/un_wipo_agreement.pdf at 28th March 2008 (hereinafter UN/WIPO Agreement).

rights internationally.¹⁰ In furtherance of these goals WIPO's core tasks are developing international intellectual property laws and standards, delivering global IP protection services, encouraging the use of intellectual property for economic development, promoting better understanding of IP and providing a forum for debate.¹¹ WIPO administers 24 intellectual property related treaties¹² and currently has 184 Contracting Parties.¹³

While WIPO's objective is to promote intellectual property rights globally, its establishment as a UN agency also requires it to pursue a development policy for the benefit of developing countries. The Agreement between the UN and WIPO states that the UN recognises WIPO as

being responsible for taking appropriate action ... *inter alia*, for promoting creative intellectual activity and for facilitating the transfer of technology related to industrial property to the developing countries in order to accelerate economic, social and cultural development.¹⁴

WIPO is also required to follow any recommendations of the UN¹⁵ and to render such assistance as the latter may request.¹⁶ A further objective is to promote and facilitate the transfer of technology to developing countries so as to assist them in attaining their objectives in the fields of science and technology and trade and development, and to this end it is required to co-operate with the UN and its organs.¹⁷ It is clear therefore that its status as a specialised UN agency must necessarily be consistent with the latter's overall developmental focus.¹⁸

¹⁰ More specifically these goals are to promote an IP culture; to integrate IP into national development policies and programs; to develop international IP laws and standards; to deliver quality services in global IP protection systems; and to increase the efficiency of WIPO's management and support processes - <http://www.wipo.int/about-wipo/en/what_is_wipo.html> at 28th March 2008. See also *World Intellectual Property Organisation Proposed Program and Budget for 2006/07*, presented by the Director General.

¹¹ See <http://www.wipo.int/about-wipo/en/core_tasks.html> at 28th March 2008.

¹² <<http://wipo.int/treaties/en/>> at 28th March 2008. The WIPO Convention provides the framework for the organisation and is only an administrative treaty. The various categories of IPRs are dealt with by separate treaties which WIPO administers, and they have different aims and objectives and different contracting parties. See also Musungu and Dutfield, above n 8, Chapter 2.

¹³ See <<http://www.wipo.int/members/en/>> at 28th March 2008.

¹⁴ UN/WIPO Agreement, above n 9, Article 1.

¹⁵ Ibid Article 5

¹⁶ Ibid Article 8.

¹⁷ Ibid Article 10.

The inconsistency between WIPO's mandate to promote IPRs¹⁹ and its mandated development focus has caused some degree of tension between its developed and developing country members and some ambivalence in their perceptions of the institution.²⁰ Its structure and functions have also contributed to this situation. To begin with, unlike many international institutions WIPO is predominantly funded by fees earned by the administration of the Patent Cooperation Treaty (PCT) (discussed below), and therefore not dependent on the contributions of its member countries. This has meant that the developed countries are less able to dominate its activities by controlling the budget.²¹ The developed countries' dissatisfaction is further enhanced by the fact that being a subsidiary organisation of the United Nations where they are outnumbered by developing countries, WIPO's "allegiance" is seen as being towards the latter.²² Further, WIPO does not have a dispute settlement mechanism through which its intellectual property standards can be enforced and conflicts can be resolved, which could also have worked to the advantage of developed countries.

Some scholars suggest that the developing countries also view WIPO as being fundamentally hostile to issues of equity and development²³ and as being biased in favour of developed country efforts to strengthen IP protection.²⁴ This perception has not been offset by the Development Agenda which WIPO launched in 2004 designed to ensure that IPRs are used to further

¹⁸ Christopher May, *The World Intellectual Property Organization: resurgence and the development agenda* (2007) 25. It must be noted however, that WIPO's objectives do not include a development agenda – WIPO Convention - Articles 3 and 4.

¹⁹ WIPO Convention - Articles 3 and 4.

²⁰ See generally Musungu and Dutfield, above n 8.

²¹ May, above n 18, 24-25. The revenue earned by administering the PCT provides about 80% of WIPO's total income with expected increase in this figure – GRAIN, *One global patent system? WIPO's Substantive Patent Law Treaty* (2003) <http://www.grain.org/briefings_files/wipo-splt-2003-en.pdf> at 25th February 2008.

²² David G Scalise and Daniel Nugent, 'International Intellectual Property Protections for Living Matter: Biotechnology, Multinational Conventions and the Exception for Agriculture' (1995) 27 *Case Western Reserve Journal of International Law* 83, 107. See also *U.S. Vows to "Fight" the Push for WIPO Reform* (2004) *Intellectual Property Watch* Vol. 1 No. 1 <http://www.ip-watch.org/newsletter_1.pdf> at 28th March 2008.

²³ Ronan Kennedy, 'International Conflicts over Plant Genetic Resources: Future Developments?' (2006) *Tulane Environmental Law Journal* 1, 17. See also Crocker, above n 1.

²⁴ Sangeeta Shashikant, *Intellectual Property and the WIPO Development Agenda* (date not available) <<http://www.choike.org/Documentos/wsis/book10.pdf>> at 25th February 2008.

development. Suspicion has been further deepened by its simultaneous role in the international patent harmonisation process and the negotiations of the Substantive Patent Law Treaty (SPLT)²⁵ which has raised the ire of some developing countries who view it as being detrimental to their interests.²⁶ WIPO is therefore placed in a unique position, as notwithstanding its Charter, it is simultaneously pursuing both a patent and a development agenda and it is not clear whether this is a mutually compatible objective.

WIPO as an institution does not have a specific mandate in regard to either PGRFA or traditional knowledge. However, its mandate in promoting intellectual property rights worldwide, and specifically in the patent harmonisation process, would necessarily impact upon the application of such rights to both these resources. As will be shown, it has played a significant part in the debate on these two resources and to some extent it is perceived by developing countries as a more favourable forum in which to further their objectives than the World Trade Organisation (WTO). It is pertinent therefore to consider its general functions in relation to its patent and development agendas.

7.3.2 *WIPO's Patent Agenda*

While WIPO's Patent Agenda is not directly related to the propertisation of genetic resources or traditional knowledge, its development would facilitate this process. The purpose of the agenda which was launched in 2001 was to promote international patent law harmonisation both substantively and procedurally.²⁷ The objective of patent law harmonisation is the creation of an international unified patent system to which every country would adhere. This would replace the current territorial system whereby each country sets standards as it deems appropriate in regard to

²⁵ SCP/10/4 - Standing Committee on the Law of Patents Tenth Session, May 10 to 14, 2004, *Draft Substantive Patent Law Treaty*, 30 September 2003 (hereinafter SLPT).

²⁶ James Boyle, 'A Manifesto on WIPO and the Future of Intellectual Property' (2004) *Duke Law & Technology Review* 9; Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (2002) <http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf> at 25th February 2008.

²⁷ Carlos M. Correa and Sisule F. Musungu, *The WIPO Patent Agenda: The Risks for Developing Countries* (2002) South Centre <<http://www.southcentre.org/publications/workingpapers/wp12.pdf>> at 25th February 2008; WIPO Document A/36/14 - *Agenda for Development of the International Patent System - Memorandum of the Director General*, 6 August 2001; WIPO Publication No. 441(E) - *Annual Report 2005* states that "One of WIPO's principal tasks is to promote and develop international harmonization of IP laws, standards and practices."

both the subject matter of patents, the degree of protection awarded and the procedures to process patent applications. Therefore harmonisation would impact upon property rights to PGRFA too, as once the system comes into force countries would lose the flexibility to decide which property regime it would apply to these resources.

7.3.2.1 The WIPO patent harmonization treaties

The WIPO Patent Agenda is implemented by the Standing Committee on the Law of Patents (SCP) whose function is to promote international harmonisation of patent law. This process is to be implemented by way of three treaties, namely, the PCT²⁸ which was last modified in 2001, the Patent Law Treaty (PLT) of 2005²⁹ and the draft SPLT which is currently under negotiation.

The first two treaties seek to harmonise the procedural aspects of patent applications. The PCT does so by providing a unified system for filing, searching and examining them. Under its provisions an applicant (who must be a national or resident of a Contracting Party) may seek patent protection simultaneously in each of several countries by filing an international patent application. It may be filed either in the national patent office of the State of his/her nationality/residency or with the International Bureau of WIPO. The application is then put through an “international search” by a WIPO appointed International Searching Authority (ISA) which investigates all published documents that might affect the patentability of the subject matter, and which also prepares a written opinion on patentability. On the basis of this investigation the applicant would decide whether to continue with the process or not.³⁰

The objectives of the PLT are also to harmonise the procedural aspects of applying for, obtaining, and maintaining patents. Its provisions relate to such issues as filing date, application, representation, communications, notifications, validity of patents and revocation, and relief in

²⁸ *Patent Cooperation Treaty*, Done at Washington on June 19, 1970, amended on September 28, 1979, modified on February 3, 1984, and October 3, 2001(as in force from April 1, 2002) (hereinafter PCT).

²⁹ *Patent Law Treaty*, Adopted at Geneva on 1 June 2000, available at <http://www.wipo.int/treaties/en/ip/plt/trtdocs_wo038.html> at 28th March 2008 (hereinafter PLT).

³⁰ <<http://www.wipo.int/pct/en/treaty/about.htm>> at 30th April 2008. The vast majority of PCT applications are filed by developed countries, mainly the U.S., European countries, Japan, Australia and Canada – WIPO Publication *The International Patent System in 2006 - PCT Yearly Review (2006)*. See also WIPO Patent Report - *Statistics on Worldwide Patent Activities (2007)* for similar statistics. For a detailed account of the PCT reforms see Correa and Musungu, above n 27.

respect of time limits, reinstatement of rights, and correction or addition of priority claims and restoration of priority rights.³¹ The Treaty thus obviates the necessity for patent applicants to deal with different laws in regard to these issues. This harmonization process would greatly facilitate IPR claims on plant varieties since an applicant could obtain such rights globally in a single stroke. Countries would no longer have the authority to process such applications according to their legal requirements.

While the PCT and PLT deal with procedural issues, the third pillar on which WIPO's patent agenda rests, the SPLT, deals with substantive issues. While discussions on the SPLT began in 2001 at the Fifth Session of the SCP, to date it is still under negotiation, reflecting developed/developing country divisions on these issues. The U.S, Japan and the European Patent Office put forward what was dubbed the Trilateral proposal, pushing to have an initial package of issues prioritized for discussion, namely, definition of prior art, grace period, novelty and inventive step/non obviousness.³² Questions of prior art and novelty have direct impacts on genetic resources and traditional knowledge and resolving them would make it easier to patent them.³³ This proposal met with resistance from developing countries who in turn raised concerns regarding issues such as patentable subject matter, the exceptions to patentability and disclosure of origin of genetic resources and associated knowledge where the subject matter was based on them.³⁴ Nevertheless in 2005 it was agreed that the following issues would be prioritised within WIPO - prior art, grace period, novelty, inventive step, sufficiency of disclosure and genetic resources. The first four issues would be addressed by the SCP, and the last two by the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional

³¹ PLT, Articles 5 -13.

³² WO/GA/31/9 - WIPO General Assembly Thirty-First (15th Extraordinary) Session September 27 - October 5, 2004, *Proposal by the United States of America, Japan and the European Patent Office for Establishing a New Work Plan For The Standing Committee on the Law of Patents (SCP)* 23 July 2004; WO/GA/31/10 - WIPO General Assembly Thirty-First (15th Extraordinary) Session September 27 - October 5, 2004, *Proposal by the United States of America and Japan for Establishing a New Work Plan for the Standing Committee on the Law of Patents (SCP)*, 27 August 2004.

³³ WO/GA/31/9, above n 32; WO/GA/31/10 , above n 32.

³⁴ WO/GA/31/15 - WIPO General Assembly Thirty-First (15th Extraordinary) Session, September 27 - October 5, 2004, *Report adopted by the Assembly*, 5 October 2004; Carlos M. Correa, *An Agenda for Patent Reform and Harmonization for Developing Countries* (2005) <http://www.iprsonline.org/unctadietsd/bellagio/Bellagio2005/CorreaPiece_REV.pdf> at 25th February 2008; South Centre and Centre for International Environmental Law, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral, and Bilateral Fora* (2004) 15 <http://www.ciel.org/Publications/IP_Update_3Q04.pdf> at 25th February 2008.

Knowledge and Folklore (IGC).³⁵ The meeting also agreed that work on issues of development and intellectual property should be pursued so that an effective WIPO Development Agenda could emerge.³⁶ At the 2005 General Assembly, Members decided to hold an Open Forum on the SPLT in 2006 and then convene an informal session of the SCP to agree on a work programme³⁷ after which the SCP would begin work.³⁸ The 2006 General Assembly subsequently decided to continue with consultations the following year, 2007, with a view to establishing a work plan for 2008/2009.³⁹

The SPLT has provoked opposition from many developing countries on several fronts. However, a comprehensive analysis of all its provisions is beyond the scope of this thesis and the present discussion will be confined to its implications vis-à-vis the potential proprietisation of genetic resources and traditional knowledge.⁴⁰ At this point it could be argued that a global patent convention which over rides national intellectual property laws, potentially erodes a country's

³⁵ After the Diplomatic Conference for the Adoption of the Patent Law Treaty in mid 2000 at which consultations on TK and genetic resources also took place, a proposal was submitted to the 2000 WIPO General Assembly to establish an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC). The IGC would address three primary themes, namely, (i) access to genetic resources and benefit sharing; (ii) protection of traditional knowledge, whether or not associated with those resources; and (iii) the protection of expressions of folklore including handicrafts. This proposal was approved by the General Assembly at its 26th Session in 2000 - WO/GA/26/6 - WIPO General Assembly Twenty-Sixth (12th Extraordinary) Session, September 25 to October 3, 2000, *Matters Concerning Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore*, 25 August 2000; WO/GA/26/9 - WIPO General Assembly Twenty-Sixth (12th Extraordinary) Session, September 25 to October 3, 2000, *Traditional Knowledge and the Need To Give It Adequate Intellectual Property Protection - WIPO Committee on the Relationship between Intellectual Property, Genetic Resources and Traditional Knowledge, Documents prepared by the Group of Countries of Latin America and the Caribbean* September 14, 2000; WO/GA/26/10 - WIPO General Assembly Twenty-Sixth (12th Extraordinary) Session, September 25 to October 3, 2000, *Report adopted by the Assembly*, 3 October 2000.

³⁶ SCP/11/3 - Standing Committee on the Law of Patents Eleventh Session, June 1 and 2, 2005, *Future Work Program for the Standing Committee on the Law of Patents*, (2005).

³⁷ WO/GA/32/13 - WIPO General Assembly Thirty-Second (17th Ordinary) Session, September 26 to October 5, 2005, *Report adopted by the General Assembly*, 5 October 2005.

³⁸ SCP/IM/GE/06/2 - Standing Committee on the Law of Patents Informal Session, April 2006 *Future Work Program for the Standing Committee on the Law of Patents*, 7 March 2006.

³⁹ WO/GA/33/10 - WIPO General Assembly Thirty-Third (16th Extraordinary) Session, September 25 to October 3, 2006, *Report adopted by the Assembly*, 3 October 2006.

⁴⁰ For a detailed analysis of the SPLT provisions vis-à-vis developing countries see Carlos M Correa, *The WIPO draft Substantive Patent Law Treaty: a review of selected provisions* (2004) South Centre <<http://www.southcentre.org/publications/workingpapers/wp17.pdf>> at 25th February 2008.

sovereign rights to determine its own intellectual property policy and its development strategies.⁴¹ Its application to resources such as PGRFA which are of critical importance to developing countries' agriculture and food security, would be of particular concern.⁴²

As at date developed countries have not succeeded in pushing the SPLT to a final conclusion⁴³ and some writers note that points of disagreement have already arisen as developing countries become aware of the implications of patent harmonisation.⁴⁴ Commentators have also expressed concern at the asymmetry in preparation and participation in the negotiations demonstrated by the latter in contrast to developed countries.⁴⁵ It remains to be seen whether developing countries will succeed in preventing a process which is essentially disadvantageous to them.

7.3.3 *WIPO's Development Agenda*

WIPO's development agenda was initiated in 2004 by a group of 14 developing countries known as the Groups of Friends of Development (FOD) as an attempt to counter the patent harmonization agenda that was being pushed forward by developed nations. The proposal submitted to the WIPO General Assembly argued that despite the scientific and technological

⁴¹ Donald P. Harris 'TRIPS' Rebound: An Historical Analysis of How the TRIPS Agreement Can Ricochet Back Against the United States' (2004) 25 *Northwestern Journal of International Law & Business* 99. See also Sisule F Musungu, *Rethinking innovation, development and intellectual property in the UN: WIPO and beyond* (2005) Quaker International Affairs Programme 9 <<http://www.qiap.ca/pages/Documents/TRIPS53.pdf>> at 25th February 2008; John Braithwaite and Peter Drahos, *Global business regulation* (2000) 75.

⁴² The UK IPR Commission has observed that developing countries have already had a foretaste of the possible outcomes of these negotiations, given their experiences in 1991 when a substantive patent law treaty was almost concluded. It notes that the final treaty "was essentially a hybrid of the laws prevailing in a number of developed countries, in particular the US and the EU. As the delegate of one developing country noted, there was a paradox that through a harmonisation process, the majority of the countries were being asked to align their law with the provisions of a minority" - Commission on Intellectual Property Rights, above n 26, 132.

⁴³ WO/GA/33/6 - WIPO General Assembly, Thirty-Third (16th Extraordinary) Session, September 25 - October 3, 2006, *Report on the Progress of the Standing Committee of the Law of Patents in Respect of the Draft Substantive Patent Law Treaty and Consideration of a New Work Plan for 2007*, 30 June 2006.

⁴⁴ It must be noted that developing countries are not themselves in agreement on all aspects of the negotiations - Correa and Musungu, above n 27.

⁴⁵ Ibid. GRAIN also observes that the discussions on the SPLT are largely between the U.S and Europe and the developing countries are hardly participate, with a few exceptions led by Brazil - GRAIN, *WIPO Moves Toward "World" Patent System* (2002) <<http://www.grain.org/docs/wipo-patent-2002-en.pdf>> 28th March 2008.

advances of the recent past which are important sources of material progress and welfare, a significant gap exists between rich and poor nations in their ability to access these resources. In this context the role of intellectual property protection which is intended as an instrument to promote technological innovation and to transfer and disseminate technology has been widely debated. The proposal observes that “[i]ntellectual property protection cannot be seen as an end in itself, nor can the harmonization of intellectual property laws leading to higher protection standards in all countries, irrespective of their levels of development.”⁴⁶ Intellectual property protection has both costs and benefits which may vary according to a country’s level of development and it must be ensured that the costs do not outweigh the benefits.

The proposal also raised specific concerns about the draft SPLT.⁴⁷ It pointed out that the proposed treaty would raise patent protection standards, creating new obligations which developing countries will be unable to implement. It noted that these countries had suggested amendments to make the draft more responsive to public interest concerns and their specific development needs, and urged that these be taken into account.

Finally the proposal set out eight specific measures by which its concerns could be addressed. These included the adoption of a high level declaration on intellectual property and development which should address the development concerns raised by a number of WIPO Member States and the international community at large and amendments to the WIPO Convention to explicitly incorporate the development dimension into WIPO’s objectives and functions.⁴⁸ It also proposed

⁴⁶ WO/GA/31/11 - WIPO General Assembly Thirty-First (15th Extraordinary) Session, September 27 - October 5, 2004, *Proposal by Argentina and Brazil for the Establishment of a Development Agenda for WIPO*, 27 August 2004, 1. See also PCDA/1/5 - Provisional Committee on Proposals Related to a WIPO Development Agenda, First Session, February 20 - 24, 2006, *Proposal for the Establishment of a Development Agenda for WIPO: A Framework for Achieving Concrete and Practical Results in the Near and Longer Terms*, 17 February 2006.

⁴⁷ Progress on the Development Agenda appears to be tied up with the negotiation of the SPLT. As noted above, the initial proposal of Brazil and Argentina expressed concern about the negotiations of this Treaty. At the 2005 General Assembly the FOD led by Brazil made further discussions on the SPLT conditional on progress on the Development Agenda – ICTSD, *WIPO Development Agenda Status Unclear* (2005) BRIDGES No. 9 (September – October 2005) <<http://www.iprsonline.org/ictsd/docs/BridgesMonthly9-9WIPODevAgenda.pdf>> at 25th February 2008.

⁴⁸ Note the concerns raised by the UK IPR Commission regarding the absence of such a provision in the WIPO Convention – Commission on Intellectual Property Rights, above n 26, Chapter 8.

the establishment of a Working Group on the Development Agenda to further discuss its implementation.⁴⁹

The proposal received mixed responses and some cautious support from developed countries,⁵⁰ in contrast to the enthusiastic response from a number of civil society organisations.⁵¹ However, the General Assembly agreed to convene inter-sessional intergovernmental meetings to examine it,⁵² and subsequently established a Provisional Committee on Proposals related to a WIPO Development Agenda (PCDA) to carry forward the process.⁵³

The PCDA process has been carried forward into 2007. At the Fourth Session held on 11 – 15 June 2007 the PCDA agreed that the General Assembly in September 2007 be recommended to adopt the recommendations for action in the agreed proposals contained in Annex I.⁵⁴ It also

⁴⁹ For a commentary of the proposal see South Centre, Analytical Note SC/TADP/AN/IP/3 - *Establishing a "Development Agenda" for the World Intellectual Property Organization (WIPO): Commentary on Proposal by Argentina and Brazil* (2004) <<http://www.southcentre.org>> 28th March 2008.

⁵⁰ WO/GA/31/15, above n 34. See also *U.S. Vows to "Fight" the Push for WIPO Reform*, above n 22; Sisule F. Musungu, *The WIPO Assemblies 2004: A Review of the Outcomes* (2004) South Bulletin (15th October 2004) 89 <<http://www.southcentre.org/info/southbulletin/bulletin89/bulletin89.pdf>> at 25th February 2008.

⁵¹ Prior to the General Assembly, a consortium of non profit organisations, scientists, academics and others had signed the "Geneva Declaration on the Future of WIPO" available on <<http://www.cptech.org/ip/wipo/futureofwipodeclaration.pdf>> at 28th March 2008. This Declaration, inter alia, urged WIPO to work within the 1974 UN/WIPO agreement "and take a more balanced and realistic view of the social benefits and costs of intellectual property rights as a tool, but not the only tool, for supporting creative intellectual activity." It also declared that "[t]here must be a moratorium on new treaties and harmonization of standards that expand and strengthen monopolies and further restrict access to knowledge."

⁵² WO/GA/31/15, above n 34. In addition to these meetings several meetings were held with UN and international organisations as well as in other fora, revealing that "the discussions on the establishment of a WIPO development agenda are no longer a simple WIPO issue but a global discussion" - PCDA/1/5, above n 46. For an account of the discussions which took place in the meetings see Shashikant, above n 24.

⁵³ It has been noted that the establishment of this Committee was a compromise since delegates to the General Assembly differed as to whether discussions should continue at high level meetings reporting to the General Assembly or should be confined to the Permanent Committee on Co-operation for Development Related to Intellectual Property (PCIPD), a relatively unimportant forum concerned with technical assistance – ICTSD, above n 47, 22.

⁵⁴ These proposal were contained in four clusters - Technical Assistance and Capacity Building; Norm-Setting, Flexibilities, Public Policy and Public Domain; Technology Transfer, Information and Communication; Technologies (ICT) and Access to Knowledge; Assessment, Evaluation and Impact Studies; Institutional Matters Including Mandate and Governance; and Other Issues - PCDA/4/3 -

recommended that a Committee on Development and Intellectual Property (CDIP) be immediately established to develop a work program for implementing the adopted recommendations. The Committee would be composed of Member States of WIPO and would be open to all accredited intergovernmental and non-governmental organisations. The Committee will report and make recommendations annually to the General Assembly.⁵⁵ The Permanent Committee on Co-operation on Development Related to Intellectual Property (PCIPD) will cease to exist and the mandate of the PCDA will also not be renewed.⁵⁶

7.4 THE AGREEMENT ON TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (THE TRIPS AGREEMENT)

7.4.1 Introduction

While UPOV is specifically concerned with plant variety protection, and WIPO's mandate is that of promoting intellectual property protection, much of the debate on patenting plant varieties has taken place in the Council for Trade Related Aspects of Intellectual Property Rights (the TRIPS Council) of the World Trade Organisation. This is in large measure due to the structure and content of the TRIPS Agreement which contains, *inter alia*, provisions linking intellectual property rights to trade, sets minimum standards of such rights, and most importantly, contains effective measures to enforce its provisions. A discussion of the historical antecedents of TRIPS, the negotiations of its provisions and its scope and content will place in context the current debates which are taking place within it.

Provisional Committee on Proposals Related to a WIPO Development Agenda (PCDA), Fourth Session, June 11 to 15, 2007, *Report Adopted by the Meeting*, 4 September 2007, Annex 1.

⁵⁵ The First Session of the CDIP took place from 3-7 March 2008 - <http://www.wipo.int/meetings/en/details.jsp?meeting_id=15082> at 5th April 2008. This session, as approved by the WIPO General Assembly (September-October 2007), is to develop a work-program for implementation of the adopted recommendations; monitor, assess, discuss and report on the implementation of all recommendations adopted; and to discuss intellectual property and development related issues as agreed by the Committee, as well as those decided by the General Assembly - WO/INF/10/78 Rev - *List of Selected WIPO Meetings from February to December 2008*, February 2008.

⁵⁶ PCDA/4/3, above n 54, 30.

7.4.2 *History of the TRIPS Agreement*

The origins of the TRIPS Agreement date back to the General Agreement on Tariffs and Trade (GATT). The GATT has been described as an offshoot of a wider project – the International Trade Organization (ITO). The latter was the institution to administer the Havana Charter for an International Trade Organization being negotiated at the time. The GATT provisionally entered into force on 1 January 1948 pending the conclusion and entry into force of the Havana Charter. It has been described as “a legal instrument aimed at relaxing government-mandated trade protection.” Since the Havana Charter was never concluded, the GATT was applied for 47 years on a provisional basis.⁵⁷

The Agreement establishing the World Trade Organisation (WTO)⁵⁸ came into effect on 1 January 1995 emerging out of the Uruguay Round of Multilateral Trade Negotiations and became the successor to the GATT. The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) formed the Annex to the WTO Agreement.⁵⁹ The history of the TRIPS process originated with, inter alia, the concerns of multinational corporations (MNC) based in developed countries in regard to the counterfeiting and misappropriation of goods manufactured by them.⁶⁰ The purpose of this coalition was to encourage national governments to take action to prevent the trade in counterfeit goods. From about this time corporate interests including book publishers, agricultural chemical producers and others had also started taking action to combat the piracy of their products.⁶¹ As a result of effective lobbying, the 1980s saw the U.S. government responding to the problem through a variety of ad hoc strategies, including bilateral negotiations, to persuade

⁵⁷ Petros C Mavroidis, *The General Agreement on Tariffs and Trade: A Commentary* (2005), Chapter 1.

⁵⁸ Uruguay Round Agreement, *Marrakesh Agreement Establishing the World Trade Organization*, 1867 U.N.T.S. 154; 33 I.L.M. 1125 (1994); available at <http://www.wto.org/english/docs_e/legal_e/04-wto_e.htm> at 28th March 2008.

⁵⁹ *Agreement on Trade-Related Aspects of Intellectual Property Rights*, Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, signed in Marrakesh, Morocco on 15 April 1994, 1869 UNTS 299; 33 ILM 81 (1994) (hereinafter TRIPS Agreement).

⁶⁰ May, above n 18; Duncan Matthews, *Globalizing intellectual property rights: the TRIPs agreement* (2002). For a discussion of the role of U.S. industries in the TRIPS negotiations see Susan K Sell, ‘Industry Strategies for Intellectual Property and Trade: The Quest for TRIPS and Post-TRIPS Strategies’ (2002) 10 *Cardozo Journal of International and Comparative Law* 79.

⁶¹ Matthews notes that in lobbying on the issue U.S. business interests used language that was “emotive, portraying the ‘theft’ being undertaken by developing countries and those copying U.S. products as ‘pirates’. By using the language of incursion and theft, U.S. companies effectively changed the policy debate” – Matthews, above n 60, 14. The same language is now used by developing countries to define the misappropriation and acquisition of their genetic resources by these same business interests.

countries to protect the intellectual property of MNCs based within them. Within a short space of time both corporate interests and governments in the U.S., Europe, Canada and Japan had united to take up the question in global fora.

The issue was placed on the agenda at the Tokyo Round of the GATT negotiations which took place between 1973 and 1979, but proposals regarding measures to address it failed to gain support from other countries. Consensus was again absent at the Ministerial Meeting of GATT in 1982 where it met with opposition from developing countries.⁶² Nevertheless it was agreed that further work on the matter of counterfeit goods should go ahead. In addition, despite the opposition of some developing countries, intellectual property rights (IPRs) were included in the list of subjects for negotiation in the Ministerial Declaration of 1986.⁶³ This Declaration which launched the Uruguay Round of trade negotiations included Trade Related Aspects of Intellectual Property Rights (TRIPS).

7.4.3 Negotiation of the TRIPS Agreement

The negotiations of the TRIPS Agreement were marked by several factors including the prominent role played by developed country corporate interests,⁶⁴ the alleged arm twisting tactics used by the U.S. to overcome continuing developing country opposition to the negotiations⁶⁵ and the lack of transparency in the negotiating process.⁶⁶ In general, developing countries were opposed to an all encompassing agreement, i.e. one that incorporated both the trade in counterfeit

⁶² Ibid Chapter 1.

⁶³ Developing countries were not unanimous in their opposition to the inclusion of IPRs in the GATT Ministerial meeting and the newly industrialised countries of South East Asia did acknowledge the need to provide more effective protection - Ibid Chapter 1.

⁶⁴ For a discussion on corporate influence in international trade negotiations see ActionAid International, *Under the influence- Exposing Undue Corporate Influence over Policy-Making at the World Trade Organisation* (2006) <http://www.actionaid.org.uk/doc_lib/174_6_under_the_influence_final.pdf> at 25th February 2008.

⁶⁵ For a discussion of this aspect see Matthews, above n 60, Chapter 2. See also ActionAid International, *Divide and Rule – The EU and U.S. response to developing country alliances at the WTO* (2004) <http://www.actionaid.org/docs/divide_rule.pdf> at 25th February 2008.

⁶⁶ Peter Drahos, *Developing Countries and International Intellectual Property Standard Setting* (2002) Commission on Intellectual Property Rights Study Paper 8 <http://www.iprcommission.org/papers/pdfs/study_papers/sp8_drahos_study.pdf> at 25th February 2008.

and pirated goods as well as the “availability, use and scope” of intellectual property rights.⁶⁷ They also reiterated their position that WIPO was a more appropriate forum to address the latter issue rather than GATT.

The developing country concerns which were expressed throughout the negotiations centred generally on the impacts that the Agreement would have on their economies and development processes. More specifically they pointed to the likelihood that it could impede the transfer of technology and also increase the costs of agricultural and pharmaceutical products. They also took issue with the inclusion of trade secrets and pushed for compulsory licensing of patents⁶⁸ and exceptions to patentability on grounds of public interest, health and nutrition.⁶⁹

Ultimately the impetus to reach a final conclusion came not from the negotiating process but rather from the threats of bilateral sanctions brought by the United States under Section 301 of the U.S. Omnibus Trade and Tariff Act of 1988.⁷⁰ Action under Section 301 was taken against India, China and Thailand in 1991 and later against South Korea and Brazil, effectively compelling them to change their stand on the negotiations. Matthew comments that

[b]y threatening trade sanctions against recalcitrant countries one by one, the United States could effectively be seen to have weakened opposition to a TRIPS Agreement while ensuring that negotiations could at least take place within the Uruguay Round and increasing the prospects of an acceptable TRIPS Agreement.⁷¹

⁶⁷ Daniel Gervais, *The TRIPS Agreement - Drafting History and Analysis* (2nd ed. 2003) 18.

⁶⁸ Compulsory licensing is provided for under Article 31 of TRIPS which permits the subject matter of a patent to be used without the authorisation of the patent holder under specified circumstances, including national emergency or other situations of urgency. The patent holder must be adequately compensated for such use.

⁶⁹ Gervais, above n 67, Part 1.

⁷⁰ Matthews, above n 60, 31. Matthews explains that initially the U.S. had responded to complaints by businesses on an ad hoc and informal basis with its embassies abroad assisting in sorting out the problems. However, consequent to the failure to reform the WIPO conventions it adopted a bilateral approach to the issue and enacted new legislation to deal with it, specifically the Trade Act of 1984. Section 301 of this Act operated in three ways. Firstly, it permitted the U.S. Trade Representative to investigate the appropriateness of another country’s intellectual property without waiting for a complaint from U.S. businesses. Secondly, it made the failure to protect intellectual property rights actionable with trade sanctions. Thirdly, it made intellectual property protection a criterion for eliminating tariff privileges for imports into the U.S. of goods from developing countries under the Generalised System of Preferences (GSP).

⁷¹ *Ibid* 32.

After these countries, which were relatively more powerful among the developing nations, capitulated, little resistance could be expected from others. Having effectively fragmented the opposition it was left to the U.S., Europe and Japan to determine the final text of the Agreement.⁷²

However, Dutfield comments that coercion of the South by the North does not completely explain the complexities of the TRIPS negotiations. He points out that the “the developing world is extremely heterogeneous in terms of countries’ levels of industrialization and social and political development.” While some least developed countries totally lacked a manufacturing sector and were extremely indebted and poor, Latin American countries were relatively industrialized but were heavily indebted too. Some Asian countries “had extremely dynamic export-oriented industrial economies with firms beginning to develop their own IPR-protectable products and technologies.” Therefore the IPR related interests of these countries varied as did the interests of the different industrial sectors within them.⁷³

7.4.4 The nature, scope and content of the TRIPS Agreement

In relation to its content and scope, it is generally agreed that the TRIPS Agreement is the most comprehensive and far reaching international legal regime on intellectual property rights. It crosses the traditional line that separates the two main categories of IPRs, i.e. copyright and industrial property.⁷⁴ It also establishes universal minimum standards of patent protection across these areas. Further, unlike previous international treaties it contains detailed provisions on enforcement.⁷⁵

⁷² The fact that India, which was a particularly vociferous opponent of the negotiations, also surrendered its position is significant. Matthews notes that in 1992 the U.S. suspended GSP tariff exceptions for Indian pharmaceutical products, imposing a cost on Indian exports of an estimated \$60 million – Ibid Chapter 2.

⁷³ Graham Dutfield, *Trade, Intellectual Property and Biogenetic Resources: A Guide to the International Regulatory Landscape* (2002) International Centre for Trade and Sustainable Development (ICTSD) and Centre for Policy Dialogue, Bangladesh, 11 <<http://www.ictsd.org/dlogue/2002-04-19/Dutfield.pdf>> at 25th February 2008.

⁷⁴ The latter encompasses trademarks, geographical indications, industrial designs, patents, layout designs of integrated circuits and undisclosed information – South Centre, *The TRIPS Agreement: A Guide for the South. The Uruguay Round Agreement on Trade-Related Intellectual Property Rights* (1997) 17 <<http://www.southcentre.org/publications/trips/tripsagreement.pdf>> at 25th February 2008.

⁷⁵ Nuno Pires de Carvalho, *The TRIPS Regime of Patent Rights* (2005) 28.

The Agreement consists of four main elements.⁷⁶ First, it provides a set of substantive standards regarding the availability, scope and use of IPRs in relation to the various areas covered by it. Second, its enforcement provisions permit action against acts of infringement, including remedies to prevent them and those that deter further infringements. Third, it provides a dispute settlement mechanism to resolve disputes involving intellectual property matters. The fourth element has been described as the “general provisions for the agreement, which identify some basic rules and the general principles that preside over TRIPS obligations, as well as the norms on transitional arrangements.”⁷⁷

It has been commented that “[t]he real novelty of the Uruguay Round Declaration on trade-related aspects of IPRs resided in its GATT-based approach.”⁷⁸ This link between IPRs and trade has been expressed in the Preamble to the Agreement which expresses its objective as

to reduce distortions and impediments to international trade, and taking into account the need to promote effective and adequate protection of intellectual property rights, and to ensure that measures and procedures to enforce intellectual property rights do not themselves become barriers to legitimate trade.⁷⁹

The Preamble does not however throw light on the question as to why the subject of intellectual property rights was brought within the ambit of multilateral trade negotiations rather than that of specialised organisations dealing exclusively with this subject such as WIPO. The answer may have more to do with strategy than substance.

Firstly, opening up markets for developing country exports was made conditional upon them accepting the provisions of TRIPS. Developing countries also agreed to liberalise trade by reducing or eliminating tariff and non-tariff trade barriers. This enabled developed countries to increase exports of products based upon technology protected by intellectual property rules, thus eliminating competition from domestic products in the importing country. Perhaps most importantly, merging issues of trade and intellectual property in an agreement which also includes

⁷⁶ Ibid 30.

⁷⁷ Ibid.

⁷⁸ Abdulqawi A Yusuf, ‘TRIPS: Background, Principles and General Provisions’ in Carlos M Correa and Abdulqawi A Yusuf (eds.), *Intellectual property and international trade: the TRIPS Agreement*, Chapter 1.

⁷⁹ TRIPS Agreement, Preamble.

effective enforcement mechanisms enables non-compliance in one area to be penalised with retaliatory measures in the other. Therefore countries breaching TRIPS patent provisions could be subject to retaliation in trade.⁸⁰ Thus unlike WIPO, compliance could be ensured.

The relevant provisions of the TRIPS Agreement for the purposes of this thesis are those concerning patents insofar as they impact on PGRFA and related traditional knowledge. The remainder of the discussion in this thesis will be confined to this issue.

7.5 BILATERAL TREATIES AND “TRIPS-PLUS” MEASURES

While intellectual property (IP) standards and related issues are being discussed in a range of multilateral fora, negotiations are simultaneously taking place at the bilateral and regional level. These negotiations are often, though not invariably, between developed and developing countries, the former being usually the U.S. and the EU. Bilateralism is being mainly driven by the U.S., although the EU⁸¹ and the European Free Trade Association (EFTA)⁸² and to a somewhat lesser extent Japan, have played a significant role.⁸³

Bilateral treaties have been described as “direct, individual agreements between two or more countries on a range of topics such as trade, investment, scientific research, development cooperation/aid or intellectual property.”⁸⁴ These treaties can take the form of free trade

⁸⁰ South Centre, above n 74, 6.

⁸¹ Maximiliano Santa Cruz, *Intellectual Property Provisions in European Union Trade Agreements: Implications for Developing Countries* (2007) <<http://www.iprsonline.org/resources/docs/Santa-Cruz%20Blue20.pdf>> at 28th March 2008; GRAIN, ‘*TRIPS-Plus’ Must Stop - The European Union caught in blatant contradictions* (2003) http://www.grain.org/briefings_files/trips-plus-eu-2003-en.pdf at 23 April 2008.

⁸² The EFTA is composed of four European States which are not members of the EU – Switzerland, Norway, Iceland and Liechtenstein. See also Berne Declaration, Switzerland – “*TRIPS – Plus*” through EFTA’s back door – *How Free Trade Agreements concluded with EFTA-States impose much stronger rules on developing countries for IPRs on life than the WTO* <http://www.evb.ch/cm_data/Trips-plus_through_EFTAs_back_door_rev2.pdf> at 1st April 2008.

⁸³ Drahos, above n 66, 43. GRAIN has noted that Japan is also increasingly turning to bilateral agreements to boost its corporations’ market interests and to protect its food and energy security interests – GRAIN, *Japan digs its claws into biodiversity through FTAs* (2007) <http://www.grain.org/Articles_files/atg-11-en.pdf> at 1st April 2008.

⁸⁴ GRAIN, *TRIPS-plus” through the back door - How bilateral treaties impose much stronger rules for IPRs on life than the WTO* (2001) <http://grain.org/briefings_files/trips-plus-en.pdf> at 28th March 2008.

agreements, bilateral investment treaties, development cooperation, aid and partnership or association agreements, bilateral science and technology (or research co-operation) agreements and bilateral IPR agreements.⁸⁵ For the sake of clarity the term “bilateral treaty” will be used in this discussion to include the range of such bilateral, regional or sub-regional agreements.

Bilateral treaties can sometimes involve two blocs of countries, as in the case of the special partnership agreement between the EU and African, Caribbean and Pacific (ACP) countries, which are comprised of 15 and 78 nations respectively.⁸⁶ The U.S. has also entered into agreements with blocs of countries.⁸⁷ Notwithstanding the number of parties actually involved in the agreements, and the structure of the treaties, their ultimate objective is to negotiate terms and conditions which are applicable only to them and which are outside the multilateral trading system.

Bilateral negotiations between developed and developing countries are intrinsically more disadvantageous to the latter than negotiations in multilateral fora where their numerical advantage and the mutual support among them operate as counterbalances to the power of developed countries. These negotiations are also often marked by a lack of transparency, even secrecy, where neither the legislature nor the public of the countries concerned are aware of the terms of the negotiations until the agreement has been signed, thus preventing any form of democratic control over them.⁸⁸

7.5.1 “TRIPS-plus” provisions in bilateral treaties

The most controversial feature of bilateral treaties is the provisions which have been termed “TRIPS-plus.” This term refers to provisions in these treaties which impose more stringent standards of IP protection than that contained in the TRIPS Agreement. These TRIPS-plus

⁸⁵ Ibid.

⁸⁶ Ibid.

⁸⁷ For example the Andean Trade Preferences Act, 1991 and the Caribbean Basin Trade Partnership Act, 2000 – GRAIN, *Bilateral agreements imposing TRIPS-plus intellectual property rights on biodiversity in developing countries* (2008) <http://www.grain.org/rights_files/TRIPS-plus-January-2008.pdf> at 28th March 2008.

⁸⁸ Berne Declaration, above n 82, 6.

standards are usually imposed by the developed country partners to the agreement in return for the trade concessions needed by the other partner/s, usually developing countries.⁸⁹

TRIPS imposes only minimum standards of IP protection, reserving the freedom of Member countries to impose higher levels so long as they respect the principles of national treatment⁹⁰ and most favoured nation treatment.⁹¹ Therefore it does not totally serve developed country objectives in regard to raising the levels of such protection. TRIPS-plus provisions in bilateral treaties may include those that require a signatory State to implement a higher standard of IP protection than required under TRIPS and provisions that eliminate the flexibilities under TRIPS.⁹² Some agreements also compel developing countries to begin implementation of their TRIPS obligations before the expiration of transition periods and to accede to other multilateral intellectual property agreements.⁹³ While these TRIPS-plus measures cover all aspects of intellectual property, they will also necessarily impact on the propertisation of PGRFA.

7.5.2 *The development of TRIPS-plus bilateralism*

While the use of bilateral measures to impose higher standards of IP protection has seen an upsurge in the past decade, it is not a new phenomenon. Rather, it forms part of a periodic cycle of multilateralism and bilateralism initiated by developed countries to attain the “upward harmonisation” of IP standards.⁹⁴ Bilateral IP agreements of the 1980s were, in fact, a precursor

⁸⁹ Pedro Roffe, *Intellectual Property, Bilateral Agreements and Sustainable Development: The Challenges of Implementation* (2007) Center for International Environmental Law <http://www.ciel.org/Publications/FTA_ImplementationPub_Jan07.pdf> 28th March 2008. However, such treaties entered into by and between southern countries are also increasing - GRAIN, *Sharing FTA experiences* (2006) <http://www.grain.org/seedling_files/seed-06-10-4.pdf> at 28th March 2008.

⁹⁰ Under Article 3 of the TRIPS Agreement a Member “shall accord to the nationals of other Members treatment no less favourable than that it accords to its own nationals with regard to the protection of intellectual property.” This is subject to certain specified exceptions.

⁹¹ Article 4 of the TRIPS Agreement states that “[w]ith regard to the 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.” This is also subject to certain specified exceptions.

⁹² Peter Drahos, *Bilateralism in Intellectual Property* (2001) <http://www.bilaterals.org/IMG/pdf/Drahos_study_2001.pdf> at 28th March 2008.

⁹³ Laurence R Helfer, ‘Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Lawmaking’ (2004) 29 *Yale Journal of International Law* 1, 24.

to TRIPS and as noted earlier, the U.S. used the threat of bilateral trade sanctions to coerce countries into adopting higher IP standards. It has been observed that “[t]he most fundamental U.S. strategy has been to act tough on bilateral negotiations to set frameworks for subsequent multilateral negotiation.”⁹⁵

Developing countries agreed to TRIPS on the expectation that if they did so the U.S. would desist from negotiating IP standards bilaterally.⁹⁶ Notwithstanding this expectation, since TRIPS was signed there has in fact been an increase in bilateral IP negotiations.⁹⁷ This increase particularly took off after the failed Seattle Ministerial Meeting in 1999.⁹⁸

The reversion to a bilateral strategy can therefore be largely attributed to the failure of developed countries to advance their objectives of higher levels of IP protection in multilateral fora such as WIPO and the TRIPS Council.⁹⁹ Developed countries led by the U.S. forum shifted from WIPO to the WTO when they believed that the former was dominated by developing country interests. Having launched TRIPS, they faced similar opposition in the WTO when developing countries formed themselves into coalitions in both fora which successfully stalled moves to further enhance international IP standards.¹⁰⁰

Negotiation of bilateral treaties is a strategy by which to fragment these alliances and enter into agreements with individual members of the coalitions which undermine their common position.

⁹⁴ Ruth Mayne *Regionalism, bilateralism, and TRIPS plus-provisions on public health: the threat to developing countries* (2005) Human Development Report Office Occasional Paper <http://hdr.undp.org/docs/publications/background_papers/2005/HDR2005_Mayne_Ruth_18.pdf> at 28th March 2008.

⁹⁵ Braithwaite and Drahos, above n 41, 198. See also Drahos, above n 66, 14.

⁹⁶ David Vivas-Eugui, *Regional and bilateral agreements and a TRIPS-plus world: the Free Trade Area of the Americas (FTAA)* Quaker United Nations Office, Quaker International Affairs Programme and International Centre for Trade and Sustainable Development (2003) <<http://www.quno.org/geneva/pdf/economic/Issues/FTAs-TRIPS-plus-English.pdf>> at 28th March 2008.

⁹⁷ Drahos, above n 66.

⁹⁸ Bryan Mercurio, *TRIPS-Plus Provisions in FTAs: Recent Trends* [date not available] <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=947767> at 23rd April 2008.

⁹⁹ GRAIN, above n 89; Mayne, above n 94.

¹⁰⁰ Mayne, above n 94, 1.

They may also bypass the constraints contained in the TRIPS Agreement. Bilateral treaties negotiated with a single country or a bloc of countries, constitute a new form of international IP standard setting. Moving away from the multilateral into the bilateral sphere, has in fact enabled countries such as the U.S. and those of the EU to impose on developing countries far higher standards of IP protection than they would have achieved within TRIPS.¹⁰¹

The success of this strategy can be seen for example in the case of Peru which has consistently taken a strong position in the WTO Council on issues of genetic resources and traditional knowledge but which nevertheless signed a Free Trade Agreement with the U.S. with potential negative consequences on it in regard to these resources.¹⁰² Developing country groups such as the G20¹⁰³ have also been targeted, with some Latin American countries leaving the coalition after the Cancun Ministerial when the U.S. declared that it would not approve Free Trade Agreements with members.¹⁰⁴ On the other hand some countries such as Argentina and Brazil have resisted these attempts,¹⁰⁵ while in Ecuador FTA negotiations have stopped as a result of social mobilization, and in South Korea they have been delayed for the same reason.¹⁰⁶

The question therefore is why developing countries are entering into these agreements. The primary reason cited for this is that they require access to markets in developed countries and they are often not fully aware of what they are signing away.¹⁰⁷ The U.S. for example has made enhanced IP standards a condition for developing countries to qualify for U.S. trade preferences

¹⁰¹ GRAIN, above n 89. See also UNCTAD/TDR/2007 – United Nations Conference on Trade and Development, *Trade and Development Report 2007*, for an analysis of the impacts of bilateral agreements on developing countries.

¹⁰² BRIDGES, *IP Standards in the US-Peru FTA: Health and Environment* (2006) BRIDGES No. 1, January – February 2006, 17 <<http://www.ictsd.org/monthly/bridges/BRIDGES10-1.pdf>> at 25th February 2008; Susan K. Sell, *Books, Drugs and Seeds: the Politics of Access* (2006) 45 <www.tacd.org/events/intellectual-property/s_sell.doc> at 28th March 2008.

¹⁰³ The G20 is a coalition of developing countries which was established on 20 August 2003 during the preparations to the Cancun Ministerial Conference of that year. Its central focus is on agriculture. It has 23 member countries from Africa, Asia and Latin America. See <<http://www.g-20.mre.gov.br/history.asp>> last visited 24th April 2008.

¹⁰⁴ Mayne, above n 94.

¹⁰⁵ Ibid 5.

¹⁰⁶ GRAIN, above n 89 16.

¹⁰⁷ Drahos, above n 66, 29; Mayne, above n 94, 5.

under the Caribbean Basin Initiative¹⁰⁸ and Andean Trade Preferences Act.¹⁰⁹ Under the required standards these countries must provide levels of IPR protection as defined by the U.S.¹¹⁰ Critics have pointed out that developing countries are paying for very limited access to these markets by signing away the flexibilities they had under TRIPS.¹¹¹

Bilateralism also has implications for multilateralism in international standard setting on IP. The interaction of multilateralism and bilateralism in a way that is most advantageous to developed nations is evident in the operation of the Most Favoured Nation Treatment clause of the TRIPS Agreement found in Article 4. Under this provision any terms negotiated regionally or bilaterally must be made available to other WTO members on the same basis.¹¹² Therefore, for example, a developing country which agrees to higher levels of IP protection in a bilateral agreement entered into with the U.S. would be required to grant that same level of protection to all other Member states of the TRIPS Agreement. This potentially makes further negotiations in the TRIPS Council irrelevant.

Therefore apart from fragmenting developing country alliances in fora such as the WTO and WIPO, TRIPS-plus provisions potentially undermine the multilateral system which carries at least a façade of agreement with consensus.¹¹³ The combined effect of negotiations in both spheres also opens up the possibility that it would replace multilateral IP standard setting which would become redundant.

¹⁰⁸ The Caribbean Basin Trade Partnership Act of 2000 is part of the Caribbean Basin Initiative launched in 1983. It entered into force on 1 October 2000 and continues until 30 September 2008 or an earlier date on which a free trade agreement enters into force between the U.S. and a beneficiary country. Currently 19 countries of the region are partners in this initiative. See the website at <http://www.ustr.gov/Trade_Development/Preference_Programs/CBI/Section_Index.html> last visited 5th April 2008.

¹⁰⁹ The Andean Trade Preference Act was enacted in 1991 to combat drug production and trafficking in the Andean countries: Bolivia, Colombia, Ecuador and Peru. It was expanded under the Trade Act of 2002, and is now called the Andean Trade Promotion and Drug Eradication Act. See the website <http://www.ustr.gov/Trade_Development/Preference_Programs/ATPA/Section_Index.html> last visited 5th April 2008.

¹¹⁰ Mayne, above n 94, 6.

¹¹¹ Berne Declaration, above n 82.

¹¹² Commission on Intellectual Property Rights, above n 26, 162.

¹¹³ Mayne, above n 94, 7.

It should be noted that there have been some examples of resistance to bilateralism, notably in the suspension of the negotiations of the Free Trade Areas of the Americas. Similarly in 2005 Ecuador and Colombia refused to agree to TRIPS-plus measures in negotiations with the U.S., although Colombia subsequently gave in.¹¹⁴ Much of the resistance is emanating from civil society groups and the public.¹¹⁵ At the same time developing countries are uniting to push for reforms in the TRIPS Council.¹¹⁶ It remains to be seen how successful this resistance will be.

7.6 CONCLUSION

The discussion above examined the operation of the international IPR and trade regime as it potentially applies to the patenting of plant varieties. The primary purpose of the regime is the development of higher intellectual property standards, the facilitation of processes for approving patent applications and the international upward harmonisation of the rules relating to both. While this process does not relate to PGRFA alone, it will necessarily impact upon these resources, and much of the concerns raised by developing countries in this regard have been in relation to them. The substantive issues on plant variety protection are for the most part dealt with by TRIPS, which provides for minimum IPR standards, while leaving to countries a certain degree of flexibility to formulate their laws within this framework. UPOV deals specifically with plant breeders' rights over plant varieties and, as will be analysed later in this thesis, its provisions have been linked to those of TRIPS in an attempt to enhance patent protection of PGRFA. The procedural aspects of intellectual property protection have been addressed in the WIPO by way of its patent agenda. WIPO is also attempting to develop substantive aspects of patent laws through the negotiation of the SPLT.

The debate on patenting of plant varieties has, for the most part, taken place in the TRIPS Council and in WIPO fora. WIPO can be considered as a somewhat more neutral forum than the former for developing countries to raise their concerns, since, being a UN organisation, its mandate does include accelerating economic, social and cultural development in these countries. However, its

¹¹⁴ Sell, above n 102, 57.

¹¹⁵ GRAIN, above n 89.

¹¹⁶ Third World Network, *TRIPS: Majority of WTO members now support disclosure proposal* 14 March 2008 <<http://www.twinside.org.sg/title2/wto.info/twninfo20080318.htm>> at 5th April 2008; Intellectual Property Watch, *TRIPS Council: Half of WTO Membership Backs Biodiversity Amendment* (14 March 2008) <<http://ip-watch.org/weblog/wp-trackback.php?p=961>> at 5th April 2008.

patent harmonisation agenda has been a cause for concern among them. As at date, developing countries have resisted this process with some degree of success, and in turn have brought in their own proposals as counter measures. These include the development agenda in the WIPO and demands that requirements of IPRs be reviewed in order to prevent unjustified patent protection being granted over plant varieties and related traditional knowledge. Developing countries have also raised the same issues in other fora including the CBD, and negotiations are continuing in these as well.

Developed countries in turn are now offsetting their failure to push their agenda through in multilateral fora by once again resorting to a bilateral strategy. This serves to effectively undermine the united front presented by developing countries in the WTO and WIPO, and further, by bypassing TRIPS, to strengthen intellectual property protection measures on a country by country basis. While they have been successful in this strategy to a large extent, they have encountered some resistance in this sphere.

As will be seen in the further discussions, the international property rights regime, consisting of these three institutions, has succeeded in instituting a system of intellectual property rights applicable to PGRFA, which enables the appropriation of crop plants and their removal from the public domain. While this process serves the interests of commercial plant breeders and agribusiness, it is inimical to the interests of farmers, indigenous and local communities, and national agricultural systems, particularly in developing countries. The continuing debate on the issue reflects the attempts of developing countries to negotiate measures to counteract the negative impacts of this regime. The next section will analyse related issues in the debate on PGRFA, specifically its prejudicial effects on certain communities and its use of traditional knowledge. The section thereafter will continue the examination on the substantive issues which are being discussed in international fora.

Part 4

Related Issues in the debate on PGRFA - Farmers' and Indigenous Peoples' Rights, and Traditional Knowledge

CHAPTER 8

THE RIGHTS OF FARMERS

8.1 INTRODUCTION

While the propertisation of plant genetic resources for food and agriculture (PGRFA) may have potential negative implications for national agricultural systems and food security, concerns as to its more direct impacts on particular groups of people have also been raised in the international debate on the topic. One such group is farmers, particularly those in developing countries, whose livelihoods and way of life may be threatened by these international developments. Consequently, this aspect of the debate is not confined to issues of conservation or commercialisation of natural resources alone, but also takes on a dimension of rights and equity. It is also an aspect of international law, which is still ill-defined and uncertain, as will be seen from the discussion below.

The concept of farmers' rights entered the international discourse on PGRFA by way of the FAO International Undertaking on Plant Genetic Resources (IUPGR). As discussed in Chapter 6, developing countries sought recognition for the role of farmers in plant breeding by Resolution 5/89 entitled "Farmers' Rights," adopted on 29 November 1989. This was essentially a counter measure to the recognition of plant breeders' rights which had been articulated by Resolution 4/89 entitled "Agreed Interpretation of the International Undertaking," adopted on 29 November 1989. The principle is now embedded in the FAO Treaty on Plant Genetic Resources for Food and Agriculture (FAO Treaty). In this chapter I will argue that while farmers' rights have become one of the principal elements on which the debate on PGRFA is based, to date the nature, scope and content of the rights have still not been clearly elucidated and it is a principle which is still confused and uncertain.

8.2 THE DEVELOPMENT OF THE PRINCIPLE OF FARMERS' RIGHTS

Until relatively recently the role of farmers in plant breeding and agricultural production was not enclosed in a framework of rights but was simply a part of the process of conserving, developing and using PGRFA.¹ For generations and until recently, seed varieties developed by traditional

¹ For a history of the development of farmers' rights see Regine Andersen, *The History of Farmers Rights, A Guide to Central Documents and Literature* (2005) The Fridtjof Nansen Institute, The Farmers Rights Project, Background Study 1 <<http://www.fni.no/doc&pdf/FNI-R0805.pdf>> at 25th February 2008. See

farmers were viewed as a public good to be freely used, saved and exchanged. As has been discussed above, with the development of modern technology (and genetics in particular), plant breeding became more amenable to technological manipulation, which resulted in faster adaptations of plant varieties. Consequently the process has come to be dominated by institutional plant breeders who began producing what were designated as “modern,” “elite” and “high yielding” varieties of seeds, which were bred in a relatively short space of time and contained specific and identifiable characteristics. Plant breeding was analogised to inventions rather than to natural processes of evolution, and on the basis of the analogy, claims of intellectual property rights were extended to the end results. These were justified on the premise that it was necessary to recognise the plant breeders’ role in developing “modern varieties” of seeds and to ensure monetary compensation for their products.²

This position was advantageous to institutional plant breeders but worked to the detriment of traditional farmers working informally, whose efforts in plant breeding, spanning generations, for the most part went unacknowledged. Western technology and legal concepts have essentially reconstructed their role in food production. It has trivialised their contribution to the development and improvement of PGRFA and the maintenance of agricultural biodiversity. Further, the property rights awarded to the latter have threatened to displace their own rights to save and re-use seed, endangering their traditional livelihoods and farming practices including that of breeding.³

The inequity caused by granting legal recognition to plant breeders’ rights over their plant varieties, while the contributions of farmers to this process went disregarded and unrewarded, in effect triggered the campaign for the recognition of the latter. An analogy was drawn with intellectual property rights claimed by plant breeders and extended to this new debate, and the former claims were countered by parallel claims to the rights of farmers. As Borowiak observes:

also generally Martin A Girsberger, *Biodiversity and the Concept of Farmers’ Rights in International Law: Factual Background and Legal Analysis* (1999).

² C S Srinivasan ‘Exploring the Feasibility of Farmers’ Rights’ (2003) 21(4) *Development Policy Review* 419.

³ Craig Borowiak ‘Farmers’ Rights: Intellectual Property Regimes and the Struggle over Seeds’ (2004) 32 *Politics Society* 511.

[i]f ‘breeders’ rights’ was the pivot upon which agribusinesses lobbied for changes in commercial law, ‘farmers’ rights,’ ‘indigenous rights,’ and, more recently, ‘human rights’ provide the ground upon which resistance to plant variety IPRs is being waged.⁴

The efforts to introduce farmers’ rights to the international agenda bore fruit when the subject was incorporated into international documents dealing with plant genetic resources, biodiversity conservation and sustainable development, in fora including the FAO and the CBD. The mandate to develop the concept has been taken up by the FAO rather than by the CBD.⁵ However, the formulation of farmers’ rights is not articulated in the usual vocabulary of human rights and there is uncertainty as to what they are, who holds them, and whether they are in any way justiciable.

8.3 THE CONCEPTUALIZATION AND RATIONALES OF FARMERS’ RIGHTS AS HUMAN RIGHTS

It is unclear whether farmers’ rights should be analogized to human rights or property rights. Human rights are grounded on principles of justice, equity, and human dignity, while property rights are premised on the principles of possession and ownership. The initiative to formulate and enforce farmers’ rights was, as noted above, triggered by modern plant breeders asserting intellectual property rights over seed varieties, which were then being aggressively marketed throughout the world. Another cause of concern was the loss of genetic diversity which would result with the replacement of farmers’ landraces with these “modern” varieties. Although the initial impetus for the movement was based on a concern for this loss of diversity, writers have identified three interrelated rationales for farmers’ rights – conservation, equity, and the preservation of farming practices.⁶ These three aspects will be examined in turn to determine whether and how they provide a basis to conceptualise these rights as human rights.

⁴ Borowiak, above n 3, 512.

⁵ Resolution 3 of the Nairobi Final Act entitled “The Interrelationship between the Convention on Biological Diversity and the Promotion of Sustainable Agriculture” noted that the question of farmers’ rights was one of the outstanding matters concerning PGR for which solutions should be sought within the Global System - CBD/UNEP – *Handbook on the Convention on Biological Diversity* (3rd ed. 2005), 406.

⁶ Borowiak, above n 3, 524.

8.3.1 Conservation

The conservation aspect addresses the problem of the global loss of biodiversity including diversity in PGRFA. Its continuing conservation and enhancement, particularly *in situ*, is to a large extent dependent on the traditional agricultural practices of local farmers, including plant breeding. However, while these practices are important in the long term, they are not rewarded in the short term under the existing proprietary system. Farmers are not compensated for their conservation practices or for the continued use of traditional plant varieties and may in fact be at a competitive disadvantage vis-à-vis those who use high yielding varieties or genetically engineered crops.⁷ Borowiak argues that

[f]rom this perspective and for the sake of future innovation in agriculture, as well as in other bioindustries, farmers' rights are seen as a way to materially support (and thereby offer incentives to) farmers who conserve biodiversity.⁸

It appears therefore that farmers' rights are not founded on the interests of farmers per se, including the need to protect their human rights to their culture, economic base or traditional livelihoods. It seems rather that the conservation rationale views them as the custodians of agricultural diversity, and as the means by which to preserve such diversity for the greater good. The wording of both the Convention on Biological Diversity (CBD) and the early FAO documents clearly reflect this linkage. For example, Annex 2 of the IUPGR declares that "plant genetic resources are a common heritage of mankind to be preserved and to be freely available for use, for the benefit of present and future generations." It then goes on to endorse the concept of farmers' rights in order to, inter alia, ensure that the need for conservation is globally recognized, and to assist farmers and farming communities, in all regions of the world, but especially in the areas of origin/diversity of PGRFA in the protection and conservation of such resources. While this is necessarily in the interests of the farmers, it is also in the interests of everybody else as well. The CBD is also founded upon the conservation of biological diversity including PGRFA. While this diversity is crucial to the survival of the global population, it is by and large located in the developing world in the custody of those who are among the poorest, and on whom the burden falls to conserve it. Therefore the conservation rationale clearly does not prioritise the

⁷ Kathleen McAfee, 'Corn Culture and Dangerous DNA: Real and Imagined Consequences of Maize Transgene Flow in Oaxaca' (2003) 2 (1) *Journal of Latin American Geography* 18.

⁸ Ibid.

interests of farmers, but rather focuses on their capacity to conserve biodiversity for the common good.

8.3.2 *Equity*

The equity rationale of farmers' rights revolves around the current international dimensions in agricultural production and trade, including property rights over seed varieties.⁹ As noted earlier, farmers practising traditional agriculture in developing countries have not been compensated for their efforts in developing the germplasm on which modern high yielding varieties are based. Further, when farmers in these countries adopt modern agricultural processes including high yielding seed varieties commercialised by plant breeders, they are charged market prices by the latter.¹⁰ These factors have not been addressed by the international regime which has failed to take a holistic overview of the issue.

The equity rationale is also problematic as these issues, including the asymmetry in assigning value to seed varieties produced by farmers on the one hand and by plant breeders on the other, do not impact upon farmers alone. In the context of domestic food production, the interests of farmers are intrinsically tied up with the interests of the country in which they are located. The inequity directly impacts upon farmers to the extent that it affects their livelihoods. However, there is also a wider dimension to the issue of propertising and marketing modern plant varieties. It would not be in the interests of a nation's economy and food security if its means of food production were under the monopolistic control of agribusinesses which are outside its jurisdiction, particularly where the latter's operations are facilitated by the current trends in intellectual property rights and the global trade in agriculture and agricultural products. Consequently, the interests of the wider population would also be threatened, and the matter would have to be addressed in a different context and dimension, rather than by international agreements on natural resources conservation or human rights. Therefore while the equity issue includes the interests of farmers, it cannot be articulated in that context alone.

⁹ Ibid; Timothy Swanson, 'Why is there a Biodiversity Convention - The International Interest in Centralised Development Planning' (1999) 75(2) *International Affairs* 307.

¹⁰ Swanson, above n 9, 327.

8.3.3 *The preservation of farming practices*

It is perhaps the third aspect of farmers' rights that can be brought within the framework of farmers' human rights, i.e. that of the preservation of farming practices. This is the aspect that directly concerns the interests of farmers as a distinct category, irrespective of the rights of others. The rights articulated in the FAO Treaty, include the protection of traditional knowledge relevant to PGRFA, the right to equitably participate in the sharing of benefits arising from the use of PGRFA, and the right to participate in making decisions at the national level on matters relating to the conservation and sustainable use of PGRFA. These rights as well as the others specified, i.e. the rights to save, use, exchange, and sell farm-saved seed/propagating material clearly fall within the dimensions of farmers' human rights.¹¹ The rights are also expressed in a vocabulary which is consistent with the language of human rights and which is possibly enforceable at national if not at international level.

However, even in this respect, the rationale for farmers' rights in the FAO Treaty is prioritized by the need for conservation of PGRFA rather than the protection of a category of people who are essentially disadvantaged and voiceless in many respects. The Preamble to the Treaty affirms

that the past, present and future contributions of farmers in all regions of the world, particularly those in centres of origin and diversity, in conserving, improving and making available these resources, is the basis of Farmers' Rights.¹²

Therefore once again the rights of farmers have been subsumed to the wider interests of conserving and developing PGRFA for the benefit of humankind.

8.4 FARMERS' RIGHTS AS PROPERTY RIGHTS

Having argued that farmers' rights as they are presently articulated cannot be clearly sited within the human rights agenda, the next question is whether they can be located within the boundaries of property rights. This question also does not have a clear answer. Although farmers have historically been the custodians and developers of PGRFA they have not asserted property rights over them, such resources being in the public domain. In international law, rights over PGRFA

¹¹ *International Treaty on Plant Genetic Resources for Food and Agriculture*, adopted at the 31st Session of the FAO Conference on 3 November 2001 available at <http://www.fao.org/ag/cgrfa/itpgr.htm> and the website of the Treaty at <http://www.planttreaty.org/> last accessed 30 April 2008 (hereinafter FAO Treaty), Article 9 entitled "Farmers' Rights."

¹² See for example FAO Treaty – Preamble, Paragraph 7.

have now shifted from common heritage to State sovereignty.¹³ Therefore property in PGRFA is now clearly within the jurisdiction of national governments. This is inevitable since it would not be feasible for governments to accord farmers such exclusive rights over plant varieties vis-à-vis the rest of a country's population.

As noted before, the idea of farmers' rights emerged as a strategic response to the exclusive intellectual property rights accorded to plant breeders. However, the practical objective was to prevent these rights from disadvantaging farmers or from dislodging them from their traditional role and functions. The need was to ensure that their role in agriculture received equal recognition as that of plant breeders, and that they received compensation for their part in the conservation and management of those resources and an equitable share of the benefits derived from them.

As can be seen from the list of rights suggested below by Via Campesina, even advocacy groups have stopped short of suggesting that plant breeders' property rights should be duplicated with farmers' property rights. In any case it would be practically impossible to enforce such rights. While the scientifically bred varieties can be identified and assigned to their respective owners, the very nature of farmer bred seeds and the processes by which they are freely exchanged, shared and developed in common, preclude this.¹⁴ Therefore it can be argued that the concept of farmers' rights is not intended to assign property rights over seed varieties to farmers, but is rather a defensive measure to ward off the proprietisation of what was historically in the public domain.

8.5 ALTERNATIVE PERSPECTIVES ON FARMERS' RIGHTS

Some civil society groups have argued for a broader approach to farmers' rights, viewing them as a part of the general socio-economic rights of rural communities. Borowiak cites one farmer

¹³ *International Undertaking on Plant Genetic Resources*, Resolution 8/83, Twenty-second Session of the FAO Conference, 5-23 November 1983 (hereinafter IUPGR) - Annex 3; *Convention on Biological Diversity* (1992) 31 ILM 818, Preamble, and Article 3; FAO Treaty - Article 10.

¹⁴ Borowiak, above n 3.

advocacy group, Via Campesina, as campaigning for farmers' rights to be interpreted to include the following:¹⁵

- the right to conserve biodiversity;
- the right to achieve food security;
- the right to land, water, and air;
- the right to participate in policies linked to genetic resources;
- the right to appropriate technology;
- the right to define the control and handling of benefits derived from the use of genetic resources;
- the right to develop models of sustainable agriculture; and
- the right to use, choose, store, and freely exchange, genetic resources.

The FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) has also noted that some countries consider that farmers' rights should be considered socio-economic rights which should include the following:

- the traditional rights of farmers and their communities to keep, use, exchange, share and market their seeds and plant reproductive material, including the right known as the "farmers' privilege;"
- access by farmers to new technologies and other research achievements;
- protecting local technologies, traditional cropping practices and other informal innovative systems; and
- the rights of communities as custodians of indigenous knowledge and of their own plant genetic resources.¹⁶

These lists are obviously broader than the rights specified in the FAO Treaty and contain a combination of both generally recognised socio-economic rights, and those which are specific to farmers in the context of their role in agriculture. The international human rights agenda has

¹⁵ Ibid 529. The website of Via Campesina is available at <<http://viacampesina.org>> at 18 April 2008. See also the *Bamako Declaration - Declaration of the Farmer Exchange on the Privatisation of Seeds*, organized by the CNOP, BEDE and IIED, Preparatory process for the International Forum on Food Sovereignty of Nyeléni, Mali, Bamako, 21st February 2007, available at <<http://www.iied.org/NR/Documents/BAMAKODECLARATION.pdf>> at 28th March 2008.

¹⁶ CPGR-6/95/REP - Report of the Commission on Plant Genetic Resources Sixth Session, 19-30 June 1995, Appendix C, Report by the Chairman of the Tenth Session of the Working Group of the Commission on Plant Genetic Resources, Paragraph 24.

recognised that the rights of certain groups – women,¹⁷ children,¹⁸ minorities¹⁹ – require specific action beyond the general discourse of rights. It is suggested that farmers are also a group whose needs are sufficiently distinctive so as to necessitate such specific action.

8.6 THE SCOPE AND CONTENT OF FARMERS' RIGHTS IN INTERNATIONAL DOCUMENTS

The scope and content of farmers' rights was not enunciated in precise terms in the early documents. Annex 2 of the IUPGR which was the first document to give expression to them states that farmers' rights are those 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.²⁰

This statement merely offers an explanation of the origins of such rights and does not articulate their scope or content. The Annex had earlier noted that “farmers, especially those in developing countries, should benefit fully from the improved and increased use of the natural resources they have preserved.” However, here too it did not indicate in what ways they should benefit.

Annex 1 to the IUPGR stated that

the adhering states consider that the best way to implement the concept of Farmers' Rights is to ensure the conservation, management and use of plant genetic resources, for the benefit of present and future generations of farmers.

¹⁷ *Convention on the Elimination of All Forms of Discrimination against Women*, GA res. 34/180, 34 UN GAOR Supp. (No. 46) at 193, UN Doc. A/34/46; 1249 UNTS 13; 19 ILM 33 (1980) (entered into force 3 September 1981).

¹⁸ *Convention on the Rights of the Child*, GA res. 44/25, annex, 44 UN GAOR Supp. (No. 49) at 167, U.N. Doc. A/44/49 (1989); 1577 UNTS 3; 28 ILM 1448 (1989) (entered into force 2 September 1990).

¹⁹ *International Convention on the Elimination of All Forms of Racial Discrimination*, G.A. res. 2106 (XX), Annex, 20 U.N. GAOR Supp. (No. 14) at 47, U.N. Doc. A/6014 (1966), 660 U.N.T.S. 195, (entered into force 4 January 1969); *Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities*, Adopted by General Assembly resolution 47/135 of 18 December 1992.

²⁰ Annex 2, Resolution 5/89 to the International Undertaking entitled “Farmers' Rights.” The wording is reproduced in Article 2 of the *FAO International Code of Conduct for Plant Germplasm Collecting and Transfer* and in the *FAO Draft Code of Conduct on Biotechnology*.

This provision thus calls for the implementation of rights without specifying what they are. Further, interests in PGRFA are not confined to farmers and are essential for global food security as well as being an important aspect of biodiversity conservation. Therefore it is unclear how conserving them would uniquely promote the rights and interests of farmers.

The indeterminate wording of the expressions in the IUPGR on farmers' rights reflects early attempts to conceptualise them, which fall short of giving them concrete expression. While the range of rights to which farmers *as farmers* are entitled may be extensive and diverse, it is generally accepted that at a minimum they include the right to use, save, sell and exchange seed,²¹ but these have not been articulated in the IUPGR.

Some references to these specific rights can be found in international documents of the 1990s. One (though indirect) is contained in Paragraph 9 of the FAO Global Plan of Action of 1996²² which notes

the needs and individual rights of farmers and, collectively, where recognized by national law, to have non-discriminatory access to germplasm, information, technologies, financial resources and research and marketing systems necessary for them to continue to manage and improve genetic resources.

However, while the Plan spoke at length of the need to enhance the knowledge, capacity and livelihoods of farmers, to include them in decision making and to promote the conservation and development of plant genetic resources for their benefit, it did not elaborate further on how this should be achieved or how the rights should be enforced.²³

²¹ John E Haapala, 'Farmers' Rights' (2004) *Journal of Environmental Law and Litigation* 467.

²² *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture*, 1996 (hereinafter Global Plan of Action).

²³ Another reference, again indirectly, is contained in Decision V/5 of CoP 5. Section 3 of the Decision on Genetic Use Restriction Technologies refers to the rights of farmers to keep, use, exchange and sell seed or propagating material which may be obstructed by the use of GURTS. References to farmers' rights are also found in Agenda 21, Chapter 14.59. Chapter 14 deals with "Promoting Sustainable Agriculture and Rural Development and calls upon the Global system to, inter alia, take further steps to realise farmers' rights. Article 16.7 which deals with Environmentally Sound Management of Biotechnology calls upon governments to promote specified activities in conformity with international agreements or arrangements on biological diversity, as appropriate, including rights associated with intellectual property and informal innovations, including farmers' and breeders' rights. Chapter 32 entitled "Strengthening the role of farmers" also provides some indication of what farmers' rights may entail.

This changed in 2001 when Article 9.2 of the FAO Treaty explicated the concept to some degree.²⁴ However, it must be noted that the wording of this Article refers to the rights of farmers “as they relate to plant genetic resources for food and agriculture.” This appears to indicate that other rights of farmers, whether civil, political, or socio-economic, which are not directly related to PGRFA would not come within the ambit of the Treaty.²⁵

Article 9.2 of the Treaty states that farmers’ rights include:

- (a) protection of traditional knowledge relevant to PGRFA;
- (b) the right to equitably participate in sharing benefits arising from the utilization of PGRFA;
- and
- (c) the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA.

Article 9.3 specifies that Article 9.2 shall not be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material. However, it is important to note that this right is “subject to national law and as appropriate.” The Treaty has recorded the most important of the rights and those that are most likely to be contested both in national and international fora. The three contained in Article 9.2 have been voiced in very broad terms and it would require further interpretation to give them definitive meaning

8.7 THE JUSTICIABILITY OF FARMERS’ RIGHTS

Having determined at least in a limited way what the substantive rights of farmers are, the next question to assess is the extent to which they are justiciable. The justiciability of farmers’ rights is constrained by several factors. A notable drawback in the original formulation of farmers’ rights in the IUPGR was that neither the rights holders nor those who were obliged to uphold or implement the rights, were precisely identifiable. Farmers’ rights are held by “farmers” and “farming communities.” These categories encompass a large proportion of populations in

²⁴ See above n 11 and accompanying text.

²⁵ See also for example, the *African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources*, 2000, Article 26 of which sets out farmers’ rights which are limited to those relating to PGRFA.

developing (and other) countries, which comprise heterogeneous, continuously fluctuating, and socially and politically unidentifiable groups. As Borowiak notes,

it is not even clear who should count as a farmer. There is no clear reason why, for instance, farmers' rights should not extend beyond cultivators of field crops to include fisher folk, hunters, pastoralists, nomads, and gatherers, all of whom contribute to the conservation of biodiversity.²⁶

In many countries a high proportion of the workforce is in any case, involved directly or indirectly in agriculture and it would be difficult to demarcate this group and its interests from the rest of the population. None of the international documents dealing with farmers' rights attempt to define or construct what is meant by "farmer" in the context of the rights, probably because this is not possible. The Global Plan of Action describes farmers as "a large, economically disadvantaged population."²⁷ Chapter 32 of Agenda 21 is a little more specific, stating that:

in this chapter, all references to "farmers" include all rural people who derive their livelihood from activities such as farming, fishing and forest harvesting. The term "farming" also includes fishing and forest harvesting.²⁸

However, it is doubtful whether even this definition is a basis on which to precisely identify members of a particular social, political or economic group.²⁹ Most notably, the FAO Treaty which is now the definitive document dealing with these rights, does not provide any definition of the term. It has been left to national legislation to spell it out so as to make such groups identifiable in the relevant context.

In order for a right to be justiciable it must necessarily vest in the rights holders who should have the capacity to enforce it as against an identifiable entity. International human rights documents confer rights upon individuals vis-à-vis their national governments. The IUPGR took the unusual step of vesting farmers' rights not in farmers, but rather in the international community as trustee for present and future generations of farmers. Since the "international community" is as nebulous

²⁶ Borowiak, above n 3, 530.

²⁷ *Global Plan of Action*, above n 22, Paragraph 30.

²⁸ *Agenda 21*, U.N. Conference on Environment and Development, U.N. Doc.A/CONF.151/26/Rev.1 (1992) – Chapter 32.

²⁹ For a discussion on this issue see Martin A Girsberger, *Biodiversity and the Concept of Farmers' Rights in International Law: Factual Background and Legal Analysis* (1999) 221.

an entity as the global population of farmers this does not help to either clarify or enforce the concept.

The IUPGR envisaged that farmers' rights would be implemented by way of an international fund which would support the conservation and utilization of PGRFA, particularly but not exclusively, in developing countries.³⁰ Reference to the International Fund for Plant Genetic Resources already established by the FAO had earlier been made in Annex 1 to the IUPGR.³¹ Contributions to the Fund were proposed on the basis of differential responsibilities of States, it being pointed out that the countries which have benefited most from the use of germplasm could supplement it. However, the beneficiaries of the Fund are not limited to farmers, and its objectives include educational programmes for biotechnology specialists and strengthening the capabilities of developing countries in general.

The FAO Treaty took the more practical step of vesting the responsibility of realizing farmers' rights in national governments of the Contracting Parties, reflecting the structure of international human rights documents. This serves two purposes. National governments are identifiable, political entities that operate within specific geographic and political boundaries. Therefore this also enables the farmers as rights holders to be more easily delineated as national groups within those boundaries, rather than as an indeterminate part of the global population. However, the Treaty stops short of imposing definitive obligations on national governments, and the Contracting Parties are required to protect and promote farmers' rights only "as appropriate and subject to its national legislation."³² These obligations are merely exhortatory and the Treaty gives States wide leeway in determining the means and extent to which they could or should fulfill them. Several countries have in fact enacted legislation addressing issues of farmers' rights and this will be discussed further in this thesis.³³

³⁰ FAO International Undertaking on Plant Genetic Resources - Annex II, Resolution 5/89, "Farmers' Rights."

³¹ *FAO International Undertaking on Plant Genetic Resources* - Annex I, Resolution 4/89, "Agreed Interpretation of the International Undertaking," Paragraph 4.

³² Article 9.2.

³³ Stephen B Brush 'Protecting Traditional Agricultural Knowledge' (2005) 17 *Washington University Journal of Law & Policy* 59.

8.8 CONCLUSION

It can therefore be argued that the concept of farmers' rights has two dimensions. Firstly, farmers, as a community, possess characteristics based upon their way of life and livelihood which is unique to them and which give rise to certain rights. These rights are difficult to define precisely, but at a minimum may be developed in part in the context of socio-economic rights.

Secondly, the role of farmers in agricultural production also gives rise to certain specific rights peculiar to them. These cannot be viewed in isolation and must be considered in the context of the interests of countries as a whole. These wider national interests include the right to political and economic autonomy and to food security. It would be illogical for the rights of farmers (as the producers of that food) to conflict with the rights of the wider population and this is a balance which national governments would have to address. This dimension has not been considered in international documents which have merely attempted to confer unenforceable rights on an undefinable category of people. Further, these documents do not perceive farmers as an appropriate subject of human rights but rather view them as the means to an end – that of the conservation of crop diversity.

At present both the conceptualization of farmers' rights and their location within the appropriate discourse are still ambiguous. But whether they are viewed as human rights or property rights, different strategies will be required to address them, both at national and international level. The fact that the issue has been successfully brought into the international agenda provides the opening to develop it further and this is a success of sorts. However, it now needs to be translated into effective implementation. It can in fact, be the pivot on which socio-economic rights for certain communities can be developed.

CHAPTER 9

THE RIGHTS OF INDIGENOUS AND LOCAL COMMUNITIES

9.1 INTRODUCTION

A second related issue in the debate on plant genetic resources for food and agriculture (PGRFA) is that of indigenous peoples. As in the case of farmers, the issue of indigenous peoples is one that has entered the international law discourse relatively recently, and within the context of rights. The past decades have witnessed a growing recognition that indigenous peoples have, for centuries, been systematically victimized by the invasion and colonization of their homelands, the destruction of their political, social and cultural institutions and the plundering of their resources. Even after the end of the colonial era, these groups continue to be, by and large, politically and economically marginalized within the wider political milieu of the countries they live in. The acknowledgement of these grievances has been translated into efforts in international law to ensure that redress for past injustices and the prevention of further exploitation is carried out effectively.

The topic of indigenous rights obviously covers the gamut of human rights, but the discussion of such rights in this thesis will be confined to those relating to PGRFA and traditional knowledge. In the context of this thesis the point of reference in regard to the rights of indigenous peoples, farmers and local communities is their relationship to the development and conservation of PGRFA and the traditional knowledge relating to them. However, indigenous rights have generally been addressed as an issue distinct from that of farmers and local communities, largely due to the fact that the Conference of the Parties to the Convention on Biological Diversity (CBD CoP) has taken it up as a distinct issue. It is therefore necessary to first identify how indigenous communities are defined in international legal parlance, as distinct from other sections of a country's population, in particular farmers and local communities.¹ This discussion will also

¹ Although the CBD refers to “indigenous and local communities” as a single phrase, (see *Convention on Biological Diversity* (1992) 31 ILM 818, Preamble, Articles 8 and 26), (hereinafter CBD), it does not define either term. Given the international law developments in regard to indigenous communities, this group will be discussed as a separate issue. The term “local communities” appears to be more easily combined with that of farmers. A paper submitted by the Permanent Forum on Indigenous Issues has attempted to explain the term “local communities” as opposed to indigenous communities – see PFII/2004/WS.1/3/Add.1 - United Nations Department of Economic and Social Affairs, Secretariat of the Permanent Forum on Indigenous Issues, *The Concept of Local Communities, Background paper prepared*

demonstrate that while issues of indigenous peoples are important to the debate on PGRFA, they are also imprecise, and difficult to conceptualise and enforce.

It is also necessary to identify what specific rights indigenous communities possess vis-à-vis genetic resources, management of biodiversity, sustainable development and traditional knowledge. While many of these rights are clear and undisputed, there are others, which again are controversial in regard to their content and those against whom they are claimed. Also, since there are several areas of similarity in regard to the rights of indigenous peoples, farmers and local communities in relation to biological resources, the issues discussed here will also be relevant to the latter two categories.

9.2 THE DEFINITION OF INDIGENOUS PEOPLES

The discussion below on the definition of indigenous peoples highlights the uncertainty in precisely defining and identifying these communities. This uncertainty in definition reflects the general ambivalence in international law in regard to indigenous communities, and makes it more difficult to conceptualise indigenous rights, including those relating to PGRFA and traditional knowledge. Nevertheless, indigenous rights are now an important aspect of both the human rights discourse, as well as the debate on plant genetic resources. A significant part of the latter debate centres on indigenous peoples, their role in sustaining and developing biodiversity and the rights which they have over them. Often, these rights are based on the issue of indigenesness and dealt with in a manner different from those relating to other peoples. It is relevant therefore to arrive at a definition which will help to identify these communities and distinguish them from other sections of a population.

It is estimated that indigenous peoples number around 250-300 million comprising 4-5% of the global population. They are composed of around 5000 different communities and cultures and live in all parts of the world from the Arctic Circle to tropical rainforests.² However, formulating

by the Secretariat of the Permanent Forum on Indigenous Issues for the Expert Workshop on the Dissaggregation of Data, 19-21 January 2004.

² See <http://www.rainforestweb.org/Rainforest_Information/Indigenous_Peoples/> at 28th March 2008. For other estimates see Jose Paulo Kastrup, 'The Internationalization of Indigenous Rights from the Environmental and Human Rights Perspective' (1997) *Texas International Law Journal* 97, 103; WWF International - *Indigenous and Traditional Peoples of the World and Ecoregion Conservation - An Integrated Approach to Conserving the World's Biological and Cultural Diversity* (2000), 1.

an identifiable definition of indigenous peoples has proved to be a complex issue. It has been observed that the term indigenous peoples

has been transformed from a prosaic description without much significance in international law and politics, into a concept with considerable power as a basis for group mobilization, international standard setting, transnational networks and programmatic activity of intergovernmental and nongovernmental organizations.³

Notwithstanding this comment, it is a term which appears to be as elusive of precise definition as farmers, though unlike farmers, it has in fact been applied to physically and geographically identifiable groups of people. A characteristic which indigenous peoples generally share with farmers is that both groups are by and large politically, economically and socially marginalised with little voice in decision making.⁴

Legal writers have grappled with the meaning of the term “indigenous peoples” and the appropriate approach to be taken in reaching a workable definition. Kingsbury cites two possible approaches in this regard. A positivist approach would treat indigenous peoples as “a legal category requiring precise definition” on the basis of which it should be possible to identify all those who fall within it. However, he takes the view that such a definition would be unviable and unworkable, given the disparate circumstances, characteristics and experiences of different social and cultural groups.⁵ The second approach, which Kingsbury terms constructivist, does not attempt to locate the definition within a specific set of criteria but embodies

a continuous process in which claims and practices in numerous specific cases are abstracted in the wider institutions of international society, then made specific again at the moment of application in the political, legal and social processes of particular cases and societies.⁶

³ Benedict Kingsbury, ‘Indigenous Peoples’ in International Law: A Constructivist Approach to the Asian Controversy’ (1998) 92 *American Journal of International Law* 414.

⁴ Kingsbury cites the following elements of commonality among indigenous peoples – “connections with land and territory, aspirations for autonomy and self-determination, renewed interest in distinct cultures and languages, the historical experience of incursions by other groups, continuing consequences of dispossession and subordination, concerns over health and education, and relative disadvantages in child welfare, mortality, nutrition and income levels,” some of which are also shared by farmers and other local communities which are similarly marginalised. He also notes that the indigenous peoples’ movement is a resistance to modernisation and globalisation – Kingsbury, above n 3, 421.

⁵ Kingsbury, above n 3, 415.

⁶ *Ibid.*

The flexibility of this approach would permit it to encompass a wider range of social groups in different contexts, although at the expense of uniformity and consistency.

The wide range of definitions of indigenous peoples found in both international documents and legal writings seems to reflect a constructivist rather than a positivist approach. The term has been usually defined relatively speaking, i.e. in relation to, for example, an event or period of historical significance, or to the larger population of the nation State in which the group is located, or in relation to the particular rights which a group is claiming.

From a historical viewpoint, the European conquest and colonisation of New World countries has been used as a timeframe against which to define and identify indigenous peoples. An early definition states that

[i]ndigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems.⁷

While this conceptualisation seems effective at first sight in identifying specific groups of people as indigenous, it can become unfocused.⁸ To begin with, it presupposes that indigenous groups will continue to perpetuate their cultural and social patterns which existed in pre-colonial times without change. The question arises whether groups which assimilate themselves into the mainstream and into the dominant political and cultural milieu will lose their status as indigenous, and further, who would determine this. In the same way, linking indigenous status to ties to land would be tenuous given the fact that many communities are in fact in danger of losing their traditional territories.

⁷ See the 1986 report of Jose Martinez Cobo, UN Special Rapporteur for the study of discrimination against indigenous peoples, quoted in Jeremy Firestone, Jonathan Lilley and Isabel Torres de Noronha, 'Cultural Diversity, Human Rights, and the Emergence of Indigenous Peoples in International and Comparative Environmental Law' (2005) 20 *American University International Law Review* 219, 224. See also Kingsbury, above n 3, 419.

⁸ Siegfried Wiessner, 'Rights and Status of Indigenous Peoples: A Global Comparative and International Legal Analysis' (1999) 12 *Harvard Human Rights Journal* 57, 111.

A second problem with this definition is that it has been disputed in the case of countries which did not experience European colonisation, or which were subject to colonial rule which subsequently ended. For example, several Asian countries have denied the existence of indigenous peoples within their boundaries on the basis that the concept is intrinsically linked to the experience of European colonial settlement which displaced the original inhabitants of those countries.⁹ In the absence of this phenomenon, all the inhabitants of a nation can claim to be equally “indigenous,” including the larger and politically and culturally dominant groups.¹⁰

It is undeniable that basing the definition on the issue of European colonialism does provide a comparatively definitive method of identifying groups which fall within the term. However, in order to encompass groups in countries where this is inapplicable, an alternative approach has to be posited. One such approach has been to define the term on the basis of the relationship which the group in question bears to the State and to the larger and more dominant group or groups within it. This would include cultural, social and political distinctiveness including in lifestyles, livelihoods and forms of governance. However, this would inevitably overlap with the more general question of ethnic minorities within States including those who do not necessarily claim the status of being indigenous.¹¹

A third approach to defining indigenous peoples in international law takes a more ad hoc and flexible view, and leaves it to the international treaty in question to provide the qualifications for indigenous status in the context of its provisions.¹² Therefore indigenous status can be established for the purpose of the particular treaty, or by identification with the territories inhabited by the

⁹ Kingsbury, above n 3. See also Alexander Gillespie, ‘Aboriginal Subsistence Whaling: A Critique of the Inter-Relationship between International Law and the International Whaling Commission’ (2001) 12 *Colorado Journal of International Environmental Law and Policy* 77, 92.

¹⁰ For example countries such as India, China and Bangladesh take the position that all their inhabitants are indigenous people who existed within the territory before the colonial period – Kingsbury, above n 3, footnote 4. On the other hand see Paragraph 6 of the ‘Declaration on the Rights of Asian Indigenous Peoples’ (2000) 1(1) *Asia-Pacific Journal on Human Rights and the Law* 165, where they claim to be the descendants of the original inhabitants of territories which have been conquered.

¹¹ For example, Colchester cites marginalised ethnic groups like the Kurds as a group which chooses not to designate itself as indigenous, but to use other strategies to gain recognition. On the other hand he also notes that some marginalised peoples have redefined themselves as indigenous in order to assert their rights to land and identity - Marcus Colchester ‘Indigenous rights and the collective conscious’ (2002) 18(1) *Anthropology Today* 1, 2.

¹² Gillespie, above n 9, 92.

peoples, or by leaving it to the States Parties to determine the issue.¹³ While the first two methods would be negotiated at international level, the third would leave it to the discretion of State governments to acknowledge such status and rights. Here again, the question would be how national governments would deal with the question.¹⁴

It appears therefore that it is impossible to arrive at one all encompassing definition of “indigenous peoples.” While the term does have a comprehensible connotation at an abstract level, at a more functional one it is necessary to keep it flexible and pragmatic in order to ensure that both the subjects of the definition and the rights in question are covered. As noted above, it is a relative term which necessarily must be defined in the context of the larger picture of the nation State within which the group in question is located and in order for indigenous peoples to establish their uniqueness, identity or rights, they must necessarily negotiate them within the dominant political society.¹⁵

9.3 THE CONCEPTUALIZATION OF INDIGENOUS PEOPLES IN INTERNATIONAL DOCUMENTS

The conceptualization of indigenous peoples in international documents reflects the debate discussed above. While several such documents refer to “indigenous peoples,” they do not all deal with this category exclusively, with many using the term either interchangeably or in conjunction with “farmer,” “tribal” and “local communities.”

The only international conventions to deal exclusively with indigenous peoples were promulgated by the International Labour Organization (ILO). The ILO Convention currently in force is the Convention Dealing with Indigenous and Tribal Peoples in Independent Countries.¹⁶ However, even this Convention has been unable to achieve precision in regard to either terminology or

¹³ For examples of the conventions in question see *ibid.*

¹⁴ For discussions of how domestic systems have addressed the issue of indigenous people see for example, Kingsbury, above n 3; Wiessner, above n 8.

¹⁵ David A Cleveland and Stephen C Murray, ‘The World’s Crop Genetic Resources and the Rights of Indigenous Farmers’ (1997) 38(4) *Current Anthropology* 477, 480. See also the definition of indigenous peoples in the *Indigenous Peoples Rights Act* of 1997 of the Philippines.

¹⁶ *Convention Concerning Indigenous and Tribal Peoples in Independent Countries* (ILO No. 169), 72 ILO Official Bull. 59, (entered into force 5 September 1991) (hereinafter ILO Convention 169). This Convention revised ILO No. 107 - *Convention Concerning the Protection and Integration of Indigenous and Other Tribal and Semi-Tribal Populations in Independent Countries*, (entered into force 2 June 1959).

definitions. Article 1 of the Convention applies it firstly to “tribal peoples” identified on the basis of social, cultural and economic conditions which distinguish them from other sections of the national community. Their status must be regulated wholly or partially by their own customs or by special laws or regulations. However, the latter criterion presupposes that their status as such has already been recognized by the political system concerned. Second, the Convention applies to peoples who are regarded as indigenous on account of their descent from populations which inhabited the country prior to conquest and colonization, and who further, retain some or all of their unique social, cultural, economic and political institutions. The implication in this case is that if they lose the latter characteristics they will be considered as having been integrated into the larger population, thus foregoing their indigenous status. As discussed above, this definition would also be difficult to apply to peoples in countries which were not colonized in this way. The two-pronged definition therefore attempts to incorporate both the historically determined basis, as well as one which is relative to the larger population. The definition is reinforced by the fact that self identification as indigenous or tribal is to be regarded as the fundamental criterion for determining which groups may claim the status.

The approach of the ILO Convention 169 is reflected in the Proposed American Declaration on the Rights of Indigenous Peoples.¹⁷ Article 1 of this Declaration makes it applicable to indigenous peoples as well as to

peoples whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations.

This definition casts a wider net and can potentially include ethnic or cultural groups who may not have all the generally accepted characteristics of indigenes but who are subject to differential treatment from the mainstream. It can also include indigenous groups who have chosen to assimilate themselves with the mainstream in certain respects. It also emphasises that self-identification as indigenous is a fundamental criterion for determining those to whom it is applicable.

¹⁷ *Proposed American Declaration on the Rights of Indigenous Peoples* (Approved by the Inter-American Commission on Human Rights on 26 February 1997, at its 1333rd session, 95th Regular Session), OEA/Ser/L/V/II.95 Doc.6 (1997) (OAS Declaration). For an update on the Declaration see <<http://www.oas.org/consejo/CAJP/Indigenous%20documents.asp#1997>> at 10th May 2008.

The UN Declaration on the Rights of Indigenous Peoples, though containing a comprehensive list of the rights of indigenous peoples, omits to define the term.¹⁸ Article 8 refers to the right of peoples to identify themselves as indigenous, and to be recognised as such.

Perhaps the most pragmatic attempt at definition comes from the World Bank Operational Policy on Indigenous Peoples.¹⁹ It takes the positions that because of the varied contexts in which indigenous peoples live, there is no universally accepted definition of the term. Therefore the term is used in a generic sense to refer to “distinct, vulnerable, social and cultural groups” possessing specified characteristics including “self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.” The Policy acknowledges that ascertaining whether a particular group is considered as indigenous may require a technical judgement involving the participation of qualified social scientists with expertise on the social and cultural groups in the project area. The Bank would also consult the indigenous peoples concerned as well as the borrowing State, and may follow the latter’s framework for identification of such peoples when it is consistent with the present policy.

The difficulties in finding a workable definition of indigenous peoples seem to be based upon the fact that while they are usually ethnic or linguistic minorities within nations States, they also have unique and disparate characteristics which are not shared by more “mainstream” minority groups, or those which do not claim to be indigenous. Given the diversity among these groups, a precise and universally applicable definition is obviously not viable. Therefore it appears that the most equitable and effective method by which to identify such communities is on the basis of a broad and flexible range of criteria, including the unique characteristics which distinguish them from others, the rights which they are claiming under the particular circumstances, and more importantly, by accepting the premise of self-identification as the over riding factor in this regard.

¹⁸ The Declaration was first drafted in 1985 by the Working Group on Indigenous Populations which is a subsidiary body of the Sub-Commission on Prevention of Discrimination and Protection of Minorities. The latter is itself an advisory body to the UN Commission on Human Rights (now the UN Human Rights Council – see UN General Assembly Res. A/RES/60/251 of 3 April 2006). The Declaration remained a draft until it was adopted by the UN Human Rights Council in June 2006. (See UN Document A/HRC/1/L.10 of 30 June 2006, page 56.) It was adopted by the UN General Assembly in 2007 - *Declaration on the Rights of Indigenous Peoples* 46 I.L.M. 1013, 13 September 2007. It remains however, a Declaration with only persuasive force and States will not be legally bound by it (hereinafter UN Declaration).

¹⁹ The World Bank Operational Manual, Operational Policies, OP 4.10, July 2005 available at <http://wbln0018.worldbank.org/Institutional/Manuals/OpManual.nsf/tocall/0F7D6F3F04DD70398525672C007D08ED?OpenDocument> at 25th March 2008.

9.4 THE RIGHTS OF INDIGENOUS PEOPLES

Indigenous peoples as a group differ significantly from farmers in that unlike the latter who are viewed as a disadvantaged category within mainstream social and political groups, the former claim distinctiveness and often political autonomy from the mainstream. Under the circumstances, while some rights attributed to both groups may overlap, the rights of indigenous peoples are often distinct and may also encompass a wider range.

Indigenous peoples' rights cover the general gamut of human rights, civil and political as well as economic, social and cultural. It should be noted that internationally recognised human rights of ethnic, linguistic and other minorities are also applicable to indigenous peoples.²⁰ However, there is a significant dimension in indigenous rights which sets them apart from the general discourse of human rights, i.e. that it is collective in nature. Human rights, as articulated in the main international documents,²¹ are essentially individual rights held vis-à-vis the State.²² It has been pointed out however, that indigenous peoples entered the arena of international human rights as the subjects of collective rights (or group rights) which had not upto then been conferred on any other category of people.²³ The collective nature of indigenous rights is also relevant when

²⁰ See for instance, *United Nations Declaration on the Elimination of All Forms of Racial Discrimination* Proclaimed by General Assembly resolution 1904 (XVIII) of 20 November 1963; *International Convention on the Elimination of All Forms of Racial Discrimination*, G.A. res. 2106 (XX), Annex, 20 U.N. GAOR Supp. (No. 14) at 47, U.N. Doc. A/6014 (1966), 660 U.N.T.S. 195, (entered into force 4 January 1969); *Declaration on Race and Racial Prejudice*, adopted and proclaimed by the General Conference of the United Nations Educational, Scientific and Cultural Organization at its twentieth session, on 27 November 1978; *Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities*, Adopted by General Assembly resolution 47/135 of 18 December 1992.

²¹ *Charter of the United Nations* 59 Stat. 1031; TS 993; 3 Bevans 1153 (entered into force 24 October 1945); *International Covenant on Civil and Political Rights* GA res. 2200A (XXI), 21 UN GAOR Supp. (No. 16) at 49, UN Doc. A/6316 (1966); 993 UNTS 3; 6 ILM 368 (1967) (entered into force 23 March 1976) (hereinafter ICCPR); *International Covenant on Economic, Social and Cultural Rights* GA res. 2200A (XXI), 21 UN GAOR Supp. (No. 16) at 52, UN Doc. A/6316 (1966); 999 UNTS 171; 6 ILM 360 (1967) (entered into force 3 January 1976) (hereinafter ICESCR).

²² This is so even in the case of minority rights, since they relate to the rights of individuals belonging to minority groups rather than to the group as a whole. For example the *International Convention on the Elimination of All Forms of Racial Discrimination* above n 20 refers to groups or individuals belonging to them. Article 5 of the Convention lists the rights which States are required to uphold, which are rights of individuals belonging to certain groups rather than to the group as a whole.

²³ Colchester, above n 11, 1. See also Russel Lawrence Barsh, 'Indigenous Peoples in the 1990s: From Object to Subject of International Law?' (1994) 7 *Harvard Human Rights Journal* 33. Barsh observes that indigenous peoples have achieved greater recognition of collective rights than minorities and other social groups have.

addressing issues of genetic resources and traditional knowledge, and, as will be seen in the further discussion, it is this very factor which often makes it difficult to find solutions to the problems.

Indigenous rights have entered the debate on genetic resources in the context of the misappropriation of these resources, as well as in some instances, the traditional knowledge relating to them. Therefore it would be pertinent to examine the nature and scope of these rights and the basis from which they arise.

9.4.1 *The right to self determination*

The collective rights of indigenous peoples emanate from the most fundamental of such rights – that of self-determination. Self-determination has been spelt out as:

The idea of a community's rights to control its own future, and thus physically to survive and prosper to the fullest extent possible. A community's powers of 'self-determination' are perceived as a crucial aspect of its identity, and so also, in holistic terms of its health and survival.²⁴

Self determination is an inherent aspect of minority rights as spelt out in international human rights documents. Article 3 of the UN Declaration on the Rights of Indigenous Peoples states that

[i]ndigenous peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.

This Article is identical to those contained in the two human rights Covenants which refer to “all peoples.”²⁵ Barsh notes that based on the argument that they are “peoples” under the UN Charter,

²⁴ C E Foster, 'Articulating self-determination in the Draft Declaration on the Rights of Indigenous Peoples' (2001) 12(1) *European Journal of International Law* 141, 142. Self determination may be either external or internal and therefore is not confined to a colonial context and is potentially applicable to a group of peoples within any State - Robert McCorquodale, 'Self Determination: A Human Rights Approach' (1994) 43(4) *International and Comparative Law Quarterly* 857; Patrick Thornberry, 'Self Determination, Minorities and Human Rights' (1989) 38(4) *International and Comparative Law Quarterly* 867.

²⁵ International Covenant on Civil and Political Rights (ICCPR), Article 1 and International Covenant on Economic, Social and Cultural Rights (ICESCR), Article 1 – “All peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.”

indigenous peoples have been claiming the right to self-determination and the right to be recognized as subjects of international law rather than objects of international concern.²⁶

The right to self-determination also provides the basis for other civil and political, as well as economic, social and cultural rights.²⁷ In relation to indigenous groups, the Declaration is the only document which has attempted to articulate the specific elements of this right.²⁸ Article 31 of the Declaration covers a wide gamut of rights which however, stops short of acknowledging rights of secession and limits self-determination to autonomy within the State in which the group is located. More importantly, it sets out the basic rights which are applicable to indigenous peoples, some of them falling within the general spectrum of rights and some more specific to them. While the generally accepted rights will not be discussed here, those more specific to these groups and which relate directly or indirectly to natural resources will be explored further.

Even where the rights articulated in the Declaration and the ILO Convention fall within the general discourse of human rights, in the context of indigenous peoples they may take on particular implications. For example, several rights are defined in the context of land and territories and the natural resources which are part of them, and these may have political, economic and cultural connotations.²⁹ The implementation of these rights requires at a minimum the recognition of historical indigenous rights to land prior to colonisation and also the

²⁶ Barsh, above n 23, 35. This is probably one aspect that differentiates indigenous peoples from “farmers” in international law since farmers as a social group cannot be categorised as peoples.

²⁷ ICPPR, Article 1 and ICESR Article 1, above note 25; UN Declaration, Article 3 – “Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development.”

²⁸ The ILO Convention 169, while enumerating a range of indigenous rights is silent on the issue of self determination. However, Richardson argues that these rights are based on this principle - Benjamin J Richardson, ‘Indigenous Peoples, International Law and Sustainability’ (2001) 10(1) *Review of European Community and International Environmental Law* 1, 5.

²⁹ UN Declaration – Preamble, Articles 8, 10, 25 -30 and 32. ILO Convention 169 – Preamble, Articles 13 and 14. Anaya observes that while there is diversity among indigenous groups a common characteristic tends to be strong ties to land and territory - S James Anaya, ‘International Human Rights and Indigenous Peoples: The Move toward the Multicultural State’ (2004) 21 *Arizona Journal of International and Comparative Law* 13. For a discussion on the international law relating to indigenous rights to land see Michael Holley, ‘Recognizing the Rights of Indigenous People to their Traditional Lands: A Case Study of an Internally-Displaced Community in Guatemala’ (1997) 15 *Berkeley Journal of International Law* 119.

recognition of indigenous land tenure systems which may differ from that of the political mainstream.³⁰

9.4.2 *The right to culture*

The second important right of indigenous peoples in the context of this thesis is that of the right to culture. The culture of indigenous peoples is also inherently linked to land and territory, as articulated in the UN Declaration.³¹ The Preamble to the Declaration recognizes the need to respect and promote the inherent rights and characteristics of indigenous peoples “which derive from their political, economic and social structures and from their cultures, spiritual traditions, histories and philosophies, especially their rights to their lands, territories and resources.”

Indigenous peoples’ rights to culture take on particular importance in the light of the threats of destruction and misappropriation of cultural property which they have faced since colonization, and which has exponentially increased in an increasingly globalised and commercially dominated world. The threats include the appropriation of such manifestations of culture as folklore, sacred songs, symbols, dances and art.³² In the present context however, the element of indigenous culture which has become most economically valuable and politically contentious is that of traditional knowledge, which has been often exploited over the years for commercial gain without their consent. The traditional knowledge relevant to this thesis is biodiversity related knowledge and this aspect will be further discussed below.³³

³⁰ Anaya, above n 29.

³¹ UN Declaration – Preamble and Article 8. See also Kingsbury, above n 3, 437.

³² See for example Lee P Breckenridge, ‘Protection of Biological and Cultural Diversity: Emerging Recognition of Local Community Rights in Ecosystems under International Environmental Law’ (1992) 59 *Tennessee Law Review* 735.

³³ The traditional knowledge and cultural expressions of indigenous peoples has been specifically cited in the *UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions*, CLT-2005/CONVENTION DIVERSITE-CULT REV, 20 October 2005 – Preamble. See also the Action Plan for the Implementation of the *UNESCO Universal Declaration on Cultural Diversity*, adopted by the 31st Session of the General Conference of UNESCO, Paris, 2 November 2001, Article 14.

9.4.3 *The right to natural resources*

It is important at this point to determine the rights of indigenous peoples vis-à-vis biological resources, including the extent and scope of such rights. Indigenous peoples' rights to biological resources have been approached from two perspectives of international law, namely, human rights law and environmental law.³⁴

9.4.3.1 **The human rights approach**

The human rights approach was founded on the need to address the historical injustices committed against such peoples, including the appropriation and colonisation of their traditional homelands, the exploitation of the natural resources within these territories, and the disruption of their traditional lifestyles. Given the close relationships between land and culture among them, these injustices impacted particularly strongly on their traditional lifestyles and culture. Also, the destruction of natural resources would have a greater impact on communities that have a more direct dependence on them for sustenance and livelihoods. The human rights approach therefore views such destruction and exploitation as a violation of indigenous rights.

The main human rights documents do not provide any indication of specific rights in relation to biological resources.³⁵ The Conventions which refer to discrimination against ethnic, linguistic, social or cultural minorities³⁶ also focus primarily on civil and political rights, and do not throw any light on this question which would rather fall within the category of economic and social rights. Rights in relation to biological resources would therefore have to be inferred as aspects of the right to self-determination as recognised in these latter documents. However, they do not throw light on the scope of the rights either.

ILO Convention 169 in Part II entitled "Land" is the only document which specifically addresses the issue of rights over land and natural resources. Article 14(1) states that "[t]he rights of

³⁴ Richardson, above n 28; Lee P Breckenridge, 'Protection of Biological and Cultural Diversity: Emerging Recognition of Local Community Rights in Ecosystems under International Environmental Law' (1992) 59 *Tennessee Law Review* 735.

³⁵ See the *Universal Declaration of Human Rights*, G.A. res. 217A (III), U.N. Doc A/810 at 71 (1948); the ICCPR and the ICESCR.

³⁶ See those listed in n 20 above.

ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognised.” Article 15(1) states:

The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.

The Convention does not acknowledge exclusive rights of ownership over natural resources on indigenous land whether renewable or non-renewable. On the contrary Article 15(2) refers to instances “in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to lands.” In such situations the State is only required to establish procedures of consultation before exploitation of the resources, and wherever possible the peoples shall participate in the benefits of the resources and receive compensation for any damages which they may sustain. Therefore indigenous peoples’ rights of ownership and possession over their lands and the natural resources pertaining to them are limited and the Convention recognises the overriding rights of the State.³⁷

The UN Declaration on Indigenous Peoples is perhaps the most explicit on the issue of rights to natural resources. Paragraph 6 of the Preamble recognises the need to respect and promote the inherent rights and characteristic of indigenous peoples “especially their rights to their lands, territories and resources.” Article 26 states that

[i]ndigenous peoples have the right to own, develop, control and use the lands and territories, including the total environment of the lands, air, waters, coastal seas, sea-ice, flora and fauna and other resources which they have traditionally owned or otherwise occupied or used. This includes the right to the full recognition of their laws, traditions and customs, land-tenure systems and institutions for the development and management of resources, and the right to effective measures by States to prevent any interference with, alienation of or encroachment upon these rights.

Further, Article 31 states that indigenous peoples, as a specific form of exercising their right to self-determination, have the right to autonomy or self-government in matters relating to, inter alia, land and resources and environment. The Declaration therefore confers greater rights of ownership and control over natural resources as against the State in which these peoples are

³⁷ The OAS Declaration also follows the approach of the ILO Convention – see Article XVIII.

located. However, it must be noted that the Declaration constitutes only soft law and will not be binding upon States.³⁸

The human rights regime therefore appears to fall short of granting exclusive rights to indigenous peoples in regard to land and natural resources. While rights of ownership and possession over traditional lands including the total environment pertaining to it are recognised, it is limited to rights of occupation and the use of the land and its resources. There are no exclusive rights to the land vis-à-vis the State since relocation of the peoples by the State is not prohibited.³⁹ Similarly, the State may exploit and use the resources on indigenous lands so long as it is in accordance with the specified conditions, including consultation with the people concerned, and ensuring that they participate in the benefits and receive just compensation. Such power of the State would also apply to PGRFA since no distinction has been made between renewable and non-renewable resources.

While international law has fallen short of recognising indigenous rights over PGRFA, some regional and national legislation have taken more specific measures in this regard. For example the OAU Model Law of 2000 specifically provides that the State recognizes the rights of local and indigenous communities to their biological resources.⁴⁰ Similarly, the Biodiversity Law of Costa Rica has acknowledged the rights of local and indigenous communities to oppose any access rights to their resources.⁴¹ The Philippines has also given wide recognition to indigenous rights, including rights of ownership over traditional domains and the natural resources pertaining to them.⁴² It would therefore be left to national policy to determine the extent and scope of such rights.

³⁸ Other soft law instruments also refer to the link between indigenous peoples and their land. See for example Agenda 21, Paragraph 26; the Programme of Action of the UN International Conference on Population and Development, Paragraph 6; and the Programme of Action of the World Summit on Social Development, Paragraph 32.

³⁹ See Article 16 of the ILO Convention 169 which permits relocation in accordance with the specified conditions.

⁴⁰ *African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources*, 2000 – Part IV.

⁴¹ *Biodiversity Law No. 7788 of Costa Rica* – Article 66.

⁴² *Indigenous Peoples Rights Act of 1997 of the Philippines* – Chapter III and Section 57.

9.4.3.2 The environmental law approach

The environmental law approach to indigenous peoples and biological resources has been even more complex and tentative and is in effect the converse of the former approach. It is based upon the link between the cultural and biological diversity which is located within the context of indigenous and local communities,⁴³ and essentially views such peoples as an enabling factor in the conservation of such diversity, which is a global resource. To begin with, the international environmental law discourse categorically places sovereign rights over biological diversity in the hands of nation States, rather than on specific categories of national populations such as indigenous peoples and local communities.⁴⁴ While holding sovereign rights, States also have international obligations to conserve these resources for the benefit of the global community. In order to fulfil these obligations they are required to enlist the co-operation of indigenous and local peoples and to draw upon their cultural diversity, knowledge, and practices in doing so. In return, they have an obligation towards them to ensure that they, in turn, receive an equitable share of the benefits arising from these resources.

In essence, this approach is enviro-centric rather than human centric since it views indigenous peoples only in relation to the conservation of a global natural resource. While the human rights approach does recognise the rights of indigenous peoples to ownership and possession over land and natural resources and then qualifies it with the rights of the State, the environmental approach primarily emphasises the sovereignty of States over biological resources with the obligation to have due regard to the rights of indigenous peoples.

Several international environmental documents, including those which emerged from the United Nations Conference on Environment and Development 1992, (UNCED), refer to the link between indigenous peoples and the environment, but with somewhat differing frames of reference. The Rio Declaration⁴⁵ and the Forest Principles⁴⁶ clearly take an environment focused rather than a

⁴³ Breckenridge, above n 34. For a discussion on the environmental law approach to indigenous rights see Klaus Bosselmann, 'The Right to Self-determination and International Environmental Law: An Integrative Approach' (1997) 1(1) *New Zealand Journal of Environmental Law* 1.

⁴⁴ CBD, Article 3.

⁴⁵ *Rio Declaration on Environment and Development*, 31 ILM 876 - Principle 22 – "Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support

rights focused approach to the link between the two. On the other hand, Chapter 26 of Agenda 21, although reiterating the importance of environmental conservation, appears more people focused in defining the relationship between indigenous peoples and biological resources, continually noting the rights of peoples rather than the objectives of environmental conservation. This resembles the perspective found in the UN Declaration and the ILO Convention 169.⁴⁷

The CBD unequivocally views indigenous peoples as a resource for achieving its objectives of environmental conservation.⁴⁸ The Preamble recognises the close and traditional dependence that such communities have on biological resources, and notes the desirability of equitably sharing the benefits arising from the use of traditional biodiversity related knowledge, innovations, and practices which are relevant to the conservation of biological diversity and the sustainable use of its components. The clause is initially ambiguous, since it is unclear whether the objective is to ensure that everyone benefits from the traditional biodiversity related knowledge of the peoples concerned, or, having appropriated such knowledge, to ensure that the latter receive an equitable share of the resulting benefits.⁴⁹ This ambiguity is reinforced in Article 8(j) which requires States, as far as possible and as appropriate, to

subject to its national legislation, 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

their identity, culture and interests and enable their effective participation in the achievement of sustainable development.”

⁴⁶ *Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests* 31 I.L.M. 881(1992) – Principle 5(a) – “National forest policies should recognize and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. Appropriate conditions should be promoted for these groups to enable them to have an economic stake in forest use, perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, through, inter alia, those land tenure arrangements which serve as incentives for the sustainable management of forests.”

⁴⁷ See in particular Part VI of the UN Declaration.

⁴⁸ As does the FAO Treaty in relation to farmers.

⁴⁹ The ambiguity is explained in documents of the CBD CoP which notes that the Convention “recognizes that indigenous and local communities should share in the benefits derived from ideas and innovations they have developed that prove useful to others” - UNEP/CBD/COP/3/19 – CBD CoP, Third meeting, 4 to 15 November 1996, *Knowledge, Innovations and Practices of Indigenous and Local Communities: Implementation of Article 8(J)* 18 September 1996, Paragraph 9.

encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

In terms of the CBD, indigenous peoples and local communities are significant only if they embody *traditional lifestyles* that are relevant for the conservation and sustainable use of biological diversity. This begs the question as to how this issue would be defined and determined. Further, while referring to communities embodying traditional lifestyles, the CBD does not uphold the rights of the peoples to maintain such lifestyles. The reference to indigenous peoples is only as regards their *traditional knowledge, innovations and practices*, and it appears that States are required to protect these only insofar as they are relevant for the objectives of the Convention. Notably, the CBD does not recognise or make reference to the rights of indigenous peoples to their traditional lands and territories and the natural resources including PGRFA which are an intrinsic part of it, since, as noted earlier, it categorically confers sovereign rights over such resources upon nation States.⁵⁰

The approach of the CBD can be critiqued on several grounds. To begin with, the premise that indigenous peoples' traditional lifestyles make them uniquely suitable for resource conservation has been challenged by writers, who argue against overly romanticising such groups of peoples in this regard.⁵¹ It is also questionable in view of the pressures of modern life which may compel them to change that very lifestyle, possibly making it less environmentally sustainable. Writers also argue against stereotypical perceptions of indigenous peoples, noting that for example, traditional methods of resource exploitation may in fact, often be at odds with objectives of species protection and resource conservation.⁵² The premise is also based on the assumption that indigenous peoples are permanently entrenched in a particular lifestyle, which in addition to being unrealistic, would also negate their rights to make choices in development and social change. This position would be at odds with the human rights approach, which holds that such

⁵⁰ CBD, Article 15(1).

⁵¹ Richardson, above n 28, 3.

⁵² Ibid; William Bradford, "Save the Whales" v Save the Makah: Finding Negotiated Solutions to Ethnodevelopmental Disputes in the New International Economic Order' (2000) 13 *St Thomas Law Review* 155. Some writers have also expressed scepticism at the "ecological dimension to indigenous claims" – Rhiannon Morgan, 'Advancing Indigenous Rights at the United Nations: Strategic Framing and Its Impact on the Normative Development of International Law' (2004) 13(4) *Social & Legal Studies* 481. However, other writers take the opposite view – Breckenridge, above n 34; Gregory F Maggio, 'Recognizing the Vital Role of Local Communities in International Legal Instruments for Conserving Biodiversity' (1997/1998) 16 *UCLA Journal of Environmental Law & Policy* 179.

peoples have the right to decide their own priorities for the process of development.⁵³ Therefore whatever the justification or otherwise for making the link between indigenous peoples and biological resource conservation, it is fundamentally flawed from a human rights perspective.

A similar worldview is taken by the FAO Treaty in its reference to indigenous peoples. Article 5(1) requires Contracting Parties to “promote *in situ* conservation of wild crop relatives and wild plants for food production, including in protected areas, by supporting, inter alia, the efforts of indigenous and local communities.” Article 9(1) acknowledges the enormous contribution that local and indigenous communities and farmers have made to the conservation and development of plant genetic resources. In this instance too, indigenous peoples are viewed in the context of their contribution to this end.

9.5 CONCLUSION

This review of international documents relating to indigenous rights reveals that while international law does recognise that they have certain rights in biological resources, they do not amount to exclusive rights of ownership and possession as against the States in which they are located. The general human rights instruments including the Universal Declaration of Human Rights of 1948 (UDHR) and the two human rights Covenants do not shed any light on this question. While the right to self-determination contained in these documents has many connotations, they do not extend to rights over biological resources. Although ILO Convention 169 contains the most specific references to such rights, it too stops short of absolute ownership, and in fact acknowledges that States may retain ownership of mineral or sub-surface resources or rights to other resources pertaining to land. This position is carried further by the CBD which unequivocally recognises the sovereign rights of States over biological resources. Soft law instruments merely refer to the need to recognise the relationship of indigenous peoples to their land, including their direct dependence on renewable resources and ecosystems, ensure environmentally sustainable development and recognise their values, traditional knowledge and resource management practices.

There are admittedly difficulties in granting certain groups within nation States monopolistic property rights over natural resources found within specific areas of such States. The first difficulties relate to the people claiming such rights. As discussed earlier, international law has

⁵³ ILO Convention 169 – Article 7.

differentiated between indigenous peoples and other ethnic minorities, acknowledging a greater range of rights in the former. However, unless total secession or federalism from the State takes place, even minority groups are seldom granted absolute control over vital natural resources. There would need to be strong justification for doing so in the case of indigenous peoples. While it could be argued that this justification could be applicable in countries where colonisation, displacement and extreme exploitation of indigenous groups took place, it would be less so in countries where it did not. In the latter instance, the differential treatment of indigenous and other minorities would need to be substantiated to a greater degree. However, some countries have, in fact, granted broad rights to indigenous communities in this regard.

The nature of the resources would also pose certain problems in granting exclusive rights to specific categories of peoples. There could, for example, be justification for acknowledging indigenous rights to mineral resources found on their traditional lands on the basis that what is found on land accrues to the owner, though even the ILO Convention does not grant this. There would however, be much less justification for granting specific groups private property rights over genetic resources which are vital for food, medicines and other uses for humanity as a whole. Further, unlike non-renewable resources, most PGRFA would not in any case be located exclusively within the jurisdiction of specific communities. As argued earlier in this thesis, historically these resources were in the public domain. Removing them from an open access regime and putting them in the control of any group of people would be a questionable response to the privatization of such resources by corporate interests.

Traditional knowledge, on the other hand, as an aspect of culture, would have to be addressed differently and this will be discussed in the next chapter.

CHAPTER 10

TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE

10.1 INTRODUCTION

Traditional knowledge as an aspect of human cultural diversity was discussed in Chapter 2, with a particular focus on traditional ecological knowledge. This knowledge of the uses and benefits of plant varieties held by indigenous and local communities, has gained increasing commercial value in situations where it can provide leads to the possible exploitation of plants. As noted in Chapter 3, the often-unauthorised appropriation of plants and the knowledge related to them, has given rise to allegations of piracy. Therefore problems of traditional knowledge are closely linked to those of genetic resources and both have been raised simultaneously in international fora. This chapter will expand on the topic of traditional knowledge and provide an introductory overview of the issues relating to it in this context, while specific aspects will be discussed in the following chapters.

While the debate on genetic resources and traditional knowledge has focused on the knowledge held by indigenous and local communities, it is important to note that traditional knowledge though often extremely localized, is not invariably so. There is also a body of traditional knowledge which is in the public domain, in other words which is common knowledge. Often, knowledge relating to particular plant genetic resources may be widespread throughout countries or regions. For example, knowledge relating to the medicinal properties of turmeric, and the tree *Azadirachta indica* (neem in India and kohomba in Sri Lanka), is common to both countries.¹ Traditional agricultural knowledge would also generally be common knowledge, as plant genetic resources for food and agriculture (PGRFA) was generally in the public domain. However, knowledge in the public domain can no more be privatized than that specific to communities, and where this has taken place, the process has been challenged. Examples of these instances will be noted in the continuing discussions. However, the discourse on the question of traditional knowledge has generally focused on that of indigenous and local communities and therefore this discussion will also maintain this perspective.

¹ See FAO Regional Office for Asia and the Pacific (RAPA), *Non-Wood Forest Products in Asia* (1994) <http://www.fao.org/docrep/X5334e/x5334e00.htm#Contents> at 27th April 2008.

10.2 ISSUES OF TRADITIONAL KNOWLEDGE

The increased commercial exploitation of natural resources was sometimes done with the use of the traditional knowledge of these resources, often without the consent or awareness of those possessing such knowledge. The knowledge holders would be local and indigenous communities, including farmers. In cases where the knowledge was widely diffused and generally known across countries or regions, State governments have acted as the knowledge holders in the controversies that have arisen.²

The appropriation of traditional or indigenous knowledge has been facilitated in large part by the construction of “knowledge” and “modern science” to exclude the informal knowledge systems of indigenous and local communities (or even nations as a larger community), deeming it valueless and therefore not worthy of propertisation.³ It has been further facilitated by the assumption that such knowledge is in the public domain and may be appropriated by the application of property regimes to it, in particular, intellectual property rights. Where this has taken place, the holders (whether communities or States) have not received either compensation or a share of the benefits of its commercial use.

To a large extent, though not invariably, traditional knowledge has been to some extent in the public domain, with natural resource centred knowledge being by and large freely shared, exchanged, and disseminated. However, Dutfield has pointed out that while there is a strong, sharing ethos with regard to such knowledge, “this does not mean that everything is shared with everybody.”⁴ He goes on to note that proprietary systems do exist in many traditional societies,

² See for example Michael Woods, ‘Food for Thought: The Biopiracy of Jasmine and Basmati Rice’ (2002) 13 *Albany Law Journal of Science & Technology* 123; Sumathi Subbiah, ‘Reaping What They Sow: The Basmati Rice Controversy and Strategies for Protecting Traditional Knowledge’ (2004) 27 *Boston College International and Comparative Law Review* 529; Muriel Lightbourne, ‘Of Rice and Men. An Attempt to Assess the Basmati Affair’ (2003) 6(6) *Journal of World Intellectual Property* 875; Shayana Kadidal, ‘Subject-Matter Imperialism? Biodiversity, Foreign Prior Art and the Neem Patent Controversy’ (1997) 37 *IDEA* 371. See also Section 11.5.6 below.

³ See Naomi Roht-Arriaza, ‘Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities’ (1996) 17 *Michigan Journal of International Law* 919.

⁴ Graham Dutfield, ‘The Public and Private Domains: Intellectual Property Rights in Traditional Knowledge’ (2000) 21 *Science Communication* 274, 281.

and all traditional knowledge is not in the public domain.”⁵ Therefore, its free appropriation raises issues of equity and rights.

Traditional knowledge is also an intrinsic aspect of the culture of communities and as the Conference of the Parties to the Convention on Biological Diversity (CBD CoP) has noted, biological, cultural and linguistic diversity are interlinked and the loss of one component can result in the diminishing of the others.⁶ The knowledge, innovations and practices of indigenous peoples are an intrinsic part of their culture and way of life. Therefore, once again the appropriation of this knowledge raises issues of rights.

10.3 THE DEFINITION OF TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE IN INTERNATIONAL INSTRUMENTS

Questions of traditional knowledge have not been directly addressed by the international human rights regime, although they could be brought within the ambit of the right to culture. It has however, been addressed by international environmental law, particularly the CBD.⁷

The first question to be considered is how the term “indigenous or traditional knowledge” is defined in international instruments.⁸ Despite the CBD being the only international document to

⁵ Ibid.

⁶ UNEP/CBD/COP/6/7 – CBD CoP, Sixth meeting, 7-19 April 2002, *Report of the Ad hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity on the Work of its Second Meeting*, 14 February 2002, 21.

⁷ Decision VI/10 entitled “Article 8(j) and related provisions” of the CoP recognised that “the Convention on Biological Diversity is the primary international instrument with the mandate to address issues regarding the respect, preservation and maintenance of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation and sustainable use of biological diversity.” Although the FAO Treaty does not directly deal with traditional knowledge, the interface between the FAO Treaty and Article 8(j) of the CBD was discussed in UNEP/CBD/COP/7/INF/18 – CBD CoP, Seventh Meeting, 9-20 and 27 February 2004, *The Implications of the International Treaty on Plant Genetic Resources for Food and Agriculture on the Issues under Article 8(j) and Related Provisions*, 17 December 2003.

⁸ A distinction has been made between traditional and indigenous knowledge. Brush notes that “[t]raditional knowledge is a broader category that includes indigenous knowledge as a type of traditional knowledge held by indigenous communities. While traditional knowledge has recently emerged in international discourse ... indigenous knowledge is a term long in use by anthropologists and other investigators of non-industrialised societies ... Nevertheless, apart from the designation of the type of holder, the definitions applied to indigenous knowledge also apply to traditional knowledge.” - Stephen B Brush, ‘The Demise of “Common Heritage” and Protection for Traditional Agricultural Knowledge’ in

deal with traditional/indigenous knowledge it does not define the words indigenous, traditional or knowledge.⁹ As with the phrase “indigenous peoples,” the phrase “traditional” or “indigenous” knowledge is usually described rather than defined. One writer does so in these terms.¹⁰

Generally, IK is considered a body of knowledge associated with a fixed territorial space for a considerably long period of time. Such systems of knowledge are informal, experiential, and uncodified compared to the knowledge systems associated with the Western sciences.

IK is unique to a community, culture, or society; is the basis for local-level decision making in agriculture, health, natural resource management, and other activities; is embedded in community practices, institutions, relationships, and rituals; and as such is a powerful tool to create sustainable change, particularly in resource-poor rural communities.

As can be seen, the definitions of traditional knowledge tend to be ostensive, merely describing what it comprises rather than providing an explanation of what it is.¹¹ The constituents of traditional knowledge therefore include knowledge, innovations and practices, as well as institutions, relationships and rituals. These are not limited to knowledge in relation to genetic resources but also encompass for example, such manifestations of knowledge as traditional medicine and its attendant practices.¹²

Charles McManis (ed), *Biodiversity and the law: intellectual property, biotechnology and traditional knowledge*, (2007) 301. See also Chidi Oguamanam, ‘Between Reality and Rhetoric: The Epistemic Schism in the Recognition of Traditional Medicine in International Law’ (2003) 16 *St. Thomas Law Review* 59.

⁹ The terms occur in Article 17 – “indigenous and traditional knowledge”; Article 18(2) – “indigenous and traditional technologies.” Other references are to “lifestyles” (Preamble, paragraph 12 and Article 8(j)) and “cultural practices” (Article 10(c)).

¹⁰ Jude L Fernando, ‘NGOs and Production of Indigenous Knowledge under the Condition of Postmodernity’ (2003) 590 *Annals* 54, 57.

¹¹ Bernard O'Connor, ‘Protecting Traditional Knowledge. An Overview of a Developing Area of Intellectual Property Law’ (2003) 6(5) *Journal of World Intellectual Property* 677, 678 where he merely describes traditional knowledge as “as the knowledge, innovations and practices of indigenous peoples and local communities.”

¹² See for example, Oguamanam, above n 8.

10.4 RIGHTS TO TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE

As argued earlier, the CBD is less concerned with the human rights of indigenous peoples than with the need to protect and preserve their traditional knowledge for its own objectives.¹³ The importance of traditional knowledge for the purposes of the CBD was expressed at the Third CoP meeting in these terms:

Indigenous and local communities have been developing, conserving and sustainably using the biological resources on their lands and territories for millennia. Indigenous and local communities have a close knowledge of the flora and fauna and of the ecological processes of the ecosystems they inhabit and have developed a wide variety of plants and animals for food, medicine and other purposes. Traditional knowledge has and will continue to give critical clues to scientists in the agricultural, medicinal and industrial fields. In addition, traditional knowledge provides important directions for natural resource use and ecosystem management. Indigenous and local communities not only have extensive knowledge of their surrounding environment, but they also have an important role in implementing any conservation policy on the ground.¹⁴

This statement makes no mention of indigenous peoples' rights to maintain their traditional knowledge and practices that form an intrinsic aspect of their culture and way of life. Although the following paragraph notes that the CBD recognises that "indigenous and local communities should share in the benefits derived from ideas and innovations they have developed that prove useful to others," this is more to provide them with incentives to conserve biodiversity than to further their own interests.¹⁵

The FAO International Treaty on Plant Genetic Resources for Food and Agriculture takes a similar view, stating that Contracting Parties

... should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers' Rights, including:
(a) protection of traditional knowledge relevant to plant genetic resources for food and agriculture.

In this instance too, the Treaty is specifically concerned only with the knowledge relevant for its purposes.

¹³ See above Chapter 9.

¹⁴ UNEP/CBD/COP/3/19 – CBD CoP, Third meeting, 4 to 15 November 1996, *Knowledge, Innovations and Practices of Indigenous and Local Communities: Implementation of Article 8(J) (18 September 1996)*, Paragraph 8.

¹⁵ Ibid Paragraph 9.

There is however, a strong human rights justification for protecting traditional knowledge in the interests of indigenous peoples, rather than that of biodiversity conservation. Traditional knowledge, innovations and practices constitute an integral part of the cultural practices of a community. While the human rights discourse on indigenous peoples has stopped short of granting them exclusive ownership of biological resources, its provisions on cultural rights would clearly encompass knowledge, innovations and practices.¹⁶

Articles 1 of both the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR) which address the right of self-determination, note that the rights include the right to freely pursue economic, social and cultural development. Article 27 of the ICCPR declares that in States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to inter alia enjoy their own culture. In its General Comment to this Article the Human Rights Committee has noted that “culture manifests itself in many forms, including a particular way of life associated with the use of land resources, especially in the case of indigenous peoples.”¹⁷ The General Comment also notes that although the rights in question are individual rights, they depend upon the ability of the minority group to maintain its culture, language, or religion. It therefore imposes positive obligations upon States to protect these rights.¹⁸ ILO Convention 169 also links the cultural values and practices of these peoples with land and natural resources,¹⁹ and the UN Declaration on the Rights of Indigenous Peoples clearly recognises the protection of indigenous culture as a developmental right of indigenous peoples rather than as a means of resource conservation.²⁰

¹⁶ Several documents on cultural diversity also refer to traditional knowledge and knowledge systems including with regard to natural resources, but do not deal with rights in respect of it - *UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions*, CLT-2005/CONVENTION DIVERSITE-CULT REV 20 October 2005; *UNESCO Universal Declaration on Cultural Diversity*, Adopted by the 31st Session of the General Conference of UNESCO, Paris, 2 November 2001; *Convention for the Safeguarding of the Intangible Cultural Heritage*, Paris, 17 November 2003, UNESCO Doc.MISC/2003/CLT/CH/14.

¹⁷ *General Comment No. 23: The Rights of Minorities* (Art. 27): 08/04/94. CCPR/C/21/Rev.1/Add.5, Paragraphs 7 and 3.2.

¹⁸ *Ibid* Paragraph 6.2.

¹⁹ ILO Convention 169 - Article 4(1), Article 13(1) and Article 23(1).

²⁰ UN Declaration on the Rights of Indigenous Peoples 46 I.L.M. 1013, 13 September 2007, Preamble, Paragraphs 7 and 10. The Declaration also recognises that “respect for indigenous knowledge, cultures and

Legal writers have argued that one basic justification for protecting traditional knowledge is on moral grounds. Amriott argues that

because traditional knowledge is crucial for the economic and cultural survival of knowledge-holders as distinct peoples, indigenous and local communities should be permitted to live how and where they presently live--and to maintain the cultural and economic systems and relationships with the land that they and their ancestors have developed over countless generations.

She further points out that holders of traditional knowledge are often among the world's poorest people and therefore protecting it is essential to sustain them.²¹

The question is whether the CBD is also based upon this moral imperative or on the wider interests of the commercial uses which can be derived from indigenous knowledge of biological resources and the sharing of the benefits accruing from them. This factor would be relevant when examining its stance in the international debate on the issue. While it has already been argued that the wording of the Convention appears to be tilted in favour of the latter objective, it remains to be seen how the CoP has dealt with the issue.

10.5 THE WORK OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL PARTIES IN REGARD TO TRADITIONAL BIODIVERSITY RELATED KNOWLEDGE

The CBD CoP decided to address the issue of knowledge, innovations and practices of indigenous peoples and the implementation of Article 8(j)²² at its third meeting as part of its first

traditional practices contributes to sustainable and equitable development and proper management of the environment” – Preamble, Paragraph 11.

²¹ Jennifer Amriott, ‘Investigating the Convention on Biological Diversity's Protections for Traditional Knowledge’ (2003) 11 *Missouri Environmental Law & Policy Review* 3, 10-11. See also UNEP/CBD/TKBD/1/3 - *Report of the Workshop on Traditional Knowledge and Biological Diversity*, Madrid, 24-28 November 1997.

²² CBD, Article 8 “Each Contracting Party shall, as far as possible and as appropriate: ... (j) Subject to its national legislation, 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 utilization of such knowledge, innovations and practices.”

medium term programme of work.²³ Decision III/14 entitled “Implementation of Article 8(j),”²⁴ while maintaining the CBD’s stance on traditional knowledge in relation to biodiversity conservation, also noted that the issue goes beyond its scope. The Preamble to the Decision makes several points, most significant of which are references to the human rights aspects of indigenous peoples’ knowledge. It takes note of the relevant activities within the UN system and of international instruments which address the issue. Follow up action of the CoP in this regard includes being informed as to relevant international processes and bodies, including human rights and other UN bodies such as those under the auspices of the Commission on Human Rights,²⁵ the Commission on Sustainable Development, the FAO, UNESCO (United Nations Educational, Scientific and Cultural Organisation) and also ILO Convention 169.²⁶

The Decision also recognises rights under national legislation of indigenous and local communities to control access to their knowledge, innovations and practices relevant for the conservation and sustainable use of biological diversity. In this regard it requests those States Parties to develop national legislation and other strategies to implement Article 8(j) in consultation with such communities. However, there is no indication as to the direction of such legislation or how the implementation of the Article should take place.²⁷

A document submitted to the third CoP meeting sets out in detail its initial response to the issues raised by Article 8(j). The CoP dissected the wording of Article 8(j) into three distinct components.²⁸ In regard to the first element – to respect, preserve and maintain the knowledge, innovations and practices of indigenous and local communities - it emphasised that implementation of this aspect required the recognition and protection of indigenous peoples’

²³ *Handbook on the Convention on Biological Diversity* (3rd ed. 2005), 584 (hereinafter CBD Handbook), 139. The Handbook also notes that the issue has arisen in CoP discussions on intellectual property rights, access to and benefit sharing of genetic resources and forest biological diversity.

²⁴ CBD Handbook, 490

²⁵ Now the Human Rights Committee.

²⁶ Other bodies mentioned include the WIPO, the World Bank and the WTO. The work of the international human rights regime is also discussed in the document UNEP/CBD/COP/3/19, above n 14.

²⁷ This question was addressed at the fourth CoP meeting in 1998 - UNEP/CBD/COP/4/10 – CBD CoP, Fourth Meeting, 4 to 15 May 1998, *Implementation of Article 8 (j) and Related Provisions*, 2 February 1998, Part II.

²⁸ UNEP/CBD/COP/3/19, above n 14, paragraph 13 and 58.

access to land and territory. It maintained that biodiversity is protected and often enhanced by such knowledge, innovations and practices that in turn are linked to the preservation and maintenance of cultural diversity. If such communities are to ensure their cultural survival, they require secure access to land and territory. The CoP noted that “[t]he ‘respect’ referred to in Article 8(j) can thus be taken to include the requirement for Parties to respect the entitlement of indigenous and traditional communities to secure tenure of their traditional lands.”²⁹ Such respect also requires that their knowledge, innovations and practices should be given the same status as other forms of scientific and technical knowledge.

With regard to the second element of Article 8(j) - to promote the wider application of such knowledge - the CoP observed that its realisation was dependent on the fulfilment of the first. In other words, if Parties fail to respect and protect traditional knowledge, cultural diversity and consequently the knowledge would be lost. With regard to ensuring such wider application the CoP emphasised that this should be done with the approval and involvement of the holders of the knowledge, innovations and practices, and must be on the basis of prior informed consent and mutually agreed terms.

In regard to the third element of Article 8(j) - the equitable sharing of the benefits arising from the utilisation of such knowledge - the CoP noted that it would be significantly advanced by the implementation of the previous requirements, which would facilitate the communities in negotiating the terms and conditions of such use on a more equitable basis. However, these measures alone would not ensure that indigenous peoples would share in the commercial uses of their knowledge, which could be achieved only by the ability to control such use. The CoP took the view that control over such intangible goods can be achieved only by intellectual property rights or contractual arrangements.³⁰

²⁹ Ibid paragraph 62.

³⁰ Ibid paragraph 86.

10.6 CONCLUSION

The relative merits of intellectual property rights and contractual arrangements for protecting the rights of indigenous and local communities over traditional knowledge, as well as alternative suggestions will be discussed further. At this point it is interesting to note that the work of the CoP on the issue goes beyond the wording of the CBD and the approach taken by it is a great deal more people centred than the Convention. It has recognised indigenous and local communities' rights over traditional knowledge and has categorically acknowledged that such communities must be granted control and ownership over their knowledge, if not over their biological resources. This perspective is apparent in later discussions on practical measures to protect and conserve this knowledge.

Part 5

The Debate on the Appropriation of PGRFA and Traditional Knowledge

CHAPTER 11

THE PLANT PROTECTION PROVISIONS OF UPOV, THE TRIPS AGREEMENT AND BILATERAL TREATIES

11.1 INTRODUCTION

Chapter 7 of this thesis provided a general overview of the workings of the international property rights regime in regard to plant genetic resources for food and agriculture (PGRFA) and this chapter will analyse its specific application to these resources. The development of property rights over new plant varieties, while having its roots in national laws, later developed in the international sphere. The national and international developments have to a great extent influenced each other. The process has also resulted in the impetus at international level to make national legislation on such rights consistent with international regimes. The process by which this took place will be outlined in this chapter. Since the U.S. and European countries have been at the forefront of the global drive for the protection of plant varieties, the laws of these countries also merit some discussion.

This chapter will provide a brief discussion of the development of plant protection laws in the national sphere and then examine the provisions of two international agreements which deal with the application of intellectual property rights over PGRFA, namely the International Convention on the Protection of New Varieties of Plants (UPOV) and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement). It will consider the impacts of these rights on farmers and agricultural systems particularly in developing countries, and analyse the debate on the subject which is taking place in international fora.

11.2 FORMS OF PLANT PROTECTION

Two forms of monopolistic property rights are available to breeders of new varieties of plants – namely patents, or what are known as plant variety protection (PVP) or plant breeders’ rights (PBR). Both are forms of intellectual property rights. A patent, which is available for any industrial invention, gives the inventor the right to prevent any other person from using the invention in any way for a period of time, usually 20 years. The criteria for obtaining a patent on an invention are proof of novelty or non-obviousness, inventiveness, and utility or usefulness.

PVP or PBR is a unique form of intellectual property right, akin to patents, specifically designed to protect property rights over new varieties of plants and available only to plant breeders.

Currently, the criteria for PVP are novelty, distinctness, uniformity and stability of the plant variety.¹ PVP enables the breeder to prevent any other person from re-producing the plant variety for commercial purposes without his/her prior authorization. PVP is also subject to two exceptions, namely the farmers' exception and the breeder's exception. Consequently, it is viewed as a weaker form of patent.

11.3 DEVELOPMENTS IN PLANT PROTECTION IN THE NATIONAL SPHERE

The United States was one of the first countries to institutionalise private property rights over plant varieties.² While plants were initially excluded from the subject matter of standard utility patents,³ in 1930 Congress passed the Plant Patent Act⁴ in order to "afford agriculture, so far as practicable, the same opportunity to participate in the benefits of the patent system as has been given to industry."⁵ Such patents were initially restricted to distinct and new varieties of asexually reproducing plants⁶ and those reproducing sexually were excluded. In the next forty years 2,700 plant patents were issued under this Act.⁷ In 1970, Congress passed the Plant Variety Protection Act (PVPA)⁸ which extended protection to sexually re-producing plants if the breeder could show that the new variety had the attributes of novelty, uniformity, stability, and

¹ See *International Convention for the Protection of New Varieties of Plants*, of December 2, 1961 as Revised at Geneva on November 10, 1972, on October 23, 1978, and on March 19, 1991 (hereinafter UPOV Act 1991) Chapter III for explanations of these terms.

² Anne E Crocker, 'Will Plants Finally Grow Into Full Patent Protection on an International Level? A Look at the History of US and International Patent Law regarding Patent Protection for Plants and the Likely Changes after the US Supreme Court's Decision in *JEM Ag Supply v Pioneer Hi-Bred*' (2003) 8 *Drake Journal of Agricultural Law* 251.

³ The exclusion of plant varieties from patentable material is based on the "products of nature doctrine" which postulates that what exists in nature cannot be new – David G Scalise and Daniel Nugent, 'International Intellectual Property Protections for Living Matter: Biotechnology, Multinational Conventions and the Exception for Agriculture' (1995) 27 *Case Western Reserve Journal of International Law* 83, 90. The authors criticise the restrictive application of plant patents based on this doctrine.

⁴ U.S. Plant Patent Act, 35 U.S.C. §§ 161-164.

⁵ Cited in Patricia Lucia Cantuaria Marin, *Providing Protection for Plant Genetic Resources – Patents, Sui Generis Systems and Biopartnerships* (2002), Chapter 2.

⁶ I.e. plants which reproduce by vegetative material such as tubers, grafts and cuttings and not by seeds.

⁷ David S Tilford, 'Saving the Blueprints: The International Legal Regime for Plant Resources' (1998) 30 *Case Western Reserve Journal of International Law* 373, 401.

⁸ Plant Variety Protection Act of 1970 (PVPA), 7 U.S.C. §§ 2321-2582.

distinctness.⁹ The second Act was largely motivated by the rise of the private hybrid seed industry, and the strengthening of plant variety protection laws in Europe.¹⁰ The protection available under the PVPA was initially not as comprehensive as under the Plant Patent Act, and contained a “farmers’ privilege” exception which permitted farmers to save seeds produced by protected varieties and replant them without paying additional royalties. Farmers were also permitted to sell these seeds, but this right to sell was removed by a later amendment to the Act.¹¹

The U.S. courts also played an important role in furthering plant breeders’ rights by bringing them under the aegis of patent protection. The protection afforded to plant breeders by statute was substantially strengthened by judicial decisions beginning with that of *Diamond v. Chakrabarty*¹² in which the U.S. Supreme Court extended standard utility patent protection to novel plant varieties.¹³ In this case a genetically modified micro-organism which was capable of breaking down oil spills was initially rejected for patent protection by the patent office on the grounds that micro-organisms are a product of nature and living things are not patentable under the law. This ruling was overturned by the Supreme Court which disagreed with the contention that living things were not patentable, declaring that “the relevant distinction was not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions.”¹⁴ In the present case, it held that the respondent’s micro-organism was the result of human ingenuity and research, and thereby patentable.

⁹ See Section 41 of the Act for definitions of these terms. See also Jim Chen, ‘The Parable of the Seeds: Interpreting the Plant Variety Protection Act in Furtherance of Innovation Policy’ (2005) *Notre Dame Law Review* 105, 121.

¹⁰ For an account of the development of PVP laws in Europe see Klaus Bosselmann, ‘Plants and Politics: The International Legal Regime concerning Biotechnology and Biodiversity’ (1996) 7 *Colorado Journal of International Environmental Law and Policy* 111. See also Crocker, above n 2.

¹¹ See below section 11.4.2.1.

¹² *Diamond, Commissioner of Patents and Trademarks v. Chakrabarty* (1980, United States Supreme Court) 447 U.S. 303; 100 S. Ct. 2204; 65 L. Ed. 2d 144; 1980 U.S. LEXIS 112; 206 U.S.P.Q. (BNA) 193.

¹³ For a more detailed account of U.S. case law in relation to plant patenting see Marin, above n 5, Chapter 2.

¹⁴ 447 U.S. 303, 313.

Chakrabarty was followed by a series of decisions culminating in the cases of *Ex parte Hibberd*¹⁵ where the U.S. Patent Office for the first time addressed the granting of utility patents for plant varieties, and of *E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc*¹⁶ in which the U.S. Supreme Court conclusively held that sexually reproducing plants are eligible for protection under the PVPA as well as by utility patents under the Patents Act,¹⁷ thus sealing the position that patents are now issuable on life forms.¹⁸ Although the conditions for obtaining patents are more stringent and would be practically available only to genetically engineered plants and animals, the benefits obtained under the patent system would be greater, including that the invention would not be subject to the exceptions found in the PVP system under UPOV.¹⁹

Patents were used to some extent by some European countries around 1930, and in both Germany and the Netherlands national PVP systems were set up which became the forerunners to UPOV.²⁰ When the push for plant variety protection was initiated after the Second World War, the European seed industry was in fact asking for industrial patents on plants, since it was already developing a cross border trade in plant varieties. This proposal met with resistance, most notably from European governments which feared that industry would dominate the agricultural sector. Resistance also came from patent experts who feared that extending patents to plant varieties could undermine the credibility of patents.²¹ The seed companies, represented by the

¹⁵ *Ex parte Hibberd* 227 U.S.P.Q. (BNA) 443 (1985).

¹⁶ *E.M. Ag Supply, Inc. v. Pioneer Hi-Bred International, Inc* (2001, United States Supreme Court) 534 U.S. 124; 122 S. Ct. 593; 151 L. Ed. 2d 508; 2001 U.S. LEXIS 10949; 70 U.S.L.W. 4032; 60 U.S.P.Q.2D (BNA) 1865; 2001 Cal. Daily Op. Service 10239; 2001 Daily Journal DAR 12749; 15 Fla. L. Weekly Fed. S 29.

¹⁷ Chen, above n 9.

¹⁸ Scalise and Nugent, above n 3, 97; Tilford, above n 7, 400; Marin, above n 5, Chapter 2.

¹⁹ Scalise and Nugent, above n 3,100; Elisa Rives, ‘Mother Nature and the Courts: Are Sexually Reproducing Plants and their Progeny Patentable under the Utility Patent Act of 1952?’ (2001/2002) *Cumberland Law Review* 187.

²⁰ GRAIN, *The end of farm-saved seed? Industry’s wish list for the next revision of UPOV* (2007) <<http://www.grain.org/briefings/?id=202>> at 1st April 2008.

²¹ “Plants are living and evolving organisms and therefore cannot be exhaustively described in the way required by a patent – well enough to allow someone else to “repeat the invention” exactly. Thus patents on plants would require far-reaching exemptions from normal patent criteria” - GRAIN, *ibid*. Further, these interest groups also required the “novelty” and “inventive step” (or non obviousness) criteria of patents to be relaxed for plants so that varieties reflecting merely incremental improvements on known varieties could

International Association for the Protection of Intellectual Property (AIPPI)²² and the International Association of Plant Breeders (ASSINSEL)²³ therefore had to settle for a *sui generis* system of protection and together with the French government, initiated the process which was to result in the UPOV Convention (discussed earlier in Chapter 7).²⁴

11.4 PLANT VARIETY PROTECTION UNDER UPOV

The progressive amendments of UPOV from 1961 to 1991 reflect the gradual strengthening of intellectual property rights (IPRs) over plant varieties, from a limited monopoly to one which is now akin to patent protection.²⁵ While the 1972 and 1978 revisions of UPOV made only minor changes to the Convention, the 1991 Act contained significant amendments.²⁶ It has been contended that the 1991 amendments to UPOV were largely brought about by the conventional plant breeders, who were challenged by large biotechnology corporations armed with genetic engineering techniques. These techniques made it possible for their plant varieties to meet the criteria required for patents, (particularly the “novelty” criterion). By this point the U.S. Supreme Court had already ruled that patents were issuable on plant varieties. The 1991 amendments to UPOV thus gave the conventional plant breeders an expanded right which was very close to patents.²⁷

also receive protection and this requirement could not be met - Graham Dutfield, *Intellectual Property, Biogenetic Resources and Traditional Knowledge* (2004), 33; Marin, above n 5.

²² AIPPI is the acronym for the French name Association Internationale pour la Protection de la Propriété Intellectuelle with its website at <www.aippi.org> last visited 1st April 2008.

²³ ASSINSEL is the acronym for the French name Internationale des Sélectionneurs pour la Protection de Obentions Végétales. The organisation merged in 2002 with the International Seed Trade Federation (FIS) and the two became the International Seed Federation, ISF with its website at <www.worldseed.org> last visited 1st April 2008.

²⁴ GRAIN, above n 20. See also GRAIN, *Seed companies want to ban farm-saved seed* (2007) <http://www.grain.org/briefings_files/upov-2007-summary-en.pdf> at 25th February 2008; Dutfield, above n 21, 33.

²⁵ GRAIN, above n 20.

²⁶ Rolf Jördens, ‘Progress of plant variety protection based on the International Convention for the Protection of New Varieties of Plants (UPOV Convention)’ (2005) 27(3) *World Patent Information* 232, 234.

²⁷ GRAIN, above n 20.

11.4.1 UPOV Provisions

The UPOV Convention, including its amending Acts, established five main features in regard to plant variety protection, namely the:

- standard criteria for protection (distinctness, uniformity and stability, with the criterion of novelty being added in 1991);
- minimum scope of protection;
- minimum duration of protection;
- minimum number of plant genera and species for which variety protection must be provided; and
- rules for accession to the Convention, national treatment and priority of applications.²⁸

In regard to the plants protected under the Convention, while the 1978 Act permitted States to determine which plants would be accorded protection,²⁹ the 1991 Act requires plant varieties of all genera and species to be protected,³⁰ thereby extending the rights afforded to the breeder. This also means that countries no longer have the discretion to decide which plant varieties they will protect.

The requirements for protection are now, novelty, distinctness, uniformity, stability and also variety of denomination.³¹ Article 5 of the 1991 Act specifically states that the grant of the breeder's rights shall not be subject to any further or different conditions than these. This provision thus imposes an upper limit on the criteria for protection, thereby precluding countries from restricting the scope of the rights by requiring further conditions to be satisfied, for example, disclosure of origin of the variety. This significant aspect will be discussed further in this thesis.

²⁸ Jördens, above n 26, 234.

²⁹ *International Convention for the Protection of New Varieties of Plants*, of December 2, 1961, as revised at Geneva on November 10, 1972, and on October 23, 1978 (hereinafter UPOV Act 1978), Article 2.

³⁰ UPOV Act 1991, Article 3.

³¹ UPOV Act 1978, Article 6 and UPOV Act 1991, Chapter III and Article 20. For an explanation of these requirement see Mark Hannig, 'An Examination of the Possibility to Secure Intellectual Property Rights for Plant Genetic Resources Developed by Indigenous Peoples of the NAFTA States: Domestic Legislation under the International Convention for Protection of New Plant Varieties' (1996) *Arizona Journal of International and Comparative Law* 175.

The 1991 Act extends the plant breeder's rights in regard to both term and scope of protection. The term of protection has been increased in the 1991 Act, from an original minimum of 15-18 years to a minimum of 20-25.³² Under the 1978 Act, the breeder's prior authorization was required for the production of the variety for purposes of commercial marketing, the offering for sale, or the marketing of the reproductive or vegetative propagating material, as such.³³ This was maintained in the 1991 Act which prohibits the unauthorized production or reproduction (multiplication), conditioning for the purpose of propagation, offering for sale, selling or other marketing, exporting or importing, or stocking of the variety for any of the purposes mentioned above. In addition, a State may extend the range of acts which are so prohibited.³⁴ Further, in 1991 these restrictions were extended from propagating material only, to material harvested from the plant variety as well, again benefiting the breeder.³⁵

The 1991 Act also lifted the restriction on dual protection included earlier. Under Article 2(1) of the 1978 Act a member State may provide protection to a breeder either by way of patent or a special title of protection. Any member State whose national laws provide for both forms of protection may use only one form in respect of one and the same botanical genus or species.³⁶ This prohibition has been omitted from the 1991 Act and consequently the breeder can now seek dual protection under two distinct regimes, reaping the benefits and avoiding the limitations of both. For example, the requirements of novelty and the "inventive step" criteria of patents are not

³² UPOV Act 1978, Article 8; UPOV Act 1991, Article 19.

³³ UPOV Act 1978, Article 5.

³⁴ UPOV Act 1991, Article 14(4).

³⁵ Marin explains this distinction with the following example. Under the 1978 Act if a person used the oil of a protected coconut variety to produce an anti-aging cream, he/she would not have violated the rights of the breeder. However, under the 1991 Act this would constitute a violation - Marin, above n 5, 32.

³⁶ However, it must be noted that the UPOV Act 1978, Article 37 titled "Exceptional Rules for Protection under Two Forms" provides that notwithstanding the provisions of Article 2(1), a state which had provided for protection under different forms for one and the same genus or species, may continue to do so, if at the time of signing or ratifying this Act it notifies the Secretary-General of that fact. Marin states that this loophole was included to accommodate the U.S., since at that time its legislation permitted parallel protection. This was thus an important step in bringing international law in line with U.S. domestic law - Marin, above n 5, 33.

required for breeders' rights,³⁷ while there are exceptions to breeders' rights (discussed below) which are not applicable under patent protection.

Other important aspects of UPOV include the amended provision in the 1991 Act which prohibits discrimination between nationals of a State and non-nationals. While Article 3 of the 1978 Act permitted States to limit the benefits of the protection accorded to a particular plant variety to nationals of States which also applied the Convention to that variety, the 1991 Act now requires that the nationals of all member States enjoy the same level of protection in each others' countries.³⁸ This is equivalent to the principle of national treatment under the TRIPS Agreement and means that UPOV was positioning itself to be truly international.

11.4.2 Exceptions to plant breeders' rights (PBR)

There are certain exceptions or limitations to PBRs which have been recognised in both domestic laws and international law, namely the farmer's privilege and the breeder's or research exception. These exceptions are significant since they constitute one factor which distinguishes PBRs from industrial patents.

11.4.2.1 The farmers' privilege

There is an age old tradition among farmers of saving seed from one years harvest for re-planting in the succeeding year. Farmers also traditionally shared and exchanged such seed, thus contributing to further development of new plant varieties. While this may appear to be an unwritten but obvious aspect of the agricultural process, it has in fact become a contentious legal issue, both in international and national law in the context of the propertisation and commercialisation of plant varieties.

The controversy surrounding what has come to be known as the "farmers' privilege" or "farmers' exception"³⁹ was actually triggered by the 1991 UPOV Act. The 1978 Act makes no mention of

³⁷ While novelty as a criterion was added in UPOV Act 1991, the application of the term differs from that in the context of industrial patents – see UPOV Act 1991, Article 6.

³⁸ UPOV Act 1991, Article 4.

³⁹ Also called the crop exception. These terms are not actually found in the conventions. Some writers take the view that the term "farmers' privilege" is a misnomer as what is permitted to the farmer is a right rather

a farmers' exception. It merely defines the scope of protection granted to the plant breeder with reference to the three acts mentioned above which require his/her prior authorisation.⁴⁰ Farmers were thereby implicitly prohibited from violating plant breeders' rights by *selling* seed from one years' crop.⁴¹ However, in the absence of a specific prohibition on *saving* and *sharing* seed, there was a de facto acceptance of the farmers' continued practice of doing so which was in fact upheld by many countries, although to varying extents.

The 1991 UPOV Act introduced a specific provision on the farmers' exception. This was done by defining it in the form of a limitation on the plant breeder's right and also by setting out its scope and extent. Article 15(2) reads:

[*Optional exception*] Notwithstanding Article 14, each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, (emphasis added) restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety or a variety covered by Article 14(5)(a)(i) or (ii).

For the first time therefore, what had been an unwritten, customary practice was now incorporated into the law and restricted. This was done by making the farmers' exception an optional one and leaving it to national governments to implement it at their discretion but within "reasonable limits."

The farmers' exception was also introduced into the U.S. Plant Variety Protection Act.⁴² Under the PVPA a farmer was permitted to save and sell a limited amount of seed each year, and this would not violate the rights of the breeder. However, under a 1994 amendment to the PVPA⁴³ (which was in fact introduced to bring U.S. domestic legislation in line with the 1991 UPOV Act), the right to sell seeds was removed and farmers can now only use saved seed on their own

than a privilege. See Graham Dutfield, *Intellectual Property Rights, Trade and Biodiversity* (2000), 28. See also GRAIN, *Farmers Privilege under Attack* (2003) <http://www.grain.org/briefings_files/bio-ipr-fp-june-2003-en.pdf> at 25th February 2008.

⁴⁰ See above text at n 33.

⁴¹ UPOV Act 1978, Article 5 (1).

⁴² Scalise and Nugent point out that prior to 1970 there was no need for a farmers' exemption as the patenting of sexually re-producing plants was not permitted – Scalise and Nugent, above n 3, 88.

⁴³ Plant Variety Protection Act Amendments of 1994, Pub. L. No. 103-349, § 10, 108 Stat. 3136, 3142 (1994). See also Crocker, above n 2, 254.

farms.⁴⁴ In any event the exception was available only to farmers whose primary occupation was growing crops for purposes other than seed.⁴⁵

The principle of the farmers' exception is among the most contentious in the discourse on rights to PGRFA. The saving, sharing and exchange of seed among farmers obviously limits the profits of the seed companies as they will not be assured of a continual market for their products. The seed industry has made its opposition to the farmer's exception clear.⁴⁶ In a position paper on farm saved seed, ASSINSEL claimed that plant breeders have developed cultivars used by an increasing number of farmers worldwide which contain increasing genetic variability and which, together with "improved cultural practices," has resulted in a dramatic increase in food production. Plant breeding is therefore no longer a "by-product of agriculture" but a separate activity for which the breeders must get a return on large investments. ASSINSEL warns that its members oppose the farmer's privilege going beyond the 1991 Act,

i.e. within reasonable limits in terms of acreage, quantity of seed and species concerned and subject to the safe-guarding of the legitimate interest of the breeders in terms of payment of a remuneration and information.

It also states that its members

consider that any national legislation authorizing farm saved seed without reasonable limit and without safeguarding the legitimate interest of the breeders is not in conformity with the 1991 Act of the UPOV convention. In addition it would not be an effective sui-generis system in the meaning of the article 27.3.b of the TRIP's agreement.⁴⁷

Those in favour of the farmers' exception firstly emphasise that the farmers' right to save seed dates back millennia to the emergence of agricultural societies. While some writers take the view

⁴⁴ Prior to the statutory amendment, the U.S. Supreme Court had limited the ambit of the exception – Rives, above n 19. See also Crocker, above n 2.

⁴⁵ Crocker, above n 2.

⁴⁶ For an overview of the corporations which dominate the global seed industry see ETC Group, *Global Seed Industry Concentration – 2005* ETC Group Communiqué Issue #90 (September/October 2005) <<http://www.etcgroup.org/en/materials/publications.html?id=48>> at 25th February 2008.

⁴⁷ Position Papers, Statements and Motions adopted by FIS, ASSINSEL and ISF - Farm Saved Seed (adopted 31 May 2001) <http://www.worldseed.org/en-us/international_seed/on_intellectual_property.html> at 1st April 2008. See also Position Papers, Statements and Motions adopted by FIS, ASSINSEL and ISF, Consolidation of FIS Objectives and Motions (Adopted from 1967 to 1995) <http://www.worldseed.org/en-us/international_seed/on_trade.html> at 1st April 2008.

that this exception amounts to a servitude on the proprietary rights of the breeder,⁴⁸ it can be also pointed out that servitudes are acquired by prescription and long term use. Saving seed has long pre-dated proprietary rights on seed varieties, and it has also been asserted that it constitutes a common law right.⁴⁹ It can therefore be counter argued that intellectual property rights over plant varieties constitute an unjustifiable restriction on the rights of farmers in this regard.

It should be noted at this point that UPOV's restrictions on the farmers' exception is in direct conflict with the provisions on farmers' rights in the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (FAO Treaty). Article 9.3 of the Treaty states that

[n]othing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.

This is reinforced by several other provisions, both directly and indirectly.⁵⁰ However, the weakness in this Article lies in the fact that farmers' rights are made subject to national legislation rather than being enforceable in international fora. In view of the fact that under TRIPS countries are required to institute some form of plant variety protection, and the preferred form is UPOV style PBRs, this would be an unreliable source of protection for farmers' rights. Several countries have, in fact, UPOV style plant variety protection laws in place and there is now increasing pressure on others to conform to this system.⁵¹

The farmers' exception contained in UPOV has been consistently whittled down and in the light of subsequent technological developments in fact offers little protection to the interests of farmers

⁴⁸ Scalise and Nugent, above n 3. For an account of U.S. court decisions restricting the farmers' exception under the PVPA see Peter J. Goss 'Guiding the Hand That Feeds: Toward Socially Optimal Appropriability in Agricultural Biotechnology Innovation' (1996) *California Law Review* 1395; Neil D Hamilton, 'Why Own the Farm if You Can Own the Farmer (and the Crop)?': Contract Production and Intellectual Property Protection of Grain Crops' (1994) 73 *Nebraska Law Review* 48, 95.

⁴⁹ Samantha M Ohlgart, 'The Terminator Gene: Intellectual Property Rights Vs The Farmers' Common Law Right to Save Seed' (2002) 7 *Drake Journal of Agricultural Law* 473.

⁵⁰ See *International Treaty on Plant Genetic Resources for Food and Agriculture*, adopted at the 31st Session of the FAO Conference on 3 November 2001 available at <<http://www.fao.org/ag/cgrfa/itpgr.htm>> and the website of the Treaty at <<http://www.planttreaty.org/>> (hereinafter FAO Treaty), Preamble Paragraph 8, Articles 5.1(c) and 6.1 (c) and (d).

⁵¹ GRAIN, *The International Treaty on Plant Genetic Resources, A Challenge for Asia* (2002) <<http://www.grain.org/docs/it-asia-feb2002-en.pdf>> at 25th February 2008.

in either developed or developing countries. Further advances in agricultural biotechnology and their implementation, particularly in regard to genetically engineered seeds and genetic use restriction technologies (GURTs) (discussed in Chapter 3), have also served to strengthen the hand of the plant breeders and possibly make the principle of the farmers' exception redundant.⁵² The farmers' exception has also been the primary reason why the seed and biotechnology industries have sought utility patent protection, since patents do not provide for the exception.⁵³ These measures illustrate the concerted efforts taken by biotechnology corporations to safeguard their property in seeds whether by legislative or technological measures. These corporations will potentially make windfall profits when markets in developing countries, which are for the most part untapped, are opened up for their seeds.⁵⁴ However, if farmers were compelled to start planting protected plant varieties, they would inevitably be caught up in the cycle of the seed saving prohibition and this would potentially result in loss of autonomy and dependence on the biotechnological industry for agricultural inputs.⁵⁵

⁵² Seed companies' contracts with farmers also contain clauses prohibiting them from saving or selling seed - 2006 Monsanto Technology/Stewardship Agreement <<http://www.farmsource.com/images/pdf/2006%20EMTA%20Rev3.pdf>> at 1st April 2008. Seed companies have also been known to sue farmers whom they allege use their products illegally – Centre for Food Safety, *Monsanto vs. U S Farmers* (2007) <http://www.centerforfoodsafety.org/pubs/CFSMonsantovsFarmerReport1.13.05.pdf> at 8th May 2008; Peter Straub, 'Farmers in the IP Wrench - How Patents on Gene-modified Crops Violate the Right to Food in Developing Countries' (2006) *Hastings International and Comparative Law* 187, 191. The author cites the Canadian case of *Monsanto Canada v. Schmeiser* [2004] S.C.R.1 in this regard.

⁵³ Rives, above n 19, 228. Woods notes that over seven to eight years over 10, 000 utility patents have been granted for plants – Michael Woods, 'Food for Thought: The Biopiracy of Jasmine and Basmati Rice' (2002) 13 *Albany Law Journal of Science & Technology* 123, 126; Straub, above n 52,190

⁵⁴ Devlin Kuyek, *Intellectual property rights: Ultimate Control of Agricultural R&D in Asia* (2001) <http://www.grain.org/briefings_files/asiaipr.pdf> at 25th February 2008. It has also been noted that a less well known fact is that many rich and middle income countries also rely on a considerable amount of farm saved seed ranging from an average of 20-40% but going up to 90% in some countries. It has been estimated that if farm saved seed were made illegal the seed industry would gain by around \$7 billion annually - GRAIN, above n 20. The conflict between plant breeders and developed country farmers can also be seen in the presentation made to UPOV by the International Seed Federation – UPOV/ENFORCEMENT/05/3 - Meeting on Enforcement of Plant Breeders' Rights – *Presentation by the International Seed Federation (ISF)* – 4 October 2005.

⁵⁵ Straub, above n 52. For a discussion on the operations of global food corporations see ActionAid International, *Power Hungry - Six Reasons to Regulate Global Food Corporations* (2005) http://www.actionaid.org.uk/content/documents/power_hungry.pdf at 30th April 2008.

11.4.2.2 The breeders' or research exception

Competition can arise among plant breeders themselves, giving rise to conflicts over developing new varieties.⁵⁶ Breeders who have secured such protection over varieties would seek to prevent others from using them for research, or for further development of more varieties. This conflict finds expression in the provisions on what is known as the breeders' or research exception.

The breeders' or research exception imposes a limited restriction on PBRs to permit subsequent breeders to use previously protected varieties for further breeding and improvement. This exception appears in both the 1978 and 1991 UPOV Acts. Article 5(3) of the 1978 Act states that

[a]uthorisation by the breeder shall not be required either for the utilisation of the variety as an initial source of variation for the purpose of creating other varieties or for the marketing of such varieties. Such authorisation shall be required, however, when the repeated use of the variety is necessary for the commercial production of another variety.

Therefore the original rights of subsequent breeders were wide enough for them to carry on further research for developing a new variety.

The 1991 Act also contains the exception but has limited its scope quite significantly. Article 15 of the 1991 Act states that the (original) breeder's right shall not extend to "acts done for experimental purposes" and "acts done for the purposes of breeding other varieties." However, this section will apply only to "other" varieties which are not "essentially derived" from the original protected variety.⁵⁷ Therefore the scope of the research exception now revolves around the concept of "essential derivation."

UPOV has itself stated that breeders need access to all forms of breeding material to sustain progress in plant breeding.⁵⁸ However, the seed industry is as hostile to the research exception as it is to the farmer's exception. While it has acknowledged that it "is essential for continued progress from plant breeding," it has also expressed concern that it was being abused due to the assessment of distinctness based upon the 1978 Act, and that "cosmetic modifications" were

⁵⁶ Fredrick H Buttel and Jill Belsky, 'Biotechnology, Plant Breeding and Intellectual Property - Social and Ethical Dimensions' (1997) 12(1) *Science, Technology and Human Values* 31.

⁵⁷ UPOV Act 1991, Article 14(5).

⁵⁸ *Access to Genetic Resources and Benefit-Sharing*, Reply of UPOV to the Notification of June 26, 2003, from the Executive Secretary of the Convention on Biological Diversity (CBD) adopted by the Council of UPOV at its thirty-seventh ordinary session on October 23, 2003.

sufficient to protect a new variety. Therefore they claimed that the concept of “essential derivation” was introduced into the 1991 Act in order to establish a minimum distance between two species so as to claim distinctness.⁵⁹

The concept of “essential derivation” is theoretically one of fact and such determination may be subjective, although both the 1991 Act and the seed industry have attempted to lay down guidelines to determine the issue. The industry strongly supports the concept because it has “the potential to drastically decrease the risk of plagiarism in plant breeding.”⁶⁰

That the industry intends to curtail the research exception as aggressively as it has done the farmer’s exception is evident from its statement that

ISF considers that exception as meaning that a plant breeder can use, for further breeding, protected varieties in accordance with the UPOV Convention he has had access to lawfully. This does not mean that access and use of such protected varieties cannot be subject to restrictions under other international and/or national law.⁶¹

In all probability this matter will in fact be determined under national laws, many of which favour the plant breeder.⁶² In addition, while the burden of proof would obviously be on the initial breeder to prove that a subsequent variety is essentially derived, the industry has also recommended that this burden should shift in specified circumstances.⁶³ It must also be noted that the essential derivation rule only applies to protected varieties and not to traditional varieties. Therefore a plant which is essentially derived from, for example a landrace, could be the subject of PVP, which in effect is what happened in the case of basmati and jasmine rice.⁶⁴

⁵⁹ See “Essential Derivation and Dependence – Practical Information” Position papers, Statements and Motions adopted by FIS, ASSINSEL and ISF <http://www.worldseed.org/en-us/international_seed/on_intellectual_property.html> at 1st April 2008.

⁶⁰ International Seed Federation “ISF View on Intellectual Property” (Bangalore, June 2003) <http://www.worldseed.org/en-us/international_seed/on_intellectual_property.html> at 1st April 2008.

⁶¹ Ibid.

⁶² For example, the same limitation on the research exception was incorporated into the PVPA of the U.S. by its 1994 amendment - Plant Variety Protection Act Amendments of 1994, Pub. L. No. 103-341, 108 Stat. 3136, 3136-37. See also Mark D Janis and Jay P Kesan, ‘US Plant Variety Protection: Sound and Fury?’ (2002) *Houston Law Review* 727.

⁶³ International Seed Federation, above n 60.

⁶⁴ See above, Chapter 3.

Writers are generally of the opinion that the amendment will not benefit the seed industry to a great extent and will merely divert resources away from research towards litigation on the issue.⁶⁵ However, the establishment of the concept in itself has made subsequent breeders wary of accusations of infringements.⁶⁶ Helfer also agrees that while the concept is highly controversial, “[n]evertheless, the overall effect of this provision of the 1991 Act has been to narrow the breeders’ exemption and expand the IPRs of first generation breeders.”⁶⁷

11.4.3 Conclusion

Since the 1978 revision of UPOV, there have been unprecedented developments in plant biotechnology, which in turn have potentially enormous commercial returns. However, ensuring those returns requires a strategy which both secures property rights over the end products and ensures a market in which to sell them. The 1991 revision of UPOV is guaranteed to achieve the first objective.

A fundamental objection to such propertisation of seeds is the inequity resulting from PGRFA which was nurtured and developed by farmers and local communities being appropriated and subject to monopolistic corporate control. Many of the “new” and “modern” varieties of protected plants are based upon the species developed by traditional farmers who were not compensated for their use. Examples of the misappropriation of traditionally bred varieties of PGRFA have already been cited in Chapter 3. PBRs, like patents, do not recognize the previous actors in the process of plant variety development, or compensate those who developed the resource base from which modern varieties are derived.

Aside from the inequity of misappropriating varieties bred by traditional farmers in the past, the current economic impacts are also a matter of concern. The prohibition on saving and exchanging seed may obstruct farmers from carrying on their traditional activities of plant breeding and increase their production costs when buying fresh seeds every year. In developing countries a high proportion of farming is in the hands of small scale subsistence farmers. They

⁶⁵ Crocker, above n 2; Goss, above n 48, 1434; Janis and Kesan, above n 62.

⁶⁶ International Seed Federation, above n 60.

⁶⁷ Laurence R Helfer, *Intellectual Property Rights in Plant Varieties: An Overview with Options for National Governments*, FAO Legal Papers Online #31 (2002) 16 <<http://www.fao.org/Legal/Prs-OL/lpo31.pdf>> at 25th February 2008.

generally do not have the resources to continually buy new seeds, but rely on saving or exchanging seeds or cultivating wild varieties, and agriculture in these regions is still often grounded in the sharing and distribution of farmer saved seed. Further, higher costs for farmers would inevitably be passed on to the consumer, thus jeopardizing access to food, particularly in developing countries.

Commercial transactions in seed varieties have still not taken hold in these regions, and while for instance, the Asian seed market has immense potential for agricultural biotechnology corporations, it is still largely untapped. These corporations therefore need to get a foothold into these countries in order to sell their products with the potential to make windfall profits. The current practice of farmers of saving and exchanging their own seed varieties is hindering them from doing so. Therefore from the perspective of the biotechnological industry, restrictions on the farmers' right to save seed would be an effective strategy to change this situation. The governments of the countries concerned would also find themselves under pressure to provide the legal framework to protect the interests of the breeders. The imposition of intellectual property laws on farmers and the restrictions on their traditional practices would thus have wider implications for biodiversity conservation, sustainable agriculture, and food security in developing countries.

The future directions of UPOV and PVP are closely linked to the workings of the TRIPS Agreement. While the 1991 amendments to UPOV were triggered by the standoff between the conventional seed industry and the biotechnological corporations, that dimension no longer exists since the former has been largely bought up by the latter, resulting in a consolidation of the industry.⁶⁸ The common objective therefore is the extension of industrial patents to plant varieties. This process is taking place in the context of TRIPS as well as bilateral agreements.

⁶⁸ GRAIN, above n 20.

11.5 THE PLANT PATENT PROVISIONS OF THE TRIPS AGREEMENT AND CONCERNS OF DEVELOPING COUNTRIES

11.5.1 Introduction

The provisions of the TRIPS Agreement which impact upon PGRFA are those relating to patents, contained in Section 5, Articles 27 to 34. The present discussion will be confined to Article 27 entitled “Patentable Subject Matter.”

According to Article 27.1, subject to the provisions of Articles 27.2 and 27.3,

patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.

The Article does not define what constitutes an invention but merely demarcates what conditions one should meet in order to be patentable. The conditions reflect the generally accepted conditions of patentability which have now been incorporated into a global agreement.

Articles 27.2 and 27.3 specify the exceptions to patentability. According to Article 27.2 Members may exclude inventions from patentability if the commercial exploitation of those inventions within their territory should be prevented in the interests of,

ordre public or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.

According to Article 27.3 Members may also exclude from patentability, inter alia,

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, a proviso to the section specifies that

[m]embers shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.⁶⁹

⁶⁹ For an explanation of the negotiation of these sections see Daniel Gervais, *The TRIPS Agreement - Drafting History and Analysis* (2nd ed. 2003), 220.

Therefore TRIPS requires its contracting parties to protect inventions based upon plants in one of three ways - patents, a *sui generis* system or a combination of both. Although this gives Member States some leeway in the type of protection they provide, since more countries have acceded to TRIPS than to UPOV, it also ensures that plant variety protection has in fact been extended. Other factors which have contributed to TRIPS' influence on plant variety protection include its link to other international trade agreements, its widespread ratification by states in the industrialized and developing world, and its novel enforcement, review and dispute settlement provisions.⁷⁰

11.5.2 *The potential impact of TRIPS on plant breeding*

While it has been argued that universal IPRs in general and the TRIPS Agreement in particular are, by and large, inimical to the interests of developing countries,⁷¹ it is Article 27 and its impact on PGRFA and related traditional knowledge that has perhaps resulted in the most friction. The patent provisions of the TRIPS Agreement impact upon agricultural biodiversity both directly and indirectly. Until the Agreement, countries were free to decide on what would or would not be patentable, and the duration and scope of the rights. This flexibility which enabled countries to set their intellectual property (IP) standards according to their specific circumstances has been eliminated by TRIPS which now sets minimum, universal standards in this regard. Under TRIPS, all inventions, both products and processes are patentable. While “plants and animals” may be excluded from patent protection, “micro-organisms and essentially biological processes for the production of plants or animals” cannot be excluded unless they are “non-biological and micro-

⁷⁰ Helfer, above n 67.

⁷¹ UNCTAD Document UNCTAD/ITE/1 – *The TRIPS Agreement and Developing Countries* (1996); South Centre, *The TRIPS Agreement: A Guide for the South. The Uruguay Round Agreement on Trade-Related Intellectual Property Rights* (1997) <<http://www.southcentre.org/publications/trips/tripsagreement.pdf>> at 25th February 2008; Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (2002) <http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf> at 25th February 2008; Erin Kathleen Bender, ‘North and South: The WTO, TRIPS, and the Scourge of Biopiracy’ (2003) 11 *Tulsa Journal of Comparative & International Law* 281; Laurence R Helfer, ‘Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Lawmaking’ (2004) 29 *Yale Journal of International Law* 1; Farhana Yamin, *Globalisation and the International Governance of Modern Biotechnology, IPRs, Biotechnology and Food Security* (date not available) <<http://www.gapresearch.org/governance/FYIPRSfinal.pdf>> at 1st April 2008.

biological processes.”⁷² These have been cited as including isolated DNA sequences that code for certain proteins, isolated or purified proteins, seeds, plant cells and plants, plant varieties, including parent lines, hybrids, processes to genetically modify plants and processes to obtain hybrids.⁷³

This broad coverage of patent protection could thus threaten commercial breeding of plants, particularly with broadly drafted patents. Further, if a process by which plants are produced is itself patented (for example, genetic engineering), all plants bred by way of that process would also be covered by the patent. The patent holder is further safeguarded by Article 34.1 which places the burden on a defendant to prove that the product was not obtained by way of that process.⁷⁴

11.5.3 Exceptions to TRIPS provisions

While TRIPS sets out the minimum standards of intellectual property protection to which every country must conform, some provisions of Article 27 appear to give countries a certain degree of flexibility in regard to implementing its plant patent provisions. These provisions include the lack of a definition as to what constitutes an invention, the exceptions to patentability found in Articles 27.2 and 27.3, and the discretion to decide on the form of plant variety protection. Further flexibilities are found in Article 30 entitled “Exceptions to Rights Conferred,” which states:

Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interest of third parties.

⁷² *Agreement on Trade-Related Aspects of Intellectual Property Rights*, Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization, signed in Marrakesh, Morocco on 15 April 1994, 1869 UNTS 299; 33 ILM 81 (1994) (hereinafter TRIPS Agreement), Article 27.3

⁷³ Mywish K. Maredia, *Application of Intellectual Property Rights in Developing Countries: Implications for Public Policy and Agricultural Research Institutes (2001) Final Draft Submitted to the World Intellectual Property Organization December 2001*, 15 <http://www.wipo.int/about-ip/en/studies/pdf/study_k_maredia.pdf> at 1st April 2008.

⁷⁴ Ibid.

However, these flexibilities have in fact resulted in inconsistencies in the way TRIPS has been implemented by Member States. For example, while most industrialized countries grant patents on life forms, others such as Brazil, Argentina and the Andean Pact countries specifically exclude them in regard to natural substances since they do not involve an invention.⁷⁵ Further, the conditions of patentability have not been defined in the Agreement, which may also result in inconsistencies in implementation.⁷⁶ The debate regarding plant patent provisions has been further intensified by the contention of developing countries that on the one hand, patents on life forms have moral and ethical implications and, on the other, by the argument that in any event an invention based on naturally occurring matter cannot ipso facto be an invention. These positions are reflected in the discussions in the TRIPS Council discussed below.

11.5.4 The TRIPS debate on genetic resources and traditional knowledge

The TRIPS debate on genetic resources and traditional knowledge has taken place in the context of two issues. Firstly, Article 27.3(b) states that “[t]he provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement,” which schedules the review for 1999. This provision was included in part because of the differing views of the U.S. and the European Union (EU) on patenting life forms. While some developed countries had supported the U.S. position that such patents should be permitted, the EU supported the developing countries in holding that plants and animals should not be patentable. This was mainly due to the fact that it faced internal opposition to the patenting of living organisms.⁷⁷ The current draft was essentially a compromise, and conditional upon the review.

Dutfield comments that 1999 may be identified as a year that marked a shift in the balance of power in the WTO as developing countries became more proactive and assertive.⁷⁸ The

⁷⁵ Richard Gerster, ‘Patents and Development A Non -Governmental Organization View Prior to Revision of the TRIPS Agreement’ (1998) 1(4) *Journal of World Intellectual Property* 605, 612. The Andean Community countries are Bolivia, Colombia, Ecuador, Peru and Venezuela.

⁷⁶ For example, see the U.S. definition of prior art in the context of novelty, below Chapter 15, which has given rise to accusations of biopiracy.

⁷⁷ Duncan Matthews, *Globalizing intellectual property rights: the TRIPs agreement* (2002), 58.

⁷⁸ Graham Dutfield, *Trade, Intellectual Property and Biogenetic Resources: A Guide to the International Regulatory Landscape* (2002) International Centre for Trade and Sustainable Development (ICTSD) and Centre for Policy Dialogue, Bangladesh, 20 <<http://www.ictsd.org/dlogue/2002-04-19/Dutfield.pdf>> at 25th February 2008.

developed countries, on the other hand, were seeking to use the review to raise intellectual property protection standards or “improve” the protection offered by TRIPS, including by way of eliminating the patentability exceptions and incorporating key provisions of the UPOV Convention into it.

In 2001 the review took on a new dimension under Paragraph 19 of the 2001 Doha Declaration,⁷⁹ which stated that the TRIPS Council should also look at the relationship between the TRIPS Agreement and the CBD, at the protection of traditional knowledge and folklore and other relevant new developments that member governments raise in the review of the TRIPS Agreement.⁸⁰ A specific issue which arose in this regard was the disclosure of origin or source of biological material and associated traditional knowledge. Given the significance of this question, and in light of the fact that it is also being debated in other fora, this will be discussed in a separate chapter. The other elements of the Article 27.3(b) review and the TRIPS/CBD relationship are discussed in this section.

11.5.5 The review of Article 27.3 (b)

Article 27.3(b) is the single provision in the Agreement that was made specifically subject to an early review, four years after its entry into force.⁸¹ The review began in 1999 and the topics raised in the TRIPS Council included:⁸²

- how to apply the existing TRIPS provisions on whether or not to patent plants and animals, and whether they need to be modified;
- the meaning of effective protection for new plant varieties (i.e. alternatives to patenting such as the 1978 and 1991 versions of UPOV). This has included the flexibility that

⁷⁹ WT/MIN(01)/DEC/1 - Ministerial Conference, Fourth Session, Doha, 9 - 14 November 2001, *Ministerial Declaration, Adopted on 14 November 2001*, 20 November 2001, paragraph 19.

⁸⁰ Ibid.

⁸¹ Correa notes that the review was scheduled within the transitional period for implementation granted to developing countries under Article 65 - Carlos M Correa, ‘The TRIPS Agreement: how much room for maneuver?’ (2001) 2(1) *Journal of Human Development* 79, 97.

⁸² See <http://www.wto.org/English/tratop_e/trips_e/art27_3b_background_e.htm> at 1st April 2008.

- should be available, for example to allow traditional farmers to continue to save and exchange seeds that they have harvested;
- how to handle moral and ethical issues, e.g. to what extent invented life forms should be eligible for protection;
 - how to deal with the commercial use of traditional knowledge and genetic material by those other than the communities or countries where these originate, especially when these are the subject of patent applications; and
 - how to ensure that the TRIPS Agreement and the UN Convention on Biological Diversity (CBD) support each other.

The ongoing discussions on the Article 27.3(b) revisions have identified some specific issues for discussion.⁸³ These are general issues; scope of exceptions to patentability in Article 27.3(b); ethical exceptions to patentability and Article 27.2; and conditions of patentability in Article 27.1 and plant and animal inventions.

While the discussion cannot be reproduced in detail, some significant questions, which were raised, will be identified. The debate also focused to a great extent on questions of terminology, since TRIPS does not provide definitions of key terms and therefore there is considerable flexibility in applying its provisions. The continuing debate in the TRIPS Council illustrates the fact that this has worked largely to the advantage of patent applicants who have benefited from broad interpretations of these terms, which lower the threshold of patent criteria. This debate has been deadlocked along the lines of countries seeking to advance patent protection, and those trying to safeguard their genetic resources from being patented.

11.5.5.1 General issues

The general question which goes to the heart of the TRIPS Agreement is whether plant and animal inventions should be patent protected in the first place, and the line between developed and developing countries has been blurred to some extent on this issue.⁸⁴ The arguments in favour include that plant and animal as well as other biotechnological inventions should be

⁸³ IP/C/W/369/Rev.1 – TRIPS Council, *Review of the Provisions of Article 27.3(B) Summary of Issues Raised and Points Made*, 9 March 2006.

⁸⁴ For example the countries which have expressed support of such patent protection include Australia, Canada, China, the E.U., Japan, Singapore, Switzerland and the U.S. – see *ibid* footnotes 1-5.

accorded the same treatment as inventions in other fields. Therefore patent protection is necessary to further private sector investment in these activities for the general good. It is also necessary to have international rules in this regard, rather than relying on national laws. Alternatively, those opposed to such patents⁸⁵ have argued that patents on life forms “give rise to a range of concerns, including in regard to development, food security, the environment, culture and morality.”⁸⁶

The TRIPS review also considered the ways in which the mandated review of Article 27.3(b) should take place. The suggestions were grouped into four categories. These categories covered a range of positions from total prohibition on the patenting of life forms to unfettered patenting of plant and animal inventions. The U.S. took the latter position arguing that the exceptions to patentability were unnecessary and it would urge other Members also not to avail themselves of the exceptions allowed under Article 27.3(b).⁸⁷

Bangladesh, India and African countries advocated the former position on the basis that Article 27.3(b) should be amended or clarified to prohibit the patenting of all life forms.⁸⁸ They also advocated prohibitions on the patenting of inventions based on traditional knowledge or those that violate Article 15 or other provisions of the CBD. These countries further urged that the review should permit unqualified exceptions for exclusions from patentability, along the lines of other WTO agreements that permit Members to take measures in the public interest, including on ethical and moral grounds, and that a universal standard on novelty should be introduced to stop piracy of traditional knowledge and other information. They also suggested that the obligation of developing countries to implement the Article should take effect five years after the review is completed.

The other categories of suggestions fell in between these two positions. One maintained that Article 27.3(b) is well balanced and maintains Members’ rights to decide whether or not to

⁸⁵ Countries particularly vocal in the TRIPS council in this regard have been Brazil, India and the African Group of countries – see documents cited *ibid*.

⁸⁶ *Ibid*.

⁸⁷ IP/C/M/29 - TRIPS Council, *Minutes of Meeting from 27 to 30 November and 6 December 2000*, 6 March 2001, Paragraph 185.

⁸⁸ IP/C/W/369/Rev.1, above n 83, paragraph 9.

exclude plants and animals from patentability in the light of their specific national interests and needs. It was suggested that the process should be one of information sharing on how Members have implemented the Article nationally.⁸⁹ The other suggestion was to retain the exceptions but provide clarifications and definitions of key terms, particularly the differences between plants, animals and micro-organisms.⁹⁰ These issues were further debated in the review process as can be seen from the discussions in the following sections.

By 2003 the review remained deadlocked. The African Group, expressing concern at the lack of progress, proposed that areas of possible agreement which would reflect an overall balance for all Members could include the following points, i.e. Members' rights and freedom to determine and adopt appropriate regimes to protect plant varieties by an effective *sui generis* system, including non commercial use of plant varieties and the system of seed saving and exchange as well as selling among farmers; the TRIPS Agreement and the CBD as well as the FAO Treaty should be implemented in a mutually supportive and consistent manner; the TRIPS Agreement, being a minimum standards agreement, does not prevent Members from protecting traditional knowledge, and the importance of documentation of genetic resources and traditional knowledge to help better patent examination.⁹¹

However, developed country Members stood by their position that Article 27.3(b) provided sufficient flexibility for individual Members to make exclusions to patentable subject matter, and refused to agree to further flexibilities. The U.S. also emphasised that by the same token Members were also free to provide patent protection for such subject matter, stating that it did so. It credited such measures with the subsequent development of its strong biotechnology industry.⁹²

⁸⁹ Countries which took this view included Australia, Brazil, Canada, China, Korea, the EU, Japan, Mexico, Singapore and Switzerland – *ibid* footnotes 10-13.

⁹⁰ Brazil, India, Peru, Thailand and Zimbabwe advocated this – *ibid* footnote 14.

⁹¹ IP/C/W/404 - TRIPS Council, *Taking Forward the Review of Article 27.3(B) of the TRIPS Agreement Joint Communication from the African Group*, 26 June 2003.

⁹² IP/C/M/37/Add.1 - TRIPS Council, *Minutes of Meeting on 17-19 September 2002, Addendum*, 8 November 2002, paragraph 209.

11.5.5.2 Scope of exceptions to patentability in Article 27.3(b)

The discussion on this subject has focused for the most part on the terminology used in Article 27.3(b), since what can or cannot be patented will depend on the nuances in these definitions. The clarifications were called for by developing countries which took the position that uncertainty in definitions would cause problems of legal uncertainty in the patenting process. However, as the position taken by countries promoting intellectual property protection for plants indicates, definitional ambiguity necessarily works to the advantage of those in favour of expanding patentable subject matter, and a concrete decision on this issue has not been achieved to date.

The term most in dispute was “micro-organisms.”⁹³ Developing countries argued that there was no scientific or other rationale for distinguishing between plants and animals on the one hand, and micro-organisms on the other. Both are living things which can only be discovered and not invented, and should be excluded from patentable subject matter. Clarification was also asked for regarding “plants and animals,”⁹⁴ and “non-biological and micro-biological processes.”⁹⁵ In regard to “plants and animals” for example, it was suggested that it should be made clear that parts of plants and animals are excludable from patentable subject matter. Further, the word “plants” is ambiguous and cells, cell lines, genes and genomes should be excluded.

With regard to “non-biological and micro-biological processes” it was pointed out that although TRIPS makes these processes patentable, it does not define the terms. In the absence of definitions there are artificial distinctions between “essentially biological processes” on the one hand, and “micro-biological and non-biological processes” on the other, which should be removed. It has been argued that micro-biological processes are biological processes and should be treated as such in the TRIPS Agreement.

Responses to the developing country positions included that the issues are complex, and consensus on them would be impossible, that the World Intellectual Property Organization

⁹³ IP/C/W/369/Rev.1, above n 83, paragraph 21. See for example the position of Brazil as stated in IP/C/M/29, above n 87, paragraph 146 and IP/C/W/228 - TRIPS Council, *Review of Article 27.3(b) Communication from Brazil*, 24 November 2000.

⁹⁴ IP/C/W/369/Rev.1, above n 83, paragraph 20.

⁹⁵ Ibid paragraph 26.

(WIPO) may be the more appropriate forum in which to raise them given the technical expertise available there, and the absence of clear definitions at the international level gives Members the flexibility to implement them at the national level.⁹⁶

11.5.5.3 Ethical exceptions to patentability and Article 27.2

In regard to ethical exceptions to patentability and Article 27.2, further clarification was sought by developing countries. Some of these countries have suggested that some specific concerns should be taken into account, namely, those relating to public health, restrictions on research materials, limitations on competition as in the case of GURTs, human rights, agricultural security, biopiracy, traditional knowledge and farmers' rights, and the concern that the current provisions of Article 27.3(b) did not prevent the abuse of patent systems.⁹⁷

A case was also made for the unconditional prohibition on the patenting of life forms on the grounds that it was unethical and harmful.⁹⁸ It was argued that the conditions imposed by Article 27.2 amount to re-defining morality for Members, and is meaningless for Members that consider patents on life forms “to be immoral, contrary to the fabric of their society and culture.” These countries therefore suggested that the exception in Article 27.3 (b) should not restrict the exception in Article 27.2.⁹⁹

The counter arguments included that Article 27.2 adequately takes ethical concerns into account insofar as patent law is concerned. Other ethical issues will have to be addressed by other laws such as those on environmental protection, public health and animal welfare. It was also said that Article 27.3 (b) is the result of a carefully negotiated balance and that

biological materials are research ingredients and that patents for these materials should be granted as long as the patentability requirements are met and the commercial exploitation of such living organisms does not go against public order.¹⁰⁰

⁹⁶ IP/C/M/37/Add.1, above n 92, paragraph 197.

⁹⁷ IP/C/W/369/Rev.1, above n 83, paragraph 27.

⁹⁸ IP/C/W/404, above n 91.

⁹⁹ Ibid.

¹⁰⁰ IP/C/W/369/Rev.1, above n 83, paragraph 33.

11.5.5.4 Conditions of patentability in Article 27.1 and plant and animal inventions

The way in which the conditions of patentability should be applied in the case of micro-organisms, micro-biological processes, and other plant and animal inventions, was also raised in the TRIPS Council. This issue was also surfaced in the context of definitional uncertainties. India argued that the lack of clear definitions of the criteria have resulted in uncertainties in regard to the term “invention” and the scope of patentable subject matter, and leaving the issue to the discretion of member States is unsuitable.¹⁰¹ A related issue was the unduly low thresholds adopted by patent offices in meeting patent criteria, which Brazil claimed were undermining the patent system.¹⁰²

One of the most disputed issues raised in regard to patentability criteria was the distinction to be made between discoveries and inventions and the requirement of inventive step.¹⁰³ The African Group argued that by providing for the patenting of micro-organisms and micro-biological processes, TRIPS “violates the basic tenet of patent law,” i.e. that discoveries are not patentable.¹⁰⁴ A clearer understanding of which stages of research constitute discoveries and which constitute inventions was also necessary. It was alleged that some Members classify the discovery of naturally occurring matter or the mere isolation of such matter as inventions, and thereby permit patents on life forms, and such patents do not satisfy the tests of non-obviousness and inventive step.¹⁰⁵

Developed countries countered these positions by stating that mere discoveries not involving human intervention (including micro-organisms found in nature), are not patentable subject matter. However, naturally occurring matter such as chemical substances or micro-organisms

¹⁰¹ IP/C/M/28 - TRIPS Council, *Minutes of Meeting on 21 and 22 September 2000*, 23 November 2000, paragraph 128.

¹⁰² IP/C/W/228, above n 93, Paragraph 9.

¹⁰³ IP/C/W/369/Rev.1, above n 83, paragraph 36. For a discussion of this issue see Graham Dutfield, ‘Sharing the Benefits of Biodiversity. Is there a Role for the Patent System?’ (2002) 5(6) *Journal of World Intellectual Property* 899, 905.

¹⁰⁴ IP/C/W/163 - TRIPS Council, *Review of the Provisions of Article 27.3(b) Communication from Kenya on behalf of the African Group*, 8 November 1999; IP/C/W/206 - TRIPS Council, *Review of the Provisions of Article 27.3(b) Communication from Mauritius on behalf of the African Group*, 20 September 2000.

¹⁰⁵ IP/C/M/28, above n 101; IP/C/M/29, above n 87; IP/C/W/228, above n 93.

which have been subject to sufficient human intervention such as isolation or purification, would constitute an invention.¹⁰⁶ “Plants, animals or micro-organisms and other genetic resources would have to be altered by the hand of man or produced by means of a technical process to satisfy the criteria of patentability.”¹⁰⁷

Developing countries also raised the issue of the criterion of novelty in the context of protecting traditional knowledge.¹⁰⁸ They have argued that some Members define novelty so as to exclude information publicly available by way of oral traditions, but outside their national jurisdiction, which has led to piracy of genetic resources and traditional knowledge.¹⁰⁹ This issue will be further discussed in Chapter 15.

11.5.6 The relationship between the TRIPS Agreement and the CBD

The discussion on the relationship between the TRIPS Agreement and the CBD, including the patentability of genetic materials, was essentially a duplication of the debate which took place in the context of the Article 27.3(b) review. The developing countries continued to reiterate their objections to patenting of genetic material. They argued that this in itself is inconsistent with the CBD because it limits access to this material and can conflict with the sovereign rights of countries over their genetic resources.¹¹⁰ They also observed that inconsistencies between the two instruments can arise when countries do not follow closely enough the criteria for patentability as laid down in TRIPS, and grant over broad patents.¹¹¹ In this regard they reiterated their concerns that granting patents for micro-organisms amounted to patenting genetic materials in their natural state, and granting of patents over genetic material that has been merely

¹⁰⁶ See position of Japan in IP/C/M/29, above n 87, Paragraph 151.

¹⁰⁷ IP/C/W/369/Rev.1, above n 83, paragraph 37.

¹⁰⁸ Ibid paragraph 38; IP/C/M/40 - TRIPS Council, *Minutes of Meeting on 4-5 June 2003*, 22 August 2003.

¹⁰⁹ IP/C/M/28, above n 101, paragraph 126.

¹¹⁰ IP/C/W/368/Rev.1 - TRIPS Council, *The Relationship between the TRIPS Agreement and the Convention on Biological Diversity, Summary of Issues Raised and Points Made*, 8 February 2006, paragraph 19.

¹¹¹ IP/C/W/228, above n 93; IP/C/W/447 - TRIPS Council, *Article 27.3(b), Relationship between the TRIPS Agreement and the CBD And Protection of Traditional Knowledge and Folklore, Communication from Peru*, 8 June 2005.

isolated from nature and not modified in any other way gives rise to questions of inconsistency with the CBD. The same questions would arise in relation to the granting of erroneous patents based, directly or indirectly, on genetic resources or traditional knowledge that do not qualify as being novel or inventive.¹¹²

Developed countries continued to refute these arguments, stating that patents on inventions based on genetic resources do not hinder fulfilment of the sovereignty and prior informed consent and access provisions of the CBD, and repeated their position regarding patenting of micro-organisms. They further took the view that erroneously granted patents were the rare exception rather than the rule, and implementation of post-grant opposition or re-examination proceedings could be used to rectify such errors. They cited the cases of neem and turmeric, where U.S. and EU patent offices had withdrawn patents on these plants on proof of non-compliance with the relevant criteria. Thus they argued that erroneously granted patents are the result of lack of information rather than inherent flaws in the patent system, and procedures such as searchable databases on the knowledge, innovations and practices of indigenous and local communities could be established to improve examination procedures.¹¹³

Developing countries objected to post-grant counter action, pointing out that this would be a burdensome and expensive process, since holders of genetic resources and traditional knowledge would have to initiate them in different jurisdictions. Although misappropriation is an acknowledged problem, only a few patents have been challenged on this basis.¹¹⁴

Developing countries also expressed doubts as to the usefulness of searchable databases. They pointed out that in view of the vast store of traditional knowledge such a compilation could not be

¹¹² IP/C/W/368/Rev.1, above n 110, page 10. See below Chapter 15.

¹¹³ Ibid paragraph 23. See also Shayana Kadidal, 'Subject-Matter Imperialism? Biodiversity, Foreign Prior Art and the Neem Patent Controversy' (1997) 37 *IDEA* 371; John Tustin, 'Traditional Knowledge and Intellectual Property in Brazilian Biodiversity Law' (2006) *Texas Intellectual Property Law Journal* 131, 135.

¹¹⁴ They pointed out that the neem and turmeric patents were successfully challenged owing to the intervention of the government of India and a consortium of non-governmental organisations - IP/C/W/368/Rev.1, above n 110, paragraph 24. See also ETC Group, *Whatever Happened to the Enola Bean Patent Challenge?* (2005) Genotype, 21 December 2005 <www.etcgroup.org/upload/publication/pdf_file/4> at 25th February 2008 which describes how the workings of the U.S. patent system has permitted a patent owner to use bureaucratic delays to continue the operation of a patent which had in fact been rejected.

comprehensive, particularly when such knowledge is based on oral traditions or documented only in local languages. Based on experiences to date, information sharing on such issues has not been effective in preventing misappropriation. Further, use of such databases would be voluntary, and patent examiners cannot be compelled to use them. Another constraint would be the high cost involved. An important issue to also consider is the loss of confidentiality of traditional knowledge which is not in the public domain.¹¹⁵

11.6 TRIPS-PLUS PROVISIONS IN BILATERAL TREATIES AFFECTING PLANT GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE

Bilateral treaties usually include provisions in regard to plant variety protection which go beyond the level provided for in TRIPS. TRIPS-plus measures in bilateral treaties have eroded the freedom of developing countries to exercise their prerogative under Articles 27.2 and 27.3 to provide exceptions to plant patentability. These treaties have been signed by these countries with the U.S.,¹¹⁶ the EU,¹¹⁷ the EFTA¹¹⁸ and Japan.¹¹⁹

¹¹⁵ In this regard it is interesting to note that the United States had earlier suggested that such data bases would also create sources of information that could be used by potential licensees in order to obtain leads to information on the uses of genetic resources. It was pointed out that this would help to meet the objectives of Article 8(j), i.e. to promote the wider application of the knowledge, innovations and practices of indigenous and local communities and encourage the equitable sharing of the benefits arising from them. It would appear that databases could also serve to promote misappropriation and may potentially be a two edged sword. IP/C/W/368/Rev.1, above n 110, paragraph 23. See also the discussion in Chapter 15 below.

¹¹⁶ U.S. treaties include those with Bahrain (2004), Cambodia (1996), Singapore (2003) and Peru (2005). The North American Free Trade Association (NAFTA) agreement requires Mexico to take the same measures - GRAIN, *Bilateral agreements imposing TRIPS-plus intellectual property rights on biodiversity in developing countries* (2008) <http://www.grain.org/rights_files/TRIPS-plus-January-2008.pdf> at 28th March 2008.

¹¹⁷ EU treaties include those with Bangladesh (2001), Korea (2001), Syria (2004), Egypt (2001) and Algeria (2002) – GRAIN, *ibid.* See also South Centre and Centre for International Environmental Law, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral, and Bilateral Fora* (2004) <http://www.ciel.org/Publications/IP_Update_3Q04.pdf> at 25th February 2008.

¹¹⁸ EFTA treaties include those with Jordan (2001), Chile (2003), Lebanon (2004) Morocco (200) and Tunisia (2004) – GRAIN, above n 116.

¹¹⁹ Treaties between Japan and Indonesia (2007) and Chile (2007) - GRAIN, above n 116. See also GRAIN, *Japan digs its claws into biodiversity through FTAs* (2007) <http://www.grain.org/Articles_files/atg-11-en.pdf> at 1st April 2008.

A common provision in these treaties requires the latter countries to join UPOV 1978 or 1991 by a particular date, or within a given period.¹²⁰ As noted above, TRIPS does not require Member states to join UPOV, which is merely one option for providing for plant variety protection.

By acceding to UPOV, developing countries eliminate their options to implement *sui generis* systems of plant variety protection which would be suited to their particular needs and circumstances. It has been noted that the level of protection currently being targeted is UPOV for plants per se, and patents for everything else (i.e. plant genes, animals, human genetic sequences and others). Transnational corporations require a homogenous and predictable environment of intellectual property protection, rather than multiple and diverse national systems, and it has been observed that ultimately they would prefer patenting to UPOV. Since provisions on patenting, particularly those restricting the flexibilities in this regard have also been included in these treaties, in all likelihood UPOV too would ultimately become irrelevant.¹²¹ The end result of this process would be the upward harmonisation of IPRs on plants at a far higher level than that which could have been achieved in the WTO.¹²²

More specific provisions in these treaties seek to ensure that developing country partners provide stringent protection for plant varieties. Such provisions may require, for example, “adequate and effective patent protection for inventions in all fields of technology on a level similar to that prevailing in the European Patent Convention,” which allows the patenting of transgenic plants and animals.¹²³ They may also state that “[t]he parties recognise the need to ensure adequate and effective protection of patents on plant varieties and on biotechnological inventions.”¹²⁴ Such wording thus eliminates the exclusion from patentability provided in TRIPS. Some agreements

¹²⁰ EFTA-Jordan FTA (2001), EU-Lebanon FTA (2002), US-Bahrain FTA (2004), Japan-Indonesia FTA (2007), US-Singapore FTA (2003) – GRAIN, above n 116. See also GRAIN, above n 119.

¹²¹ Berne Declaration, Switzerland, “*TRIPS – Plus*” through EFTA’s back door – *How Free Trade Agreements concluded with EFTA-States impose much stronger rules on developing countries for IPRs on life than the WTO* <http://www.evb.ch/cm_data/Trips-plus_through_EFTAs_back_door_rev2.pdf> at 1st April 2008.

¹²² Yamin, above n 71, 44.

¹²³ EFTA treaties with Jordan (2001) and Morocco 2000 - GRAIN, above n 116.

¹²⁴ EU Cotonou Agreement of 2000. – GRAIN, *ibid*.

specifically ensure that developing countries do not exclude plants and animals from intellectual property protection as permitted under TRIPS.¹²⁵

A common strategy adopted by both the U.S. and the EU is to require the developing country concerned to implement the “highest international standards” of intellectual property protection.¹²⁶ The EU-South Africa FTA for example states that

South Africa shall ensure adequate and effective protection for patents on biotechnological inventions. South Africa must also implement the “highest international standards” of IPR protection and undertake to go beyond TRIPS standards of IPR protection.¹²⁷

The term “highest international standards” is ambiguous and has not been defined. By definition it assumes that there is no single applicable standard of intellectual property protection. It is also not clear that it is the TRIPS standards which are being referred to.¹²⁸ While some writers have argued that it would exclude national standards,¹²⁹ others have expressed concern that for example, U.S. standards of patent protection could be cited as the benchmark for what constitutes the highest international standards.¹³⁰ Since these are among the most stringent, it would result in raising global standards of intellectual property protection.

Indigenous and local communities’ traditional knowledge has also become a feature of bilateral agreements, particularly those currently negotiated by the U.S.¹³¹ Arguably, the inclusion of traditional knowledge in such treaties is largely due to the debate whether to treat such knowledge as intellectual property which is subject to privatisation, or as the collective heritage of

¹²⁵ US-Mongolia Agreement on Trade Relations (1991), US-Sri Lanka IPR Agreement (1991) and Free Trade Area of the Americas (negotiations suspended) – GRAIN, *ibid*.

¹²⁶ EFTA/Palestinian Authority FTA (1998), EU-Tunisia FTA (1998), EU/Mexico FTA (2000), EU-Sri Lanka Cooperation Agreement (1995) - GRAIN, *ibid*.

¹²⁷ EU/South Africa FTA of 1999 – GRAIN, *ibid*.

¹²⁸ Carlos M Correa, *Bilateral Investment Agreements: Agents of new global standards for the protection of intellectual property rights?* (2004) 20 <http://www.grain.org/briefings_files/correa-bits-august-2004.pdf> at 1st April 2008.

¹²⁹ *Ibid* 20.

¹³⁰ GRAIN, “TRIPS-plus” through the back door - How bilateral treaties impose much stronger rules for IPRs on life than the WTO (2001) 9 <http://grain.org/briefings_files/trips-plus-en.pdf> 28th March 2008.

¹³¹ GRAIN, *FTAs: Trading Away Traditional Knowledge* (2006) <http://grain.org/briefings_files/fta-tk-03-2006-en.pdf> at 1st April 2008.

communities and peoples which the State should not regulate or meddle with.¹³² Developing countries attempt to insert provisions relating to traditional knowledge into bilateral treaties so as to prevent its misappropriation and remedy the current asymmetries in its protection. However, it has been argued that these efforts are generally unsuccessful and the wisdom of this strategy has been questioned.¹³³ In light of the failure to reach a global agreement on protection of both genetic resources and related traditional knowledge at a multilateral level, there is a danger that including traditional knowledge into bilateral treaties may in fact rebound on developing countries. For example, at the negotiations on the Free Trade Area of the Americas which are currently deadlocked, Andean countries have proposed disclosure of origin, prior informed consent and benefit sharing in relation to all biodiversity-related patents granted by the signatories. These proposals have been rejected by the U.S.¹³⁴ Other agreements for example, limit the implementation of disclosure requirements, thus preventing countries from passing and implementing their own laws in this regard.¹³⁵

11.7 CONCLUSION

The debate on the review of Article 27.3(b) and the relationship between TRIPS and the CBD in relation to patentability of genetic material above, illustrates the inherently incompatible positions of the developing and developed countries on IPRs over genetic resources and related traditional knowledge. Developing countries view Article 27.3(b) as facilitating the misappropriation of these resources and enabling exclusive ownership over them to be retained by private interests. Their efforts to engineer a review have been two pronged. One strategy is to restrict the application of patents by pinning down the definitions of key terminology in order to prevent over liberal interpretations of these terms in granting them. The second strategy is the outright demand for a total prohibition on patents on all life forms and on inventions derived from traditional knowledge.

To date neither strategy has met with success in the context of the TRIPS review. The primary objective of the U.S. in terms of the review was to attempt to strengthen intellectual property

¹³² Ibid.

¹³³ Ibid.

¹³⁴ Ibid.

¹³⁵ See for example the US-Dominican Republic-Central America FTA (CAFTA) of 2004 – Ibid.

standards and eliminate the current flexibilities and exceptions contained in Article 27.3(b). The proposals of developing countries to lower these standards and/or prohibit the patenting of life forms were met with resistance to any amendments to TRIPS, which would restrict the patentability of inventions based upon genetic resources and/or traditional knowledge. Developed countries are taking the position that any country dissatisfied with the status quo is at liberty to address the situation under its national laws, but outside the patent system. They also argue that in the event a patent is granted in violation of the relevant criteria, post-grant measures could be instituted to address the situation.

Developed countries have further stated that the exceptions to patentability, and the flexibility accorded to Members to make exceptions to patentable subject matter on specified grounds, constitute adequate safeguards for those countries to prevent misappropriation of their genetic resources and traditional knowledge. Further, contract measures if effectively implemented and enforced would be sufficient to ensure that conditions of prior informed consent and benefit sharing are met. The efficacy of these latter measures will be examined in the next chapter.

The strategy of developing countries in the TRIPS Council is also debatable. The simultaneous tabling of two proposals, which on the one hand demand a total prohibition on the patenting of life forms, and on the other ask for restrictions on the application of such patents, appears inconsistent and contradictory. While developing countries have, to a large extent presented a united front in the debates and a stronger opposition than might have been expected, this dual approach must necessarily weaken their position and cloud the issue.

It is argued that these countries should have ideally maintained the position that patents should not apply to life forms since genetic resources critical for human survival should remain in the public domain. There are several grounds on which this position could have been maintained. Some countries did point out the ethical issues involved in patenting life forms. The exceptions in Article 27.2 which permit Member States to exclude inventions from patentability on the grounds of *ordre public* or morality, including on the grounds of protecting human, animal and plant life, and to avoid prejudice to the environment, could justifiably be applied to plant varieties. Issues of food security and loss of plant genetic diversity would be relevant in this regard. Developing countries could also have benefited from the definitional ambiguities discussed above, including the question of what constitutes inventions, arguing that life forms cannot amount to an invention. While these issues were raised, they were not adequately

sustained. On the other hand, by simultaneously negotiating defensive measures to patent protection of plant varieties they appear to have compromised on their position.

In view of the fact that developing countries themselves have somewhat divergent positions on whether there should be a total prohibition on patenting life forms, they could have alternatively proposed that countries should at least have the individual flexibility to determine the scope of patentability in accordance with their own needs and objectives. Articles 27.2 and 26.3 in fact provide for Member States to take their own decisions in this regard and some countries have done so. For example, as cited above, Brazil, Argentina and the Andean Pact countries exclude natural substances from patentability on the grounds that they do not constitute inventions. However, many countries are signing away this flexibility in bilateral agreements entered into with developed countries.

While developed countries have met with resistance in both WIPO and the TRIPS Council they are now using bilateral treaties to undermine the multilateral negotiations and raise standards of plant variety protection on an ad hoc basis. This is a disturbing trend and it remains to be seen whether this strategy will succeed in trumping the multilateral negotiations on this issue. In the meantime developing countries are continuing their attempts to achieve some degree of equity in the use of PGRFA and related traditional knowledge on the basis of positive measures to ensure access and benefit sharing of genetic resources, as well as defensive strategies to prevent their unjustifiable appropriation. These measures are discussed in the next chapters.

CHAPTER 12

POSITIVE MECHANISMS TO PROTECT RIGHTS OVER BIOLOGICAL RESOURCES AND TRADITIONAL KNOWLEDGE – ACCESS AND BENEFIT SHARING MEASURES

12.1 INTRODUCTION

Developing countries have taken a two pronged approach in their efforts to protect rights over their natural resources and traditional knowledge, and to prevent their misappropriation. These two approaches have been classified as positive and defensive measures. Positive measures seek to put in place a system which ensures that the countries providing such resources are assured firstly, of a say in how and to what extent they are accessed, and secondly, of a fair share in the benefits derived from them. This approach is implemented by means of mechanisms which regulate access to genetic resources by those seeking to exploit them for commercial purposes. These measures will be discussed in this chapter. In addition, as discussed in the previous chapter, countries are also required by the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement) to put in place systems of plant variety protection, either by way of patents or by *sui generis* legislation. These systems will be discussed in the next chapter.

Defensive mechanisms of plant variety protection refer to pre-emptive measures intended to prevent the misappropriation and propertisation of plant genetic resources for food and agriculture (PGFRA) and traditional knowledge, rather than to enable provider countries to gain any benefits from them. These measures will be considered separately.

12.2 ACCESS AND BENEFIT SHARING IN INTERNATIONAL LAW

Both the Convention on Biological Diversity (CBD) and the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (FAO Treaty) have been informed by the on going debate on germplasm flows from the southern to the northern hemisphere, and the inequities of access to, and sharing of the benefits arising out of these resources. A common factor of the two conventions is that they both represent a rejection of the doctrine of the common heritage of humankind as applied to genetic resources and as expressed in the International Undertaking on Plant Genetic Resources (IUPGR) discussed in Chapter 6. Both treaties seek to establish frameworks for more equitable access to and sharing of these benefits, but they take two different

approaches to it. The CBD contains provisions relating to access to genetic resources as well as technology, the latter which essentially must move from the north to the south. It envisages a bilateral approach to access and benefit sharing (ABS) agreements which requires providers and users of the resources to enter into mutually agreed contracts in this regard. The FAO Treaty alternatively envisages a multilateral system of ABS in regard to the PGRFA specified in it. The approaches of the two conventions will be discussed in turn.

12.3 ACCESS AND BENEFIT SHARING UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY

The CBD provisions on ABS are framed in very broad terms, contained in Article 15. This Article includes several aspects which need to be addressed in devising effective and equitable measures for ABS of genetic resources, firstly specifying both the rights and duties of States possessing them. Article 15(1) reads:

Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

This right is however, countered by an obligation to create conditions to facilitate access to such resources for environmentally sound uses by other Parties, and to refrain from imposing restrictions that run counter to the objectives of the CBD.¹

The framework of possible genetic resources access agreements has been addressed in broad terms within Article 15. It states that access where granted, shall be on mutually agreed terms and subject to the provisions of the Article. It further states that genetic resources shall be subject to the prior informed consent of the Contracting Parties providing such resources, unless otherwise determined by that Party.

Article 15(6) deals with the issue of scientific research based upon genetic resources. Parties carrying out such research are required to ensure the participation of the providing countries and,

¹ *Convention on Biological Diversity* (1992) 31 ILM 818, (hereinafter CBD), Article 15(2) - "Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention."

where possible, must do so within them. The results of such research and development and the benefits arising out of the commercial utilisation of such resources shall be shared with them.

Article 15, while attempting to set out the framework for ABS, is couched in ambiguous and repetitive language. As with many of the provisions of the CBD, its wording is merely exhortatory and does not set out specific and enforceable rights and obligations. It remains to be seen how it has been interpreted and developed by the administrative mechanism of the Convention, specifically the Conference of the Parties (CoP) and subsidiary bodies of the CBD and by national legislation.

12.4 THE WORK OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY ON ACCESS AND BENEFIT SHARING

The CoP has addressed the issue of access to genetic resources and benefit sharing as a priority, and its consideration of Article 15 is closely linked to its consideration of Articles 8(j), 11, 16, 17, 18 and 19.² It has also linked this work to the thematic work programmes on agricultural biodiversity and the FAO Treaty. The initial focus of the CoP in relation to Article 15 was on information gathering and dissemination.³ The CoP also called for the harmonisation of the ABS work of the CBD with that of the FAO Global System.⁴

CoP 3 had produced a concept paper which sought to clarify many of the initial issues relating to ABS.⁵ At the outset it noted that while the ‘fair and equitable sharing of the benefits arising out of the utilization of genetic resources’ is one of the three objectives of the CBD, the Convention did not define any of the decisive terms within the phrase, including ‘fair’, ‘equitable’, ‘share’ or

² CBD - Article 8(j) relates to traditional knowledge; Article 11 - Incentive Measures; Article 16 - Access to and Transfer of Technology; Article 17 - Exchange of Information; Article 18 - Technical and Scientific Cooperation and Article 19 - Handling of Biotechnology and Distribution of its Benefits. See also Handbook on the Convention on Biological Diversity (3rd ed. 2005), 584 (hereinafter CBD Handbook), 187; UNEP/CBD/COP/2/13 – CBD CoP, Second Meeting, 6-17 November 1995, *Access to Genetic Resources and Benefit-Sharing: Legislation, Administrative and Policy Information*, 6 October 1995; UNEP/CBD/COP/3/20 – CBD CoP, Third Meeting, 4-15 November 1996, *Access to Genetic Resources*, 5 October 1996.

³ CBD Handbook, above n 2, 188. See Decisions I/9, II/11 and III/15

⁴ Decisions I/9 and II/15.

⁵ UNEP/CBD/COP/3/Inf.53 - *Fair and Equitable Sharing of Benefits Arising from the Use of Genetic Resources*, 4-15 November 1996.

‘benefit’. This left a great deal of leeway for Parties and other stakeholders to interpret the terms of their obligations on what benefits should be shared, how they should be shared or with whom, and the extent to which this should be done.

In regard to stakeholders, the concept paper points out that the obligations set out in the CBD are between Contracting Parties, i.e. between national governments, although it is stakeholders such as universities, corporations and local or indigenous communities who are mainly involved in and affected by the activities. It also stated that in implementing the ABS provisions,

[p]arties should be guided less by any ‘obligations’ introduced by the Convention than by the rationale for benefit sharing, equity, and the conservation and sustainable use of biodiversity.⁶

The CoP has emphasised the desirability of consistency and commonality in ABS systems. To this end it advocated a multilateral system to facilitate ABS and requested Contracting Parties to bear this in mind when formulating national systems.⁷ CoP 4 established a regionally balanced Panel of Experts on Access and Benefit Sharing representing the private and public sectors as well as indigenous and local communities, whose mandate was to collate information on, and develop a common understanding of, basic concepts, and to explore all the options for ABS on mutually agreed terms.⁸ A specific list of elements which could be considered was also set out.⁹

Subsequently CoP 5 established the Ad Hoc Open-ended Working Group on Access and Benefit-Sharing (WG-ABS).¹⁰ This Group is composed of representatives of Government and regional economic integration organisations. Its mandate is to develop and submit to the CoP, guidelines and other approaches to ABS, and to assist countries and other stakeholders to address the

⁶ Ibid 3.

⁷ Decision V/26, Paragraph 7. This will be discussed further below.

⁸ Decision IV/8, paragraph 3.

⁹ The criteria listed were – (1) Prior informed consent in provider countries for access to genetic resources and research and development; (2) Clear, established mechanisms to provide such consent, including, inter alia, legislative, administrative and policy measures as appropriate; (3) Reference to the country of origin, where available, in relevant publications and patent applications; (4) Mutually agreed terms including on benefit-sharing and intellectual property rights and technology transfer, where applicable; (5) Efficient permitting and regulatory procedure that avoid burdensome procedures involving high transaction costs; and (6) incentive measures to encourage the conclusion of contractual partnerships.

¹⁰ Decision V/26, Paragraph 11.

following elements of the issue. These were similar to those set out for the Panel of Experts but were more comprehensive, though not exclusive. The elements were:

- terms for prior informed consent and mutually agreed terms;
- roles, responsibilities and participation of stakeholders;
- relevant aspects relating to *in situ* and *ex situ* conservation and sustainable use;
- mechanisms for benefit-sharing, for example through technology transfer and joint research and development; and
- means to ensure the respect, preservation and maintenance of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity, taking into account, inter alia, work by the World Intellectual Property Organization on intellectual property rights issues.¹¹

The most important aspect was the final element referring to indigenous and local communities. In regard to this CoP 5 also specified that the WG-ABS would be open to the participation of these communities, non-governmental organizations, industry, and scientific and academic institutions, as well as intergovernmental organizations. It specified further that it should maintain communications and exchange of information with the Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity (WG8J). The WG-ABS subsequently submitted the (Draft) Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization which were adopted by CoP 6.¹²

12.4.1 The Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization

The Bonn Guidelines were adopted in 2002 at the Sixth meeting of the CoP. The negotiations on the Guidelines were noteworthy for the multiplicity of actors including governments, inter-governmental organizations, indigenous and local communities, industry, the scientific and

¹¹ Ibid.

¹² For a detailed account of these developments see Stephen Tully, 'The Bonn Guidelines on Access to Genetic Resources and Benefit Sharing' (2003) 12(1) *Review of European Community & International Environmental Law* 84.

research community, farmers, NGOs and the media.¹³ Although the Guidelines are not legally binding and do not supersede national legislation, the fact that they were unanimously adopted by around 180 countries gives them a clear and indisputable authority and shows international will to tackle a difficult issue.

Notwithstanding the wide participation in the process, the Guidelines have not met with unanimous approval and are not intended to be the final step in the process of negotiating ABS.¹⁴ For example, some environmental NGOs argued that they were no substitute for legally binding national instruments, and countries such as the Philippines and Ethiopia also advocated a fully-fledged treaty on this question.¹⁵ Indigenous peoples took the view that their rights over genetic resources had not been adequately addressed in the document.¹⁶

The Guidelines are fairly detailed and cover such issues as roles and responsibilities of both users and providers, participation of stakeholders, steps in the ABS process including prior informed consent, mutually agreed terms, and benefit sharing. Other elements that have been addressed include accountability in implementing ABS arrangements, national monitoring and reporting, and settlement of disputes. At the final stages of negotiation additional provisions were incorporated including further preambular disclaimers (protecting sovereign rights and not assigning genetic resources rights beyond those within the CBD or arising out of mutually agreed terms), explicitly including genetic derivatives and their products within the process, and further enforcement measures. Indigenous groups were instrumental in ensuring that provisions concerning their effective participation were also incorporated.¹⁷

¹³ Ibid 85.

¹⁴ The Guidelines themselves state that they are intended to be reviewed and accordingly revised and improved as experience is gained in ABS – Secretariat of the Convention on Biological Diversity, *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization*, adopted by the Conference of the Parties to the Convention at its sixth meeting, held in The Hague in April 2002, Article 7 (f) (hereinafter Bonn Guidelines).

¹⁵ W Bradnee Chambers, 'Emerging International Rules on the Commercialization of Genetic Resources: The FAO International Plant Genetic Treaty and CBD Bonn Guidelines' (2003) 6(2) *Journal of World Intellectual Property* 311.

¹⁶ Tully, above n 12, 85-86.

¹⁷ Ibid 86.

12.5 NATIONAL AND REGIONAL MEASURES ON ACCESS AND BENEFIT SHARING

While the CBD provides the broad outlines of ABS processes, its acceptance that sovereignty over natural resources lies with States Parties necessarily means that such processes will be determined and implemented by the latter. Therefore reference to national policy and legislation on ABS will be essential in an analysis of this subject.

One of the earliest steps taken by the CoP was to compile information on legislative, administrative, or policy measures if any, on Article 15, taken by Parties to the CBD.¹⁸ At this initial stage Governments were still considering how to proceed under these provisions and many Governments were in the process of reviewing existing legislation to see if they could be amended or supplemented to fulfil its objectives.

The CoP noted that a variety of strategies have emerged in regard to ABS. These include introducing specific legislation on ABS, provisions within new legislation which have a broader range of objectives including implementing the CBD, modification of existing legislation on conservation, wildlife and forestry to include ABS provisions, and legislation intended primarily for other purposes but touching on ABS issues.¹⁹ Further, access legislation has been enacted at the national and sub-national levels, and agreements and model laws at regional level.²⁰

The CoP identified a number of key strategies by which States have developed ABS processes, namely, participation of a wide range of stakeholders, the development of a strategic plan, and co-

¹⁸ See UNEP/CBD/COP/2/13, above n 2. The discussion will focus on the updated information provided in UNEP/CBD/COP/3/20, above n 2.

¹⁹ Lyle Glowka, 'Emerging legislative approaches to implement Article 15 of the Convention on Biological Diversity' (1997) 6(3) *Review of European Community and International Environmental Law* 249 for an analysis of the various categories of legislation. See also UNEP/CBD/ISOC/3 – *Review of Options for Access and Benefit-Sharing Mechanisms*, 11th May 1999.

²⁰ Countries which took early steps to establish access systems include the Philippines, Fiji, Brazil and Australia and the Andean Community countries of Bolivia, Colombia, Ecuador, Peru and Venezuela. At the sub-national level the Australian states of Queensland and Western Australia developed legislation. Examples of measures taken at the regional level are the Andean Community Decision 391 on Common Regime on Access to Genetic Resources of 1996, the draft ASEAN Framework Agreement on Access to Biological and Genetic Resources of 2000 and the OAU Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources of 2000. See Kathryn Garforth, Isabel López Noriega, Jorge Cabrera Medaglia, Kent Nnadozie and Gabriel R Nemogá *Overview of the National and Regional Implementation of Access to Genetic Resources and Benefit Sharing Measures* (3rd ed, 2005) available at <www.cisd.org/pdf/ABS_ImpStudy_sm.pdf> at 4th April 2008.

ordination with other governments on a regional basis. Parties have also interpreted and used the key terms in Article 15 in their legislation including “genetic resources,” “access,” “mutually agreed terms,” “prior informed consent,” and “fair and equitable benefit sharing.” Relevant examples of national legislation will be referred to in the course of this discussion.

12.6 THE ELEMENTS OF ACCESS AND BENEFIT SHARING SYSTEMS

The CoP has analysed the nature of ABS arrangements, pinpointing their salient features. It notes that an ABS agreement

consists of the relationships among participants in an ABS arrangement, as well as the formal legal agreement that records their understanding. In addition, the legal and institutional context for the arrangement is also important.²¹

A primary feature of such arrangements is that they involve long-term commitments or obligations since, on the one hand, access seekers will require additional samples as research progresses, and on the other, providers will also need to monitor the use of such resources to ensure that they receive a share of the benefits.

A second factor of ABS agreements is that there is very likely to be unequal bargaining power between those negotiating them. The CoP noted that guidelines and technical assistance may be required in order to redress this imbalance. It observed that:

agreements will effectively accomplish the Convention’s objectives only if all sides have access to adequate information and technical expertise, as reflected in the requirement for PIC [prior informed consent] contained in Article 15.²²

The CoP has also noted that ABS agreements need not necessarily be encompassed in a single document, but could be contained in several, at different stages of negotiation. In addition, a single ABS arrangement could include different legal agreements in relation to the same resource, as for instance, with different parties involved in the process. While these arrangements can simplify the process, separate negotiations may also lead to inconsistencies in the agreements.²³

²¹ UNEP/CBD/COP/2/13, above n 2, paragraph 21.

²² Ibid paragraph 22.

²³ Ibid paragraphs 21-24.

In the light of these factors the various elements of ABS agreements will first be analysed. Thereafter some examples of investigated ABS arrangements will be discussed to determine how the mechanism operates in reality. This thesis take the position that ABS agreements, where they exist, are not achieving their stated purposes and, in particular, sharing of the benefits which arise from the commercialization of plants is inadequate or negligible. The case studies also show that appropriation without the consent of those holding the resources, or the knowledge relating to them, continues unabated and there is a lack of accountability in this regard.

12.6.1 Access to genetic resources

The CBD does not contain a definition of the term “access,” and it has been left to national legislation to do so.²⁴ The CoP observes that

[n]ational measures might include definition of the term *access*, to clarify what kind of activity constitutes ‘access’; for instance, physical taking, collection, exchange, etc.; definitions of the kind of use to which materials ‘accessed’ will be put, and the scope of the national legislation.

It notes that to date access is generally defined by geographical scope and the scope of the genetic resources covered, rather than the nature of the physical activity that constitutes it.²⁵

The CoP has also noted that “[m]ost genetic-resource exchanges are not limited to a simple user/provider relationship.” Research and development on genetic resources for scientific and commercial purposes would involve numerous collaborators including academic, governmental, and industrial partners in several countries.²⁶ Contractual arrangements must be sufficiently flexible to allow for this aspect, and to address the rights and responsibilities of the parties throughout the duration of the contract.

In regulating access, Parties may also consider the reasons or purposes for which it is required, in particular making a distinction between research that is for scientific or academic purposes on the one hand, and research for commercial purposes on the other. It may not always be possible to

²⁴ The Bonn Guidelines do not have a definition either.

²⁵ UNEP/CBD/COP/3/20, above n 2, paragraph 45.

²⁶ UNEP/COP/CBD/5/8 – CBD CoP, Fifth Meeting, 15-26 May 2000, *Report of the Panel of Experts on Access and Benefit-Sharing*, 2 November 1999, paragraph 67.

make the distinction between the two types of research, as research that had been conducted on the basis that it is academic could be later used for commercial purposes. While over regulation of access may in fact operate to unduly restrict research to the detriment of the country concerned, abuse is also possible when academic research is used for commercial purposes. In spite of the difficulties in drawing boundaries in this regard, some countries have attempted to distinguish between the purposes of research.²⁷ Further, some laws also make nationality related distinctions, conferring different levels of access upon nationals and non-nationals.²⁸

The Panel of Experts on ABS had noted fairly early that while contractual arrangements were the primary mechanism for enabling access, legislation was essential to ensure that they serve national policy goals and ensure the fulfillment of the ABS provisions of the CBD. It has observed that “[s]uch legislation should be clear and simple, to allow flexibility, transparency and reduce transaction costs, and will need to be tailored to the circumstances of individual countries,” and a legal framework should clarify property rights, including ownership of genetic resources, knowledge and innovations, and conservation and biosafety.²⁹ Such clarity and simplicity will be facilitated by receiving countries which take legislative, administrative, and policy measures to ensure to providers that the resources will be used in accordance with the CBD. The Panel observed that the CoP may wish to consider developing international guidelines in this regard.

12.6.2 Prior informed consent (PIC)

Article 15(5) of the CBD simply states that “access to genetic resources shall be subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party.”³⁰ The CoP has interpreted PIC to mean:

²⁷ UNEP/CBD/COP/3/20, above n 2, paragraph 44.

²⁸ UNEP/CBD/COP/4/23 – CBD CoP, Fourth Meeting, 4-15 May 1998, *Review of National, Regional and Sectoral Measures and Guidelines for the Implementation of Article 15, Note by the Executive Secretary*, 19 February 1998, page 11.

²⁹ UNEP/COP/CBD/5/8, above n 26, paragraph 94-95.

³⁰ Other terms used are “free, prior, informed consent” and “advance informed agreement” - Indigenous Peoples Rights Act of 1997 of the Philippines; Joji Carino, ‘Indigenous Peoples’ Right to Free, Prior, Informed Consent: Reflections on Concepts and Practice’ (2005) *Arizona Journal of International and Comparative Law* 19; Amanda Wolf, ‘The Emergence and Implementation of the Advance Informed

consent to an activity that is given after receiving full disclosure regarding the reasons for the activity, the specific procedures the activity would entail, the potential risks involved, and the full implications that can realistically be foreseen.³¹

PIC as a concept pre-dates and is not confined to ABS procedures under the CBD, and has been identified as a factor in participatory decision making in a wide range of situations involving individuals and States. Prior informed consent is generally associated in the public mind with medical and research practice.³² However, the concept has entered the international arena in several contexts, which concern both States and peoples, addressing issues such as trade, environment and human rights. An example of the former is that of the trade in hazardous chemicals and substances as evidenced by the Rotterdam and Basel Conventions, where the informed consent of receiving States is required for the import of such substances.³³ The concept has also developed in the context of human rights, particularly the rights of indigenous and local communities to participate in decision making, including giving their prior informed consent to development taking place on their lands.³⁴

In regard to ABS of genetic resources, the CoP has identified the salient elements of the PIC procedure as timing and change of use.³⁵ PIC must be sought sufficiently in advance so that both parties may consider and negotiate the agreement. Further, PIC must be based upon the specific uses for which the consent has been granted, and any change of such uses will require further

Agreement Procedure' in Philippe G Le Prestre (ed), *Governing Global Biodiversity: the evolution and implementation of the Convention on Biological Diversity* (2002), Chapter 6.

³¹ UNEP/CBD/TKBD/1/2 - Workshop on Traditional Knowledge and Biological Diversity, 24 to 28 November 1997, *Traditional Knowledge and Biological Diversity*, 18 October 1997, paragraph 108.

³² Wolf, above n 30, 130.

³³ *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade* U.N. Doc. UNEP/FAO/PIC/CONF/2 (Sept. 11, 1998) 38 ILM 1 (1999); *Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal* March 22, 1989, UNEP doc. IG.80/3 (1989), 28 I.L.M. 657 (1989). See also Laurel A Firestone, 'You Say Yes, I Say No; Defining Community Prior Informed Consent under the Convention on Biological Diversity' (2003) *Georgetown International Environmental Law Review* 171.

³⁴ See E/CN.4/Sub.2/AC.4/2004/4 - Commission on Human Rights, *Standard Setting: Preliminary working paper on the principle of free, prior and informed consent of indigenous peoples in relation to development affecting their lands and natural resources that would serve as a framework for the drafting of a legal commentary by the Working Group on this concept submitted by Antoanella-Iulia Motoc and the Tebtebba Foundation*, 8 July 2004. See also Carino, above n 30.

³⁵ UNEP/CBD/COP/5/8, above note 26, paragraph 110.

consent. The CoP has also pointed out that PIC may be required at both the national and sub-national levels, covering a range of possible stakeholders.³⁶

These elements of PIC are therefore based upon the requirement of full disclosure of the circumstances by those requiring it, and the identification of those with the authority or the right to give consent. While the principle is applicable in a wide range of differing circumstances, it is premised on an assumption of unequal bargaining power between the various actors in such situations. Circumstances in which PIC is required are invariably those in which one party would be potentially adversely affected by the actions of the other, and whose informed consent to the action therefore becomes a necessary precondition. Further, those from whom such consent is required are invariably at the less empowered or less informed end of the scale. This is so whether it is a question of large dams affecting indigenous and local communities, or the international trade in hazardous chemicals affecting developing countries,³⁷ or the acquisition of genetic resources and traditional knowledge under the CBD. The third scenario is somewhat more complex, and the applicability of PIC to ABS agreements addresses situations that are arguably very different from the other two cited above. One of the primary differences is that the latter involves a diversity of stakeholders in provider countries ranging from the State per se to a variety of groups and individuals within it from whom PIC may be required.

The CoP has observed that PIC is the trigger to benefit sharing, and the requirement to obtain it affords an opportunity for those whose consent is sought to reach mutually agreed terms with those who seek access, and to stipulate the benefits to be shared.³⁸ However, it has also taken the position that while PIC is essential for access, Parties must endeavour to facilitate access, and thereby ensure the continued exchange of genetic resources. National measures must therefore strike a balance between the need to ensure fair and equitable benefit sharing on mutually agreed terms, with the need to ensure that procedures to ensure PIC and benefit sharing do not obstruct

³⁶ Ibid paragraph 117.

³⁷ Richard W Emory, 'Probing the Protections in the Rotterdam Convention on Prior Informed Consent' (2000) *Colorado Journal of International Environmental Law and Policy* 47.

³⁸ UNEP/CBD/COP/4/22 – CBD CoP, Fourth Meeting, 4-15 May 1998, *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*, 9 February 1998, paragraph 16-17.

such access.³⁹ The question which arises here is whether the requirement of PIC in the CBD is merely intended as a procedural device to give legitimacy to the acquisition and use of genetic resources and traditional knowledge, or whether it is in fact intended to ensure that such resources and knowledge are obtained in a fair and equitable manner.⁴⁰

12.6.2.1 Who gives consent?

As noted by the CoP, the first step in defining PIC is to determine who has the right and the authority to give consent. This would depend on the property regime applicable to the resource in question.⁴¹ At this point it is relevant to examine the ways in which the CBD and national legislation address the issue and identify the stakeholders from whom PIC is required, as well as the methods of implementation of the requirement. The wording of Article 15(5) of the CBD indicates that the Contracting Party has the discretion to determine all aspects of PIC including whether it can be dispensed with. It must then be determined who is encompassed within the phrase “Contracting Party” in this context. In light of the fact that international agreements are entered into by and between States, and the CBD emphasises State sovereignty over natural resources, it would appear that it is the State and its representative institutions which are covered by the term.

In practice however, the situation is more complex. Given the involvement in the issue of indigenous peoples, farmers and other communities, non governmental organisations and citizens, the term “Contracting Party” would, in reality, require a wider definition and inclusion of stakeholders, rights holders and beneficiaries within the State in regard to the commercial and other uses of genetic resources. As the CoP notes,

[t]o date, Parties have defined a two-tiered set of authorities: (a) the Contracting Party, at the national level; and (b) at the local level, private individuals and groups, including indigenous and local communities.⁴²

³⁹ UNEP/CBD/COP/3/20, above n 2, paragraph 51. See also the Bonn Guidelines, Section 26.

⁴⁰ Donna Dickenson, ‘Consent Commodification and Benefit-Sharing in Genetic Research’ (2004) 4(2) *Developing World Bioethics* 109. The author discusses this issue in the context of human genetic research but it is equally applicable to genetic resources.

⁴¹ UNEP/CBD/TKBD/1/2, above n 31, paragraph 109.

⁴² *Ibid* paragraph 109.

The CoP has further stated that while the PIC of Contracting Parties is essential, access legislation in different countries

should take into account the interest of different stakeholders, including local communities, indigenous groups, protected-area management boards, and owners, holders and administrators of land.⁴³

Both the CBD CoP and national/regional measures enacted in the last decade have also dealt with the issue of indigenous and local communities as stakeholders whose PIC is an essential requirement for access.⁴⁴ This element has been reinforced by the human rights approach which emphasises the rights of indigenous peoples to participatory decision making.⁴⁵ The CoP has also linked Articles 15 and 8(j) of the CBD in this regard noting that:

[g]iven the connections between genetic resources and local and indigenous knowledge and innovations which has been recognised in Decision III/15, it is important that Article 8(j) is implemented in conjunction with Article 15 of the Convention. For example, procedures of prior informed consent as required in Article 15.5 might also provide that access seekers must obtain the informed consent, the approval, of local and indigenous communities.⁴⁶

Other stakeholders whose PIC may be required include

departments of environment, development, science and technology, trade and industry, health, education and tourism in central or state Governments, regional and local offices of Government, protected-area management boards, municipalities, *ex situ* collections, universities and research centres, and non-governmental and intergovernmental organizations.⁴⁷

The CoP has also requested Parties to designate national focal points and competent national authorities to be responsible for ABS arrangements.⁴⁸

⁴³ UNEP/CBD/COP/4/22, above n 38, paragraph 18.

⁴⁴ For a comprehensive study of national and regional measures see Garforth et al, above n 20.

⁴⁵ See for example *Convention Concerning Indigenous and Tribal Peoples in Independent Countries* (ILO No. 169), 72 ILO Official Bull. 59, (entered into force 5 September 1991) (hereinafter ILO Convention 169) and the *UN Declaration on the Rights of Indigenous Peoples* 46 I.L.M. 1013, 13 September 2007.

⁴⁶ UNEP/CBD/TKBD/1/2, above n 31, paragraph 30.

⁴⁷ UNEP/CBD/COP/4/22, above n 38, paragraph 19.

⁴⁸ Decision V/26 – CBD Handbook page 677. See also Article 13 and 14 of the Bonn Guidelines.

12.6.2.2 National legislation on PIC

While it is not possible to analyse the national legislation of all countries, some noteworthy examples will be discussed.⁴⁹ Some of the early legal and other measures on ABS emerged from countries such as the Philippines⁵⁰ and Costa Rica⁵¹ and more recently South Africa⁵² and India.⁵³ Regional measures include the Andean Pact Decision 391,⁵⁴ the OAU Model Law⁵⁵ and the draft ASEAN Framework Agreement on Access to Biological and Genetic Resources.⁵⁶ Although these laws are broadly similar, they vary significantly in their requirements of PIC, both as regards those who are entitled to grant or withhold it, and the extent to which it is applicable. While they unanimously recognise the sovereign rights of the State over biological/genetic resources,⁵⁷ these rights are not limited to the State per se, and the interests of defined groups and citizens within it are also acknowledged. The Philippines Executive Order 247, the OAU Model Law⁵⁸ and the draft ASEAN Framework Agreement⁵⁹ acknowledge the rights and interests of a

⁴⁹ For a compilation of national law on ABS see the CBD website <<http://www.CBD.int/abs/measures.shtml>> at 18 April 2008.

⁵⁰ Executive Order No. 247 - Prescribing Guidelines and Establishing a Regulatory Framework for the Prospecting of Biological and Genetic Resources, Their By-products and Derivatives, for Scientific and Commercial purposes, and for Other Purposes (1995).

⁵¹ Biodiversity Law (1998)

⁵² National Environmental Management: Biodiversity Act, 2004.

⁵³ Biological Diversity Act, 2002. For an analysis of this Act see Rajesh Sagar, 'Intellectual Property, Benefit-Sharing and Traditional Knowledge. How Effective Is the Indian Biological Diversity Act, 2002?' (2005) 8(3) *Journal of World Intellectual Property* 383.

⁵⁴ Andean Community Decision 391: Common Regime on Access to Genetic Resources (1996)

⁵⁵ African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources, 2000 (hereinafter OAU Model Law).

⁵⁶ (2000 draft).

⁵⁷ Biological Diversity Act of India – Preamble, Paragraph 4; ASEAN Framework Agreement – Article 1; OAU Model Law – Preamble, Paragraph; Biodiversity Law of Costa Rica – Article 2; Andean Community Decision 391 – Article 5.

⁵⁸ OAU Model Law. The Preamble acknowledges that “the State and its people exercise sovereign and inalienable rights over their biological resources,” and states that “the rights of local communities over their biological resources, knowledge and technologies” are “*a priori* rights which take precedence over rights based on private interests.” The Preamble also states that “it is the duty of the State and its people to regulate access to biological resources and to community knowledge and technologies,” thus equating the role of the State with citizens. It goes on to recognise the necessity of providing “adequate mechanisms for guaranteeing the just, equitable and effective participation of its citizens in the protection of their collective and individual rights and in making decisions which affect its biological and intellectual resources as well

range of stakeholders including citizens as a whole, indigenous peoples and local communities, farming communities, plant breeders and women. In contrast, the Biological Diversity Act of India gives powers of granting consent solely to the National Biodiversity Authority and State Biodiversity Boards.⁶⁰

12.6.2.3 The subject matter of the PIC process

The next question is over what specifically do the stakeholders have rights, and to what is their consent required? This question relates in particular to indigenous and local communities in the context of whether their PIC is required only when their traditional knowledge is accessed, or whether they also have rights in regard to genetic resources. The CBD has not addressed this question, although the Bonn Guidelines appear to take a broader view of such rights, recognising,

established legal rights of indigenous and local communities associated with genetic resources being accessed or where traditional knowledge associated with these genetic resources is being accessed...⁶¹

Here again national laws differ markedly on this issue. While some require PIC in relation to both genetic resources and traditional knowledge, others give indigenous and local communities rights only over the latter. The OAU Model Law is among the strongest in recognising the “inalienable rights of local communities including farming communities over their biological resources, knowledge and technologies.”⁶² Similarly the Philippines Indigenous Peoples Rights Act of 1997 permits access to biological and genetic resources and indigenous knowledge only with the PIC of the communities concerned, in accordance with their customary law.⁶³

as the activities and benefits derived from their utilization.” According to Part I one of the specific objectives of the legislation is to “recognize, protect and support the inalienable rights of local communities including farming communities over their biological resources, knowledge and technologies.”

⁵⁹ The Agreement, while respecting the sovereignty of each Member State of its biological and genetic resource, is aware of the fundamental principle that the PIC of its indigenous peoples and local communities is a necessary precondition to access.

⁶⁰ Chapters V and VI.

⁶¹ Bonn Guidelines - Article 31.

⁶² OAU Model Law, Part 1 – Objectives.

⁶³ Section 35. For a discussion of this Act see T Fitschen, ‘Protecting indigenous peoples and communities in the Philippines: the Indigenous Peoples Rights Act of 1997’ (1998) 7(2) *International Journal of Cultural Property* 526.

The Andean Pact Decision 391 on the other hand is clear that jurisdiction over natural resources lies with the State, and limits the rights of “native, Afro-American and local communities” to their “know-how, innovations and traditional practices.”⁶⁴ The Indian Biodiversity Act also reserves the authority to grant consent to the National and State Biodiversity Boards and does not give jurisdiction over this issue to local communities.⁶⁵

12.6.2.4 Conclusion

The CoP has stated that PIC is the central procedural device enabling Parties to achieve the provisions of Article 15. It has further stated that Parties must endeavor to facilitate access, and that national access procedures including PIC should not block such access. In examining the way in which the requirement of PIC is implemented, the question which arises is whether it achieves the substantive objectives of fair and equitable access to genetic resources, or whether it is in fact merely a procedural device to legitimize what is inherently unjust and unethical. In view of the fact that there is more often than not, an imbalance between the parties seeking and providing such access (as will be illustrated in some examples below), the equity of contracts based upon this consent would often be open to question. While the CoP may be attempting to strike a balance between the divergent interests in genetic resources, in the light of centuries of free and unimpeded access to both genetic resources and traditional knowledge, and the current dominance of the IPR regime, it fails to acknowledge the inherent imbalance in the process.

At the national level the fundamental question in regard to PIC is who should have the authority to grant access and to what. While the CoP has recognized that there is a two tiered set of authorities who can give consent, the involvement of indigenous and local communities or even the general public would, in reality, depend on the political environment of the State in question. States have taken differing positions on this issue in regard to genetic resources and traditional knowledge, and in some instances communities have no rights of consent even over the latter. Under the circumstances it has again to be questioned whether PIC as a procedural device of implementing ABS arrangements, achieves the objective of equity where such communities or the general public are concerned.

⁶⁴ Article 7.

⁶⁵ Chapter 5.

12.6.3 *Mutually agreed terms*

Article 15(4) of the CBD states that “[a]ccess, where granted, shall be on mutually agreed terms and subject to the provisions of this Article.” The CoP has observed that

[i]nherent in the phrase mutually agreed terms is the expectation of a negotiation between the Party providing genetic resources and a potential user. This aspect of mutually agreed terms points not only to the importance of defining particular elements of features that each agreement should contain but also to the direct and central relevance of the procedural aspects of the regime in implementing this term.⁶⁶

Therefore mutually agreed terms essentially refer to the contract by which ABS measures are specified. Contractual arrangements are the norm in ABS agreements although national and regional measures to govern them may provide guidelines. To some extent this is inevitable in view of the range and diversity of circumstances and actors involved in regard to each resource sought to be accessed, necessitating case-by-case negotiation of terms and conditions.⁶⁷ While PIC is important at the point of determining whether a user can obtain access to genetic resources or traditional knowledge initially, the issue of mutually agreed terms arises in the context of the conditions which determine the benefit sharing arrangements in relation to such resources. The phrase is premised upon the supposition that the contract in question has been negotiated by both parties operating on an equal footing, and its terms accepted by both.

The Bonn Guidelines have stated that PIC is linked to the requirement of mutually agreed terms.⁶⁸ They have dealt with this topic in some detail. They set out the basic requirements for mutually agreed terms and an indicative list of typical agreed terms.⁶⁹ The Guidelines have also noted that “[m]utually agreed terms could cover the conditions, obligations, procedures, types, timing, distribution and mechanisms of benefits to be shared. These will vary depending on what is regarded as fair and equitable in light of the circumstances.”⁷⁰

⁶⁶ UNEP/CBD/COP/3/20, above n 2, paragraph 47.

⁶⁷ For example Article I(6) of the Bonn Guidelines states that “Nothing in these Guidelines should be interpreted as affecting the rights and obligations relating to genetic resources arising out of the mutually agreed terms under which the resources were obtained from the country of origin.”

⁶⁸ Article 35.

⁶⁹ Bonn Guidelines – Section IV (D). See also UNEP/CBD/COP/2/13, above n 2, Paragraphs 90 – 92 and UNEP/CBD/COP/3/20, above n 2, paragraphs 46 -50 and UNEP/CBD/TKBD/1/2, above n 31, paragraphs 103-106.

⁷⁰ Bonn Guidelines - Article 45.

The question in regard to contractual arrangements based upon mutually agreed terms is whether they can in fact guarantee at least some degree of equity in ABS agreements. The concept presupposes that the process would achieve this objective, but this would depend on the actual parity of bargaining power and the capacity of the parties concerned. The need to negotiate each agreement on a case by case basis would have its pros and cons. The former includes flexibility to bargain for the most advantageous benefits in each instance. However, this flexibility would obviously benefit the party which holds the advantage in bargaining capacity. On the other hand, the ad hoc nature of such a process would also contribute to uncertainty in regard to access procedures and the identity of stakeholders, both State and non-State, from whom PIC is required. Of particular concern to user parties are the high transaction costs which may be associated with the lack of legal and institutional certainty in the process.

The CoP, while agreeing that the enormous differences in circumstances surrounding ABS arrangements preclude the standardization of the process, took the view that there are certain aspects on which there is mutual agreement, and which could be used as the basis for guidelines in this regard. It has observed that

“[t]o this end, Governments should define roles, ownership and authority to determine access. In this regard, attention needs to be paid to community interests, tenure and other property rights. In addition, countries should be aware of other relevant legal obligations.”⁷¹

It has also noted that high transaction costs diminish the value of genetic resources as it decreases interest in their access and use. To avoid these effects the CoP has advocated a number of measures including legal certainty and clarity in regard to Governments’ requirements for contractual arrangements, identification of national institutions and mechanisms to facilitate the process, umbrella arrangements under which repeat access could be facilitated, the use of standardised Material Transfer Agreements,⁷² property stakeholder participation and provisions on use obligations.⁷³

⁷¹ UNEP/COP/CBD/5/8, above n 26, paragraph 54.

⁷² Material Transfer Agreements (MTA) have been described as “special types of contracts routinely used by the biotechnology industry and academic researchers in Northern countries to facilitate the sharing of biological research material for mutual gain. MTAs define the rights and obligations of all parties, including third parties, involved in a transfer of biological material. MTAs can be relatively concise documents, yet sufficiently flexible to be useful in a large number of research and development scenarios” – Daniel M Putterman, ‘Model Material Transfer Agreements for Equitable Biodiversity Prospecting’ (1996) 7 *Colorado Journal of International Environmental Law and Policy* 149, 150 and also for a discussion on possible terms of MTAs to ensure equity in ABS arrangements. See also

The feasibility and equity of contracts founded upon mutually agreed terms will be discussed further below.

12.6.4 Fair and equitable sharing of benefits

ABS arrangements for the use of genetic resources must necessarily be fair and equitable. As noted by a commentator

[b]enefit-sharing is a concept originating in the international law arena. It stems from the overarching concept that certain of the earth's resources are the 'Common Heritage of Mankind' and that the benefits and burdens of exploiting and sustaining those resources ought to be universally shared. It is an evolving concept that supports the conservation and sustainable use of those of the world's resources that are a 'collective and vital interest of all mankind.' It "succinctly expresses -- with all its merits and limitations -- the 'new model' of world community which has gradually emerged since 1945."⁷⁴

From a more prosaic point of view, benefit sharing of genetic resources and TK as a legal principle stemmed from the reaction to centuries of their free and unimpeded extraction from developing countries to industrialised nations without any benefit accruing to the former.

The CBD refers to benefit sharing in several Articles in the context of genetic resources and TK, as well as in relation to the results of research and development, and technologies arising from their commercial or other uses.⁷⁵ The CoP has in fact interpreted the CBD as “an instrument to promote the equitable exchange of access to genetic resources and associated knowledge for finance, technology and participation in research.”⁷⁶

Although fair and equitable benefit sharing lies at the core of the CBD, it has not defined any of the words in the term, i.e. “fair,” “equitable,” “benefit” or “sharing.” Again, it has been left to the CoP and national legislation to interpret and define this requirement. As the CoP has noted, the

UNEP/CBD/COP/6/6 – CBD CoP, Sixth meeting, 8-19 April 2002, *Report of the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing*, 31 October 2001 at page 26 for suggestions for a standardised MTA.

⁷³ UNEP/COP/CBD/5/8, above n 26, paragraphs 50-73.

⁷⁴ Lorraine Sheremeta and Bartha Maria Knoppers, ‘Beyond the Rhetoric: Population Genetics and Benefit-Sharing’ (2003) 11 *Health Law Journal* 89, 95.

⁷⁵ CBD - Preamble, Paragraphs 12 and 20 and Articles 1, 8(j) and 15(7).

⁷⁶ UNEP/CBD/COP/3/Inf.53, above n 5, page 2.

lack of definitions and the “use of language which softens any obligations” give all Parties considerable leeway in interpreting and implementing the provisions. The CoP also points out that given the multiplicity of stakeholders involved in the ABS process and affected by the activities in question and the complexity of the issue, benefit sharing can effectively succeed only when tailored to the specificity of each situation. Therefore Parties should be guided less by obligations under the CBD, and rather by the rationale for benefit sharing, i.e. equity and the conservation and sustainable use of biodiversity.⁷⁷

12.6.4.1 The requirement of “fair and equitable”

There is no absolute criterion for determining what is equitable in the context of ABS and this issue necessarily depends upon the stakeholders involved. It is in such situations that the participation of non-State stakeholders is particularly important. PIC and mutually agreed terms are obviously an essential prerequisite for ensuring that ABS arrangements are fair and equitable. However, as argued above, in order for stakeholders to the agreement to ensure equity in sharing, there must also be equality of bargaining power which is essential at both national and international levels.

12.6.4.2 Benefit sharing mechanisms

The CBD does not provide any indication as to what constitutes benefits, or the mechanisms by which they should be shared. It is obviously not possible to do so since this would vary across countries, stakeholders, circumstances, needs and other criteria. While an exhaustive list of such benefits would not be possible, both the CoP and national legislation have elaborated on the more general benefits that may be claimed, both monetary/non-monetary and direct/indirect. Monetary benefits include various forms of fees, royalties and other payments. They could also include joint ownership of relevant IPRs. Non-monetary benefits could include education and training, institutional capacity building, contributions to the local economy and food and livelihood security benefits.⁷⁸

⁷⁷ Ibid page 3.

⁷⁸ See for example UNEP/CBD/COP/2/13, above n 2, Section E and UNEP/CBD/COP/5/8, above n 26, paragraphs 74-90. See also UNEP/CBD/COP/3/Inf.53, above n 5, and Appendix II of the Bonn Guidelines.

The enforcement of benefit sharing mechanisms is also weighted in favour of users of genetic resources. The CoP has observed that while fair and equitable sharing requires legislative, administrative and other measures in provider countries, there are broader dimensions to the issue. These include legislation in user countries on exchanges of genetic resources, and international IPR and trade regimes impacting on such resources.⁷⁹ It is generally non-State corporate entities in user countries which access such resources, but ABS legislation is by and large being promulgated in provider countries rather than in the former. This makes it difficult for provider countries to ensure that the terms of the agreements are implemented by these entities in their countries. On the other hand, trade and IPR regimes in the international arena such as the TRIPS Agreement, advance corporate interests and include strong measures to ensure that all States Parties comply with their provisions.

12.6.5 Some examples of ABS agreements

It has been noted that very few benefit sharing case studies have been documented and the best source of information at present is that made available on the website of the CBD.⁸⁰ In a study published by the Edmonds Institute,⁸¹ the researcher has documented a range of instances where genetic resources and traditional knowledge from Africa have been appropriated and/or patented by private corporations. In practically all instances the researcher has indicated that he was unable to find an ABS agreement relating to the acquisition.

Nevertheless, some case studies documented by researchers are available and indicate that the actual benefits flowing to either nations or communities from the commercialisation of the resources vary widely. The following examples provide some insights into this issue.

⁷⁹ UNEP/CBD/COP/4/22, above n 38, paragraph 12.

⁸⁰ Elpidio V. Peria, 'Benefit-Sharing from the Use of Genetic Resources: Real Myths or Mythical Realities?' in Beth Burrows (ed), *The Catch: Perspectives in Benefit Sharing*, (2005), available at <<http://www.edmonds-institute.org/>> at 6th June 2008. See the website of the CBD at <<http://www.cbd.int/abs/cs.shtml>> at 6th June 2008.

⁸¹ Jay McGown, 'Out of Africa: Mysteries of Access and Benefit Sharing' (2006) Edmonds Institute in cooperation with African Centre for Biosafety, available at <<http://www.edmonds-institute.org/>> at 6th June 2008.

12.6.5.1 The Kani Tribe in Kerala, India

This benefit sharing arrangement which was established between a research institute in Kerala, the Tropical Botanic Garden and Research Institute (TBGRI) and the Kani community in Kerala, has been cited as one where the benefits to the latter were doubtful at best. The Kanis used the fruit of a plant, *Trichopus zeylanicus travancoricus*, which they called *Aarogyappacha*, for its anti-fatigue properties. Scientists of the TBGRI, having discovered this, entered into an agreement with the Kanis and developed a drug called Jeevani from the plant. It has been claimed that Jeevani has a commercial value estimated to be around US\$ 50 million to 1 billion. The TBGRI had initially encouraged 50 Kani families to undertake cultivation of the plant species, and the benefit to them was to be around Rs. 20,000 to 30,000 per acre. The Kani people have received around US\$ 12,000 as a one time payment on the licensing of the product, and a royalty of US \$5.⁸²

Concerns as to the benefits received by the Kanis had been raised in several fora, including in the Kerala Legislative Assembly and the Kerala Institute for Research, Training and Development of Scheduled Castes and Scheduled Tribes (KIRTADS). This Institute believed that the Kanis had not been adequately involved in the negotiating process and that they “should be encouraged to directly interact with wider society, and administer their medical knowledge according to terms set forth by them.” It observed that “the only way tribal medicine can survive is by preserving its original form and premises, otherwise it is liable to be misused as a convenient resource base for other systems of medicine,” and “TBGRI should consider ways and means to impart technical know-how to the Kanis to manufacture the drug, and thereby involve them further in the process.”⁸³

⁸² Devinder Sharma, ‘Selling Biodiversity: Benefit sharing is a dead concept’ in Beth Burrows (ed), *The Catch: Perspectives in Benefit Sharing*, (2005), available at <<http://www.edmonds-institute.org/>> at 6th June 2008; Vandana Shiva, ‘Bioprospecting as sophisticated biopiracy in concept’ in Beth Burrows (ed), *The Catch: Perspectives in Benefit Sharing*, (2005), available at <<http://www.edmonds-institute.org/>> at 6th June 2008. See also Anil K Gupta WIPO-UNEP Study on the Role of Intellectual Property Rights in the Sharing of Benefits Arising from the Use of Biological Resources and Associated Traditional Knowledge (2000) jointly produced by World Intellectual Property Organization (WIPO) and the United Nations Environment Programme (UNEP).

⁸³ R.V. Anuradha, *Sharing with the Kanis, A case study from Kerala, India*, available at www.cbd.int/doc/case-studies/abs/cs-abs-kanis.pdf at 6th June 2008. See also Traci L. McClellan, ‘The Role of International Law in Protecting the Traditional Knowledge and Plant Life of Indigenous Peoples’ (2001) 19 *Wisconsin International Law Journal* 249 for further examples.

In addition to the negligible benefits accruing to the Kanis, questions were also raised regarding the consent granted to use the plant. It has been noted that the Kanis are not a cohesive unit or community, and while those from one area had imparted the knowledge of the plant, others from other areas had raised objections to the arrangements. This reflects the difficulties of identifying rights holders who can give consent as envisaged under the CBD.

12.6.5.2 The Hoodia plant of the San People of southern Africa

Another much discussed example of the appropriation of genetic resources and related traditional knowledge is that of the Hoodia plant of the San people of the Kalahari Desert in Southern Africa. The Hoodia is a plant used by the San people as a drink substitute and an appetite suppressant, among other purposes.⁸⁴ In 1998 the Council for Scientific and Industrial Research (CSIR), a South African state research institute, signed a licensing agreement with Phytopharm, a British company, granting it an exclusive worldwide licence to manufacture and market products related to the plant and to exploit the patents which had been granted to CSIR in relation to it. Phytopharm later patented P57, the appetite suppressing ingredient in the Hoodia plant. It also entered into an agreement with the pharmaceutical company Pfizer to commercialise the drug.

The prior informed consent of the San for the use of the plant or the knowledge they possessed regarding it had not been obtained, and their contribution to the possible benefits of the plant was not acknowledged. Efforts by non-governmental organizations and media publicity brought the matter to light, and finally compelled the CSIR to enter into benefit sharing agreements with them. This included recognition of the San as the originators of the ethnobotanical knowledge related to the plant.

Two important issues arise out of this situation. The first, as in the case of the Kani people, relates to identifying rights holders. The San people are dispersed across three countries, namely, South Africa, Namibia and Botswana. Since the CSIR was reluctant to negotiate with groups outside South Africa, the South African San Council was mandated to negotiate for all groups. A related issue which also arose was the fact that non-San communities which had also occupied areas in which Hoodia was found and who were also possibly aware of and used its

⁸⁴ Rachel Wynberg, 'Rhetoric, Realism and Benefit-Sharing. Use of Traditional Knowledge of Hoodia Species in the Development of an Appetite Suppressant' (2004) 7(6) *Journal of World Intellectual Property* 851.

properties, would be excluded from the process. It was also possible that not all groups of the San people had historically used the plant, but given their history of displacement, it was impossible to identify them.⁸⁵ Here again the question arises as to who has jurisdiction to give consent as required under the CBD.

The second issue is the nature of the ABS arrangement and the process by which it was negotiated. Under the agreement the San would receive only a fraction of the net sales of the product, i.e. between 0.03 and 1.2 percent. This amount would be taken from royalty and milestone payments obtained by CSIR, while profits received by Phytopharm and its partners would remain untouched. The Agreement also protects Pfizer and Phytopharm from any further obligations to the San people.⁸⁶ It has been pointed out that the San were compensated for their traditional knowledge and not for any rights which they might have in the plant itself. In fact, it was the CSIR which gave consent for the use of the plant, not the San.⁸⁷

Wynberg cites a more disturbing aspect of the agreement, which prevents the South African San from using their knowledge of the Hoodia plant in any other commercial applications. She notes that this prevents them from commercializing non-patented herbal medicines or from claiming the benefits from the dozens of Hoodia based products which have appeared on the market and which are being promoted on the basis of San traditional knowledge.⁸⁸ A second concern she cites is that the agreement is almost solely confined to monetary benefits, which are dependent on the successful commercialisation of the end product. She notes:

Yet commercialization is far from certain, highlighting the need for a more comprehensive and holistic approach to benefit-sharing that is not exclusively financial, is not contingent on successful drug development, and which provides immediate and tangible benefits to the San.⁸⁹

⁸⁵ Ibid.

⁸⁶ Ibid.

⁸⁷ Debra Harry and Le'a Malia Kanehe, 'The BS in Access and Benefit Sharing (ABS): Critical Questions for Indigenous Peoples' in Beth Burrows (ed), *The Catch: Perspectives in Benefit Sharing*, (2005), available at <<http://www.edmonds-institute.org/>> at 6th June 2008.

⁸⁸ Ibid.

⁸⁹ Ibid at 866.

Wynberg also notes that the San were faced with a dilemma in whether they should challenge the patent or adopt a more pragmatic approach and take a share of the benefits. She notes that in such communities sharing of knowledge is a culture and basic to their way of life, and the idea of owning life is abhorrent. However, ultimately, considerations of necessity compelled them to compromise on this issue and accept a share of the royalties.⁹⁰

12.6.5.3 Wild rice from Mali

A WIPO study has documented an instance of the patenting of a gene, Xa21, of a wild rice variety, *Oryza longistaminata*, obtained from Mali.⁹¹ The variety was originally accessed in Mali and transferred to a rice research programme in India where its resistance to bacterial rice blight was identified. A blight resistant specimen was transferred to the International Rice Research Institute (IRRI) in the Philippines where the locus called Xa21 which contained the resistance was identified, and then bred into cultivated rice varieties. One variety was acquired by the University of California, Davis (UC Davis), which mapped, sequenced and cloned the gene Xa21 and then obtained a patent on it.

Subsequently, a Genetic Resource Recognition Fund (GRRF) was established at UC Davis to share the benefits arising out of the commercialization of the patented gene with stakeholders in Mali and other developing countries. A certain percentage of the sales would be paid into the Fund for a certain number of years after the first year of commercialization. The Fund will be used to provide fellowships to agriculture students and researchers from Mali and the Philippines for capacity building. The author notes that at the time of writing no money had yet been paid into the fund. He also notes that there are presently no plans at UC Davis to mainstream this model of ABS.

12.6.5.4 The National Institute of Biodiversity in Costa Rica

Benefit sharing arrangements which are often cited as being positive examples are those implemented in Costa Rica by the National Institute of Biodiversity (InBio). This was created “as a private, but non-profit institution to coordinate the different activities of universities, private

⁹⁰ Ibid at 870.

⁹¹ Gupta, above n 82, 75.

organizations, and government and to become a national focal point in the field of biodiversity.”⁹² It has jurisdiction to bioprospect on State land, and therefore consent to such activities is provided by the State. This would facilitate the speed and efficiency with which ABS contracts could be concluded. The most well known contract it has signed was in 1991 with the multinational Merck, Sharp and Dome “to collaborate in the investigation of the existing biodiversity in Costa Rica’s tropical forests in order to establish its potential application to human health and animals.”⁹³ It has subsequently signed several agreements with a range of institutions including universities, multinational corporations and other groups. It has been observed that “INBio provided unrestricted access to scout the tropical forests for a paltry fee. Costa Rica alone is home to five per cent of the world’s biodiversity, with an estimated worth of several billion dollars, and all it has managed to get in return for its biodiversity is US \$2.6 million.”⁹⁴

Under the Merck agreement InBio received US\$ 1 million from the first phase of the project, which has been extended twice since then. It also received non-monetary benefits in the form of laboratory equipment and material required for processing plant and micro organism samples. While it is entitled to a percentage of royalties which may result from products derived from resources taken from the country, this information is kept confidential. Significantly, Merck has the exclusive rights to file patents over such products.

12.6.5.5 The know-how agreement with the Aguarunas in Peru

Dutfield cites a more positive benefit sharing agreement entered into between the Aguarunas people of Peru and Searle, the pharmaceutical division of Monsanto.⁹⁵ These peoples have negotiated a know-how license with Searle under which they will pass on medicinal knowledge and plants to the company and in return, receive an annual license fee. The fee increases to reflect success in research and development. Further, the agreement does not affect the right of the Aguarunas to use, share or sell or otherwise transfer plants or knowledge. However, there is

⁹² Carmen Richerzhagen and Karin Holm-Mueller, ‘The effectiveness of access and benefit sharing in Costa Rica: implications for national and international regimes’ (2005) 53(4) *Ecological Economics* 445, 453.

⁹³ Sharma, above n 82, 7.

⁹⁴ Ibid 8.

⁹⁵ Graham Dutfield, *Intellectual Property Rights, Trade and Biodiversity* (2000), 43.

no indication as to what will happen in the event that a drug or other product is produced and marketed, i.e. who will own the patent on it and whether the income will be shared with the community.

12.6.5.6 Points to note

While these examples of ABS agreements are not comprehensive, they raise several issues. The first is the difficulty of determining who should give consent to the preliminary accessing of the resource. Where the consent of communities is required, problems may arise when such communities are fragmented or widely dispersed, particularly across countries. This problem arose in the both the Kani and San cases. Further problems would arise where one section of the community has revealed the knowledge and given consent for its use, which is opposed by other sections. In the case of the Aguarunas this would not happen since the agreement is non-exclusive and does not affect the rights of non-participating communities.

A second issue is that even within countries, the interests of various people and institutions in ABS arrangements would vary widely. In both the Kani and San cases, it was State sponsored research institutions within the country which accessed the resources and made use of the traditional knowledge relating to it. These institutions then entered into collaborative arrangements with other institutions including foreign companies to exploit the resource. It is clear that in both cases the interests of the communities in question was not a priority. Similarly, in Costa Rica, InBio has the authority to enter into ABS agreements in regard to biological resources on State land. Such resources would constitute the national heritage of the people of the country. Nevertheless, InBio does not appear to be accountable to the general public as to the terms which it negotiates, and in fact many of the agreements are protected by confidentiality clauses. While InBio's ABS agreements have been generally cited as being exemplary, this would be largely unverifiable under the circumstances. Therefore the will or ability of States to protect their communities or natural resources, or to institute ABS arrangements in the public interest is called in question.

The benefits set out in ABS agreements are also a cause for concern. These benefits are categorized into monetary and non-monetary. The monetary benefits would include up front payments and royalties from the possible commercialization of the end product, if any. As can be seen from the cases cited above, the monetary payments are often negligible. This was the case

as regards both the Kani and San communities. Monetary benefits could also include joint ownership of the resulting patents, but as can be seen from the case studies, the multinational corporations' exclusive right to own the patent has generally been a feature of the agreement, including in the InBio/Merck agreement. Under the circumstances it is unlikely that communities would be able to insist on joint ownership of patents, and in any case, as noted above, many such communities have ethical problems in doing so. On the contrary, in the case of the San, the community was specifically prohibited from using the plant for any other purpose which may interfere with the patent holders' rights.

As noted by the CBD CoP and cited earlier, non-monetary benefits could include education and training, institutional capacity building, contributions to the local economy and food and livelihood security benefits.⁹⁶ Such benefits would often be negligible compared to the potential profits that would be made from the marketed product. This was the case in the San and Kani agreements. Writers also cite as an example, the agreement entered into between the University of Papua New Guinea and a consortium of research institutions including the U.S. National Institute of Health and the University of Utah, where the former is executing a US\$ 4 million project "aimed at finding marine organisms and plant species that exhibit chemical properties useful in the treatment of tuberculosis, malaria, cancer, HIV, and other diseases."⁹⁷ The uses of the \$4 million payment include that "[l]ocal researchers will be taught to inventory plants, collect ethno-medicinal plant species, and prepare and screen extracts. They will also learn the process of economic valuation of natural products, develop intellectual property rights legislation, and conduct outreach programs to educate communities about the further sharing of their knowledge."⁹⁸ On the other hand, in the event that the drug discovery programme proves fruitful, it has been estimated that the partner organizations could make US\$ 26 billion a year.⁹⁹ Even assuming that this is an overestimation, and taking into account the uncertainties of drug discovery and the possibility of marketing an end product, it must be questioned whether this kind of agreement benefits the country as a whole or only certain institutions within it.

⁹⁶ See above n 78 and related text.

⁹⁷ Sharma, above n 82, 5.

⁹⁸ Ibid 6.

⁹⁹ Ibid.

Non-monetary benefits to communities would include enhancement of health and education, livelihood benefits and contributions to the local economy. However, these are all basic human rights in any case and communities should not need to sell their traditional knowledge to have them fulfilled at the behest of outsiders. Rather, as was pointed out in the Kani case, it would be more equitable to empower them to put their knowledge to commercial use.

Another point of concern is that communities are generally only compensated for the knowledge of the resources. For example, in the San case the community was compensated only for their knowledge and not for any rights they may have in the plants themselves. While it might be difficult to accept property rights of communities or anyone else over genetic resources, the role of communities in conserving them, should, where applicable, be compensated. This is further borne out by the case of the wild rice from Mali. In this instance, the local people were in fact unaware of the particular useful properties of the plant. However, they had been instrumental in conserving it. Nevertheless, the benefits which were proposed were intended for capacity building for academics and researchers and the community was overlooked. It must be noted that this situation could arise in the case of PGRFA, where farmers have conserved and developed plant varieties but may be unaware of a particular use of such variety, which is later discovered. In such a situation, the farmers, or the country in which such variety is found, could not be compensated for the knowledge of that use, and would probably not be compensated for developing and conserving the plant.

These case studies thus demonstrate that the ABS system as envisaged by the CBD has not resulted in equitable benefit sharing to the extent that it can be justifiably upheld. At the outset, issues of who should give consent to the process are highly complex. Even if this problem was resolved, there is a fundamental fallacy in the assumption that genetic resources which have immense potential commercial values can be compensated for by the type of “benefits” that have been cited in the studies above.

12.7 THE DRAFT INTERNATIONAL REGIME ON ACCESS AND BENEFIT SHARING

By its Decision VII/19D the Seventh CoP had mandated the WG-ABS to negotiate an international regime on access and benefit sharing of genetic resources with the aim of adopting

an instrument in this regard.¹⁰⁰ It also invited the United Nations Environment Programme, the Food and Agriculture Organization of the United Nations, the World Trade Organization, the World Intellectual Property Organization and the International Union for the Protection of New Varieties of Plants to cooperate with the WG-ABS in this work.¹⁰¹ In issuing this mandate the CoP referred to paragraphs 44 (n) and (o) of the Plan of Implementation of the World Summit on Sustainable Development¹⁰² and the Millennium Development Goals¹⁰³ and the potential role of access and benefit sharing in poverty eradication and environmental sustainability.

The decision stated that the international regime could be composed of one or more instruments within a set of principles, norms, rules and decision-making procedures, legally-binding and/or non-binding. The scope of the regime would cover (i) access to genetic resources and promotion and safeguarding of fair and equitable sharing of the benefits arising out of the utilization of genetic resources in accordance with relevant provisions of the Convention on Biological Diversity and, (ii) traditional knowledge, innovations and practices in accordance with Article 8(j). The decision also set out 23 elements to be considered for inclusion in the international regime.

The current draft international regime on ABS was taken up by the WG-ABS at its Fifth Meeting in 2007 and its Sixth Meeting in January 2006.¹⁰⁴ The draft is still in a very nascent stage and is

¹⁰⁰ UNEP/CBD/COP/7/21 – CBD CoP, Seventh meeting, 9-20 and 27 February 2004, *Report of the Seventh Meeting of the Conference of the Parties to the Convention on Biological Diversity*, 13 April 2004, Decision VII/19 D, paragraph 1 at 177.

¹⁰¹ Ibid paragraph 5.

¹⁰² Paragraph 44 refers to the implementation of the three objectives of the CBD and cites specific actions in this regard including paragraph (n) Promote the wide implementation of and continued work on the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of Benefits arising out of their Utilization, as an input to assist the Parties when developing and drafting legislative, administrative or policy measures on access and benefit-sharing as well as contract and other arrangements under mutually agreed terms for access and benefit-sharing; and paragraph (o) to negotiate within the framework of the Convention on Biological Diversity, bearing in mind the Bonn Guidelines, an international regime to promote and safeguard the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

¹⁰³ See the website at <<http://www.un.org/millenniumgoals/>> last accessed 25th April 2008.

¹⁰⁴ UNEP/CBD/WG-ABS/5/8 – WG-ABS, Fifth Meeting, 8-12 October 2007, *Report of the Ad hoc Open-Ended Working Group on Access and Benefit-Sharing on the Work of Its Fifth Meeting*, 15 October 2007; UNEP/CBD/WG-ABS/5/7 - WG-ABS, Fifth Meeting, 8-12 October 2007, *Annex To Decision VIII/4 A on the International Regime on Access and Benefit-Sharing*, 14 September 2007; UNEP/CBD/COP/9/6 – CBD

comprised of points for discussion. Therefore it is difficult to predict its further development as a means to prevent the misappropriation of genetic resources and related TK and to enforce prior informed consent and ABS measures in regard to them.

At present the draft is not significantly different from either the CBD or the Bonn Guidelines since it merely reiterates the principles, concepts and objectives found in both. For example the options for the objectives of the draft regime include to

[[Promote] [Ensure] compliance with prior informed consent of the providing countries and of indigenous and local communities and mutually agreed terms;]¹⁰⁵

The draft regime also applies to, inter alia,

(c) Fair and equitable sharing of the monetary and non-monetary benefits arising out the utilization of genetic resources [and their derivatives and/or] associated traditional knowledge [and, where appropriate, their derivatives and products], in the context of mutually agreed terms [based on prior informed consent] [in accordance with the national legislation of the country of origin];¹⁰⁶

Under the heading “Fair and equitable benefit-sharing” it has been stated that

1. [Minimum conditions for the fair and equitable sharing of the benefits arising out of the use of genetic resources, derivatives or products shall be stipulated in relevant national [access] legislations [or] [and] under the international regime] and [shall] [may] be taken into consideration in mutually agreed terms [shall] [may] be based on prior informed consent between the provider and user of given resources.]¹⁰⁷

As can be seen crucial provisions in the draft international regime have yet to be determined.¹⁰⁸ It is also not yet clear whether the wording of the draft would make it a legally binding instrument

CoP, Ninth Meeting, 19-31 May 2008, *Report of the Ad hoc Open-Ended Working Group on Access and Benefit-Sharing on the Work of Its Sixth Meeting*, 31 January 2008.

¹⁰⁵ UNEP/CBD/WG-ABS/5/7, above n 104, 2.

¹⁰⁶ Ibid 3.

¹⁰⁷ Ibid 5.

¹⁰⁸ For further discussions on the international regime see UNEP/CBD/COP/9/INF/16 – CBD CoP, Ninth Meeting, 19-31 May 2008, *Written Submissions by Parties and Observers Related to the Main Components of the International Regime on Access and Benefit-Sharing Made at the Sixth Meeting of the Ad hoc Open-Ended Working Group on Access and Benefit-Sharing*, 4 March 2008; UNEP/CBD/COP/9/6, above n 104.

or not.¹⁰⁹ Further, notwithstanding that it is termed an international regime, the provisions appear to be tilted in favour of leaving the system governing ABS measures to national legislation rather than creating an internationally applicable and enforceable, harmonized system of mandatory rules in this regard.

12.8 CONCLUSION

The bilateral system of ABS under the CBD gives rise to several questions. On the one hand, a bilateral contract based system for this purpose appears to be both necessary and inevitable as it gives each country the flexibility to negotiate its own contracts in accordance with its own context and requirements. On the other hand, the question of equality in bargaining power brings the equity of these contracts into question. These questions would arise in cases where the contracts are negotiated by government entities, but particularly so where they are negotiated by indigenous and local communities. Further, as noted earlier, the capacity of government entities to work in the best interests of these communities or in the national interest is also a debatable issue.

The enforceability of these contracts must also be considered. Many provider countries have enacted legislation to regulate these access contracts. However, the obligation to share the benefits would fall on parties, usually non-State entities, from user countries. In the absence of corresponding legislation in these countries with regard to ABS measures, enforcement of the terms or remedies for their breach would be difficult for the provider countries. A fundamental inequity in this regard is the fact that while IPRs, including on PGRFA, are being harmonized internationally and made enforceable, ABS arrangements in regard to these resources must still be negotiated on an ad hoc basis, with little enforceability outside the country of origin. Developing countries have raised these concerns in the TRIPS Council as discussed in the next section.

¹⁰⁹ The Group of Like Minded Megadiverse Countries (LMMC) at its Ministerial meeting in January 2005 has agreed to “join efforts as a Group for effectively negotiating the development of an international regime on access and benefit sharing, including legally binding instrument(s) in the forthcoming meetings of the Ad-hoc Open ended Working Group under the aegis of Convention on Biological Diversity, so as to safeguard the interests of our countries and peoples” - New Delhi Ministerial Declaration of Like Minded Megadiverse Countries on Access and Benefit Sharing, New Delhi, 21st January 2005, available at <http://www.lmmc.nic.in/Delhi%20Declaration%20&%20Annex.pdf> at 4th May 2008. The Annex to the Declaration set out the recommendations of the LMMC in regard to the instrument.

It must also be questioned whether the benefits, whether given to countries or communities can adequately compensate for the removal of genetic resources from the public domain. Monetary benefits in the form of fees, royalties and other payments, would realistically amount to only a very small proportion of the actual profits which may be derived from these resources. Non-monetary benefits also appear trifling when viewed in the light of the fact that foreign corporate entities are amassing huge profits in the development and marketing of new plant varieties and assuming control of agricultural systems in many countries. Handouts in any form cannot compensate for the fundamental inequity of the system.

The international regime on ABS currently under negotiation is premised on an acceptance of this status quo. At best it has the potential to provide at least a globally enforceable framework for ensuring that the resources are acquired in conformity with PIC and in accordance with mutually agreed terms and that some benefits are received by provider countries. However, in the present wording of the document which is still under negotiation, there is no indication as to whether it will evolve into an internationally binding document or merely be a set of guidelines, like the Bonn Guidelines.

12.9 THE TRIPS AGREEMENT AND PRIOR INFORMED CONSENT/BENEFIT SHARING

The key issue under this topic is the concern that TRIPS may permit the patenting of inventions based on genetic material and traditional knowledge without ensuring that the CBD requirements of PIC and ABS have been complied with. In other words TRIPS may facilitate biopiracy by granting private property rights over genetic resources and traditional knowledge regardless of whether they were legally acquired. The three concerns which arise in this regard are to ensure that the key objectives of the CBD have been complied with in the patenting process, i.e. that access has been obtained with PIC, that there is equitable sharing of the benefits arising from the use of the genetic resources or traditional knowledge, and that the erroneous granting of unjustifiable patents is avoided.

Two approaches regarding the mutual supportiveness of the two Agreements were raised in the TRIPS Council. The first was to use national solutions, including legislation on ABS and contracts to deal with the problem, and this has been termed the national-based approach. The other is the disclosure approach which advocates a requirement at the international level to

disclose the origin or source of the genetic resources and/or traditional knowledge used in the invention. The first will be discussed in this section. The second has been simultaneously debated in other fora and will be discussed in Chapter 14.

12.9.1 The national based approach

Those advocating the national based approach¹¹⁰ take the view that national legislation could efficiently address the three issues noted above by way of permits, contractual obligations, visa systems and civil and/or criminal penalties for non-compliance. Most significantly these national systems would be outside the intellectual property system. Therefore the granted patent would not per se be affected.

A contract system to prevent unjustifiable patents has been justified on the basis that it would be sufficiently flexible so as to take account of the relative value attributable to the genetic resources and that attributable to the efforts of the inventor. It could also be appropriately tailored so as not to have unintended, negative consequences on the intellectual property system, but rather to provide for penalties against those few who might misappropriate genetic resources. Such contracts could clarify definitions of key terms at the outset so as to achieve clarity in regard to the rights and obligations of all parties, and could be used to effectively control the collection of resources and ensure sharing of benefits from their use. A contract based system could be adaptable to each country's legal system without undermining the economic benefits of a strong IP system. It could also be put in place immediately and would not require waiting for the outcome of the discussions in the TRIPS Council and other fora. Such a system could also help to implement Article 19 of the CBD with regard to the handling of biotechnology and the distribution of its benefits.¹¹¹

The national based approach advocated by developed countries indicates their preference that access to genetic resources and traditional knowledge be based on an ad hoc bilateral contract

¹¹⁰ The United States has advocated this approach most strongly in the discussions. – see IP/C/W/368/Rev.1 - TRIPS Council, The Relationship between the TRIPS Agreement and the Convention on Biological Diversity, Summary of Issues Raised and Points Made, 8 February 2006, 14-27, footnotes in this section citing the submitted documents.

¹¹¹ Ibid 14.

system rather than by a comprehensive international regime which would lay down over riding rules in this regard. This is essentially the status quo under Article 15 of the CBD. This gives rise to the same questions raised earlier, namely the parity of bargaining power between the parties to these contracts and the equity of the resulting contracts which are negotiated. The fact that such contracts are not necessarily enforceable across borders also limits their effectiveness.¹¹²

The subsequent discussion in the TRIPS Council addressed four issues in relation to national based approaches, namely, the transboundary use of genetic resources and traditional knowledge, the bargaining power of parties to the contract, transaction costs, and the effectiveness of remedies proposed.¹¹³

In regard to the transboundary use of genetic resources and traditional knowledge, developing countries argued that the national based approach, including contracts, may be helpful and also required under the CBD, but cannot be the only solution to erroneously granted patents. In view of the transboundary nature of the problem where the material is located in one country and the patent issued in the other, national measures would be insufficient to ensure transparency and would not deter those intent on acting in bad faith.¹¹⁴ Further, there is no obligation in international law for Members to legislate on PIC and ABS, particularly those not party to the CBD. It was also noted that a commitment to negotiate an international ABS regime was made at the World Summit on Sustainable Development (WSSD) at Johannesburg in 2002 and a national based approach may not be reconcilable with this.¹¹⁵ Developing countries also pointed out that if voluntary contracts are considered sufficient to ensure respect of countries/communities of origin of genetic resources and traditional knowledge, they should also be considered sufficient to ensure respect of the protection of intellectual property. Therefore it could also be countered that national patent laws are sufficient to protect IPRs, and international agreements such as TRIPS are not necessary.

¹¹² IP/C/W/443 - TRIPS Council, The Relationship Between The TRIPS Agreement And The Convention On Biological Diversity (CBD) And The Protection Of Traditional Knowledge, Technical Observations On Issues Raised In A Communication By The United States (IP/C/W/434) Submission from Brazil and India, 18 March 2005, 3.

¹¹³ IP/C/W/368/Rev.1, above n 110, 24.

¹¹⁴ Ibid 24-25.

¹¹⁵ Ibid 25; IP/C/M/48 – TRIPS Council, *Minutes of Meeting*, 14-15 June 2005, 15 September 2005, paragraph 55.

The responses to these concerns were made primarily by the United States.¹¹⁶ It observed that the reference to national laws does not imply that international norms are irrelevant or that the proposed solutions are not international in character. It cited the Bonn Guidelines and the work of the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) which may be helpful in achieving the shared objectives. It further stated that a national contract based system can be international in outlook and can include provisions to resolve transboundary enforcement or dispute issues. It reiterated that cases of misappropriation are the exception rather than the norm and a contractual system would in fact apply to the vast majority of those seeking access. Cases where a contract has not been concluded and access is in violation of national laws could be dealt with under criminal/civil national systems. The U.S. also argued that countries would promote and encourage PIC and ABS on mutually agreed terms without being a party to the CBD, and these countries have ensured that bioprospectors and researchers within their jurisdiction have been made aware of such systems in other countries.

In regard to bargaining power, developing countries protested that indigenous and local communities did not have the capacity to negotiate equitable terms and most owners of genetic resources were unaware of the benefits to be obtained from them. This unequal bargaining power could lead to unfair results since developed countries could force developing countries (or communities) to accept unfair contracts.¹¹⁷ Further, the lack of an obligation to enter into or enforce these contracts makes them difficult to enforce outside the country of origin. These arguments were countered by the U.S. which pointed out that Members may regulate the terms of agreements through national laws or rules and determine the terms of collection. The seeking of information by outsiders on knowledge, innovations and practices would help to educate communities in acquiring the expertise with which to market them, and also give them an opportunity to indicate that they do not want this knowledge shared with the larger community.

¹¹⁶ IP/C/W/368/Rev.1, above n 110, footnotes in paragraph 61.

¹¹⁷ An often cited example of a dubious benefit sharing arrangement is that of the patent issued by the U.S. Patent and Trademark Office to the United States Department of Health and Human Services on a virus found in the blood of a Hagahai tribesman of Papua New Guinea. The tribesman was infected with a virus which causes cancer in humans but had not contracted the disease and his DNA was therefore important for medical research. The researchers had in fact obtained permission from the tribe and had agreed that it would receive 50 percent of the patent royalties – Valentina Tejera, ‘Tripping over Property Rights: Is it Possible to Reconcile the Convention on Biological Diversity with Article 27 of the TRIPS Agreement?’ (1999) 33 *New England Law Review* 967.

This would also be an opportunity to educate such communities on trade secret laws in this regard.¹¹⁸

Developing countries also protested that a fragmented nation-by-nation system with no common denominator could not ensure transparency and predictability in access and benefit sharing, including prior informed consent. It could not regulate relationships between entities, persons, and activities in different countries and ensure transparency and predictability in the system. The transaction costs of doing so would also be too high. Further, such a system could not deal with the long term nature of research and development activities in regard to genetic resources.

In response it was said that such a system need not entail high transaction costs if implemented efficiently and need not become fragmented. There was also adequate flexibility in the system to address long term research and development issues.¹¹⁹

Finally it was argued that the civil and criminal remedies proposed for violations of conditions will not be an effective deterrent to prevent illegal use in third countries where the prospecting and use of the resources has taken place without the authorisation of the competent national authority. This was countered by the contention that violations were rare exceptions and could be dealt with by criminal and civil sanctions similar to those in areas of law such as environmental, health and safety and others in which governments have a regulatory interest.¹²⁰

12.9.2 Conclusion

The above discussions indicate that while developed countries have enforced a multilateral regime in regard to the protection of IPRs, it is to their advantage to maintain a bilateral one in regard to access and benefit sharing of genetic resources. In the absence of an internationally applicable regulatory framework, the latter system is intrinsically disadvantageous to developing countries and indigenous and local communities, due to the disparity in bargaining power between parties to such contracts. Negotiation of such contracts on an ad hoc basis could

¹¹⁸ IP/C/W/368/Rev.1, above n 110, paragraphs 63-64.

¹¹⁹ Ibid paragraphs 65-66.

¹²⁰ Ibid paragraphs 67-68.

potentially result in inequitable terms as far as these groups are concerned. Further, these contracts are not enforceable across borders, and here again developed countries have resisted measures to make them so. They have argued that in the event of abuse of the system or erroneously granted patents, remedies should be sought under civil and criminal law but should leave the patent intact. Under the circumstances the efficacy of a bilateral system of access and benefit sharing as far as the interests of developing countries are concerned is called into question and must be reviewed.

12.10 THE MULTILATERAL SYSTEM OF ACCESS AND BENEFIT SHARING UNDER THE FAO TREATY

The multilateral system of “facilitated access” to PGRFA under the FAO Treaty was brought about by the recognition of their special nature.¹²¹ On the one hand the strong interdependence of all countries with regard to PGRFA means that their free flow is essential for global food security and on the other, the diffusion of major agricultural crops makes it difficult to trace their country of origin.¹²² Therefore a bilateral system requiring case by case negotiations in regard to each crop, particularly where the country or community of origin has to be traced, is not the most efficient method of ensuring free access to essential germplasm. A multilateral system in which both a central point of access and a common contractual process are available, would obviate the need to do so. It would also eliminate the transaction costs involved in negotiating ad hoc agreements.¹²³ A second purpose of a multilateral system is to keep designated germplasm in the public domain and prevent its propertisation.¹²⁴ To this end Contracting Parties have essentially agreed to place certain PGRFA in a common pool with open access to all. However, ensuring

¹²¹ The term facilitated access has been explained as the role of the Treaty in making easy or routine access or expediting access to the PGRFA with the system – Gerald Moore and Witold Tymowski, *Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture* (2005), 87.

¹²² WIPO/GRTKF/IC/1/3 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, First Session, April 30 to May 3, 2001 *Matters Concerning Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore – An Overview* 16 March 2001, page 16.

¹²³ Moore and Tymowski, above n 121, 79; H David Cooper, ‘The International Treaty on Plant Genetic Resources for Food and Agriculture’ (2002) 11(1) *Review of European Community and International Environmental Law* 1.

¹²⁴ See Part IV of the Treaty. It has been argued that in this context the term “in the public domain” can be interpreted to mean that which is not protected by intellectual property rights – Moore and Tymowski, above n 121, 84.

that the objectives of such a system as implemented by the FAO have, in fact, been achieved remains a challenge.

12.10.1 Access under the multilateral system (MLS)

The multilateral system aims to facilitate open access to the PGRFA within its scope and to prevent the imposition of IPRs over them. Article 12 of the FAO Treaty sets out the conditions under which such access will be granted. A disputed provision in regard to IPRs is contained in Article 12.3 (d) which reads:

Recipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System.

The controversy surrounds the phrase “in the form received.” While the Material which is accessed cannot itself be patented, it is a debatable question as to whether a modified version of it or, for example, a gene isolated from it, can be.¹²⁵ It would be a question of fact as to whether there is sufficient modification of the original accession and sufficient distance between it and the patented version so as take it beyond “the form received” from the MLS. This question would be analogous to the principle of “essential derivation” under UPOV.

Secondly, only IPRs which limit *facilitated access* to the PGRFA in the MLS are prohibited. Here again, the fact that Materials in the MLS can be accessed, improved upon in however slight a form, commercialized, and free access restricted by IPRs, negates the fundamental premise of the Treaty that certain crops essential for food security must (presumably) in all their forms be freely available, including for further research and development.

It has been noted that this provision was essentially an agreement to disagree. Helfer notes that while developing countries wanted the phrase “or their genetic parts or components” retained and the phrase “in the form” deleted, the U.S wanted the first deleted and the second retained. A compromise saw both clauses included in the final draft.¹²⁶ Countries with strong interests in

¹²⁵ An example of the latter is the gene isolated from the wild rice in Mali, and it must also be noted that UC Davis acquired the variety from the International Rice Research Institute in the Philippines.

¹²⁶ Laurence R Helfer, *Intellectual property rights in plant varieties: International legal regimes and policy options for national governments* FAO Legislative Study 85 (2004) 89

intellectual property argued that Material subsequently developed from the original Material should not be precluded from patentability. Developing countries opposing IPRs over plant varieties argued for a total prohibition on patenting of such Materials. The ambiguities of this provision have yet to be resolved.

12.10.2 The coverage of the multilateral system (MLS)

The MLS covers PGRFA listed in Annex 1 of the FAO Treaty established according to criteria of food security and interdependence.¹²⁷ However, it has been noted that the inclusion of the crops was negotiated less on this basis than that of the interests of Parties, and many crops important for food security have been excluded.¹²⁸ Further, the PGRFA included in the Annex are only those under the management and control of the Contracting Parties and in the public domain,¹²⁹ and which are held by the IARCs.

Therefore Material held by private entities would come within the MLS only if they voluntarily place them within it. However, while these entities have no obligation to place their Material within the MLS, they are not precluded from accessing the Material in it. Article 11.3 states that Contracting Parties will take appropriate measures to encourage natural and legal persons within their jurisdiction who hold PGRFA listed in Annex 1 to place it within the MLS. The Governing Body is required to assess progress in this regard within two years of the entry into force of the Treaty, and to decide whether access by those entities that have not done so should continue to be facilitated. At the Second Session of the Governing Body in 2007 it was noted that, since the First Session, no natural or legal persons have placed their collections in the MLS, although some inquiries have been made in this regard. The Governing Body had, at its First Session, decided to

<<ftp://ftp.fao.org/docrep/fao/007/y5714e/y5714e00.pdf>> at 25th February 2008. See also South Centre and Centre for International Environmental Law, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral, and Bilateral Fora* (2004) 5
<http://www.ciel.org/Publications/IP_Update_3Q04.pdf> at 25th February 2008.

¹²⁷ *International Treaty on Plant Genetic Resources for Food and Agriculture*, adopted at the 31st Session of the FAO Conference on 3 November 2001 available at <http://www.fao.org/ag/cgrfa/itpgr.htm> and the website of the Treaty at <http://www.planttreaty.org/>. (hereinafter FAO Treaty), Article 11.1.

¹²⁸ Moore and Tymowski, above n 121, 15.

¹²⁹ FAO Treaty - Article 11.2

defer assessment under Article 11.4 until its Third Session. Therefore to date there is no indication as to how this situation would be addressed.¹³⁰

12.10.3 Benefit sharing under the MLS

According to Article 13.1, the Contracting Parties recognize that facilitated access to the PGRFA in itself constitutes a major benefit and agree that benefits accruing from the system should be shared fairly and equitably. The benefits shall be shared through the following mechanisms: the exchange of information, access to and transfer of technology, capacity-building, and the sharing of the benefits arising from commercialization. These mechanisms have been further fleshed out in the following subsections. Provisions for implementing the last mechanism will be incorporated into the Standard Material Transfer Agreement.¹³¹

12.10.4 The Standard Material Transfer Agreement

The Standard Material Transfer Agreement (SMTA) was adopted by Resolution 2/2006 at the First Session of the FAO Treaty Governing Body in June 2006.¹³² The provisions of the SMTA reflect the provisions of the Treaty¹³³ and the ABS aspects are contained in Articles 5 and 6.¹³⁴

12.10.4.1 The SMTA access provisions

The access provisions generally relate to the provider and are contained in Article 5. The Provider is required to transfer the Material expeditiously and free of charge or at a minimal cost. All

¹³⁰ IT/GB-2/07/11 - International Treaty On Plant Genetic Resources For Food And Agriculture, Second Session Of The Governing Body, 29 October – 2 November 2007, *Progress In The Inclusion Of Plant Genetic Resources For Food And Agriculture In The Multilateral System*.

¹³¹ FAO Treaty – Article 13.2(d).

¹³² IT/GB-1/06/6 - International Treaty on Plant Genetic Resources for Food and Agriculture, First Session of the Governing Body, 12-16 June 2006 - *Draft Standard Material Transfer Agreement*, Preamble.

¹³³ The Preamble to the SMTA refers in particular to Articles 4, 11, 12.4 and 12.5 of the FAO Treaty.

¹³⁴ For a discussion of the negotiation and drafting of the SMTA see Carlos M Correa, ‘Considerations on the Standard Material Transfer Agreement under the FAO Treaty on Plant Genetic Resources for Food and Agriculture’ (2006) 9(2) *Journal of World Intellectual Property* 137.

passport data and, subject to applicable law, all other associated and non-confidential descriptive information must also be provided.

Subclauses (c) and (d) restrict the free flow of Material in certain circumstances. Article 5 (c) states that:

Access to Plant Genetic Resources for Food and Agriculture under Development, including material being developed by farmers, shall be at the discretion of its developer, during the period of its development.

The definition of “PGRFA under Development” states that it is material

[d]erived from the Material, and hence distinct from it, that is not yet ready for commercialization and which the developer intends to further develop or to transfer to another person or entity for further development. The period of development for the Plant Genetic Resources for Food and Agriculture under Development shall be deemed to have ceased when those resources are commercialized as a Product.

This definition is applicable to material which is, in fact, intended to be developed and commercialized by private plant breeders who have the discretion whether to provide access to it or not. This discretion is operative until the period of development ends when the material is commercialised.

However, Article 5(c) and the definition read together would be more difficult to apply to material under development by farmers. Farmers are more likely to informally place developed varieties in the public domain rather than to commercialise them, thereby making it difficult to define the end of the development period under the SMTA. According to both the Treaty and the SMTA, after being placed in the public domain such material would be freely available for others to access. It appears therefore that the SMTA has been formulated on the basis of the way in which private plant breeders rather than traditional farmers operate, and that the reference to farmers in Article 5 (c) is merely a token gesture with little significance.¹³⁵

Article 5 (d) further protects commercial plant breeders stating that

[a]ccess to Plant Genetic Resources for Food and Agriculture protected by intellectual and other property rights shall be consistent with relevant international agreements, and with relevant national laws.

¹³⁵ It is the only occurrence of the word in the SMTA.

Therefore while plant breeders have free access to the PGRFA in the MLS, access to their own varieties protected by IPRs is restricted.

12.10.4.2 Conditions of access

Conditions of access are included in Article 6 of the SMTA relating to the rights and obligations of the Recipient. The Recipient undertakes that the Material is used or conserved only for the purpose of research, breeding, and training for food and agriculture. Chemical, pharmaceutical and other non food related industrial purposes are excluded.

Article 6.2 of the SMTA is almost identical to Article 12.3 (d) of the FAO Treaty and its critique will not be repeated. Under Articles 6.4 and 6.5 the Recipient may re-transfer the Material or a PGRFA under development to a Subsequent Recipient under the terms of the SMTA. Beyond informing the Governing Body of such re-transfer, the Recipient has no further obligation in this regard. It is unclear as to how compliance with the terms of the SMTA will be enforced and who has jurisdiction to do so. These Articles also appear to be beneficial to private entities in accessing, further developing, and commercializing Material in the MLS with little regulation under the Treaty or the SMTA.

12.10.4.3 The SMTA benefit sharing provisions

Benefit sharing is an obligation of the Recipient and comes within Article 6. Where the Recipient commercialises a product that is a PGRFA and which incorporates Material from the MLS and that product is not available without restriction to others for further research and breeding, he/she is required to pay a fixed percentage of the sales of the product into the mechanism established by the Governing Body.¹³⁶ Where such product is available the Recipient is encouraged to make voluntary payments.¹³⁷

¹³⁶ Article 6.7. Annex 2 of the SMTA sets out the amount payable and the terms under which payment should be made. Unavailability would generally occur when the movement of the seeds is restricted either by patents or by technological processes such as GURTs - Claudio Chiarolla, 'Plant Patenting, Benefit Sharing and the Law Applicable to the Food and Agriculture Organisation Standard Material Transfer Agreement' (2008) 11 (1) *Journal of World Intellectual Property* 1, 5.

¹³⁷ Article 6.8.

The benefit sharing provisions of the SMTA are half hearted. While Articles 6.7 and 6.8 appear to promote some degree of benefit sharing, it must be noted that payment is due only when the product is *not available for further research and breeding*. Therefore the SMTA appears to be premised on the tacit acceptance that Material in the MLS will, in fact, be further developed and commercialized and intellectual property protection obtained for the end product. However, in order to maintain food security and to perpetuate the process of developing new plant varieties, it is essential that the varieties should remain in the public domain at all stages of improvement and development. By permitting the proprietisation of plant varieties which have been further developed from Material in the MLS, the collections in the public domain would potentially remain static at a particular stage of development.

12.10.4.4 Implementation of the SMTA

While there is a dispute settlement mechanism in the SMTA, it is extremely complex both in relation to the applicable law and the procedures involved, and has yet to be tested.¹³⁸ However, criticisms have been leveled at the implementation of the system aside from disputes which may arise. It has been argued that it is fundamentally unenforceable and several key issues have been cited in this regard. These include, that no signature indicating acceptance of the terms of the MTA is required; the Centres officially renounce responsibility to monitor compliance with the Agreement; Centres have been caught distributing designated germplasm without an MTA; and designated material distributed from the Centres has been directly appropriated under intellectual property regimes.¹³⁹

It has also been contended that the “no IPR” policy is unenforceable as it only applies to the germplasm accessions in the form in which they are received from the gene banks. It does not prevent components of the germplasm such as individual genes or derivatives, or modified germplasm from being subject to intellectual property rights.¹⁴⁰ Under the circumstances the

¹³⁸ SMTA – Articles 7 and 8. See Claudio Chiarolla, above note 115, for a detailed analysis of this mechanism.

¹³⁹ GRAIN, *Biopiracy by another name? A critique of the FAO-CGIAR trusteeship system*, Seedling October 2002, <<http://www.grain.org/bio-ipr/?id=52>> at 8th May 2008. For examples of patent protection being granted to plant varieties acquired from CGIAR Centres see Patricia Lucia Cantuaria Marin, *Providing Protection for Plant Genetic Resources – Patents, Sui Generis Systems and Biopartnerships* (2002), 40.

CGIAR gene banks remain a resource for private interests to exert property rights over what is intended to be a global public good.

12.10.5 Conclusion

The Treaty is still in an emergent stage and its workability has yet to be determined. However, concerns have already been raised as to whether its objectives are achievable or whether it has become “the greatest case of institutional biopiracy ever seen.”¹⁴¹ Certain justifications for this accusation can be seen from the following points.

The fact that private entities both natural and legal (including corporate) are permitted to access the Materials within the MLS while keeping their own Material out of it constitutes the fundamental flaw in its formulation. It is noteworthy that while the Governing Body is required by the Treaty to assess this situation within a given time frame, it has at present deferred this process to its Third Session.

The inequity of the situation above is further exacerbated by the fact that not only are corporate entities permitted to access Material in the public domain, they are also permitted to claim intellectual property protection over them, so long as it is not “in the form received” from the collection. As noted above, whether the nature of the subsequent product is so far removed from that of the original acquisition so as to conform to this condition is a question of fact, and the Treaty does not contain a mechanism to adjudicate on this and to enforce its decision in the multilateral sphere. Another cause for concern is the fact that the person or entity originally accessing the Material may transfer it, or a PGRFA under Development, to a Subsequent Recipient. While Article 6.4 provides that this must also be done under the terms of the SMTA and the Governing Body notified, the Recipient has no further obligations to ensure that the Subsequent Recipient in fact complies with these terms. Here again there is no indication as to

¹⁴⁰ Modification however is open to interpretation and it has also been contended that slight modifications would probably be insufficient for the purpose of claiming IPRs over such germplasm. See GRAIN, *Interview with Carlos Correa*, Seedling, January 2003, <<http://www.grain.org/seedling/?id=223>> at 18th April 2008.

¹⁴¹ GRAIN, *Farmers call for suspension of Seed Treaty* <<http://grain.org/bio-ipr/?id=531>> at 3rd February 2008.

who would have jurisdiction to do so. While there is a dispute settlement mechanism, again its viability has yet to be tested.

It can be argued therefore that the conceptualization of the MLS as maintaining critical germplasm in the public domain has been negated by its legitimisation of intellectual property rights on “improved” material. Plant germplasm is in a constant process of development and improvement and must be maintained as international public goods at all stages of this process. The situation is further compounded by the fact that it is precisely the plants that are most critical to global food security that have been included in the MLS. These are also the plants that will for that reason have the most commercial value. Therefore facilitating their accession by private entities will result in global agriculture being possibly controlled by them.

There is fundamental misconception in conceptualizing benefit sharing of PGRFA which is critical for global food security in terms of permitting monopoly control over them in the first place, and then claiming a minimal share of the profits derived in order to benefit humanity as a whole. It is particularly ironic that the farmers who have been singled out to receive these benefits are the category which has contributed immeasurably to develop this vast pool of resources.

On a more positive note it could be said that the MLS is the most promising of the strategies to emerge from international fora in order to enable the free flow of germplasm which will ultimately benefit developing countries. The system is flawed and potentially open to abuse and would possibly lead to disputes. Nevertheless, given the strong international environment which is increasingly facilitating the privatization of PGRFA, it is important that significant *ex situ* collections of PGRFA were voluntarily placed in the public domain, and that the FAO Treaty and the multilateral system of access and benefit sharing that it has put in place was successfully negotiated. This is an important starting point to ensure free access to these resources and to counter measures to proprietise them.

CHAPTER 13

POSITIVE MECHANISMS TO PROTECT RIGHTS OVER BIOLOGICAL RESOURCES AND TRADITIONAL KNOWLEDGE – *SUI GENERIS* LEGISLATION

13.1 INTRODUCTION

Article 27.3(b) of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement) states that members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system, or by any combination thereof. The Latin term “*sui generis*” means “unique” or “of its own kind.”¹ A *sui generis* system in this regard would be one tailored to the specific context, situation and needs of each country as opposed to one that would be applicable globally. “In this case, it means countries can make their own rules to protect new plant varieties with some form of IPR [intellectual property right] provided that such protection is effective.”²

The debate on this requirement has taken place in the TRIPS Council in the context of the review of Article 27.3(b). While *sui generis* legislation is contained in the TRIPS Agreement in the context of plant variety protection, its application has been expanded to cover traditional knowledge and expressions of folklore. Developing countries have taken up issues of *sui generis* legislation for the protection of traditional knowledge in relation to plants and their uses in the TRIPS Council, and also in the fora of the Convention on Biological Diversity (CBD) in the context of Article 8 (j) of the CBD. In the World Intellectual Property Organisation (WIPO), the topic has been discussed in the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC).

¹ “*sui generis adj.*” *The Concise Oxford English Dictionary*, Eleventh edition revised . Ed. Catherine Soanes and Angus Stevenson. Oxford University Press, 2006. *Oxford Reference Online*. Oxford University Press. University of Waikato. 3 April 2008
<<http://www.oxfordreference.com/views/ENTRY.html?subview=Main&entry=t23.e56203>>

² Geoff Tansey, *Trade, Intellectual Property, Food and Biodiversity - Key issues and options for the 1999 review of Article 27.3(b) of the TRIPS Agreement* (1999) 8
<<http://www.quno.org/geneva/pdf/economic/Discussion/Trade-IP-Food-Biodiversity-English.pdf>> at 4th April 2004.

There has been considerable debate in international fora as to the nature of *sui generis* measures and what elements it should comprise. These elements would differ in regard to the protection of plants on the one hand, and traditional knowledge on the other. One of the primary issues is to what extent *sui generis* legislation should be based on intellectual property systems in regard to protection of both plant varieties and traditional knowledge. The second issue which has been discussed in the TRIPS Council is what constitutes “effective protection” of plant varieties in terms of the proviso to Article 27.3(b). Here again, the developed and developing countries have taken diametrically opposing views.

Concurrently with the discussions taking place in international fora, several countries have unilaterally enacted legislation to protect both plants and traditional knowledge, tailored to suit their particular situations and needs. There have also been regional initiatives in this regard, and to date five regions have developed or are developing regional agreements, frameworks, or model laws on *sui generis* systems which are based on customary laws for the protection of traditional knowledge.³

Although *sui generis* systems to protect plant varieties on the one hand and traditional knowledge on the other are necessarily connected, the strategies to do so will differ. Therefore they will be discussed separately.

13.2 OPTIONS UNDER TRIPS FOR THE PROTECTION OF PLANT VARIETIES

Developing countries have three options in meeting their obligations under TRIPS to protect plant varieties, namely, patents, legislation based on the International Convention for the Protection of New Varieties of Plants (UPOV Convention), or a different form of *sui generis* legislation.

There are divergent views as to whether a *sui generis* system to protect plant varieties should be based on a system of intellectual property rights, i.e. either patents or plant breeders’ rights, more specifically UPOV. The question which arises is whether such a system will be advantageous to developing countries and their farming and/or local communities. On the one hand it can be

³ UNEP/CBD/WG-ABS/5/3 - Ad Hoc Open-Ended Working Group On Access And Benefit-Sharing, 8-12 October 2007, *Analysis Of Gaps In Existing National, Regional And International Legal And Other Instruments Relating To Access And Benefit-Sharing*, 13 September 2007, paragraph 120.

argued that there appears to be an inherent contradiction in using an IPR based approach to protect plant varieties and traditional knowledge from being subject to IPRs. On the other, it can be also argued that the most effective way in which to afford this protection is, in fact, to use such an approach. The pros and cons of whether to base *sui generis* systems on IPRs have been raised in the TRIPS Council.

13.2.1. Plant variety protection based on patents

In the TRIPS Council the U.S. has taken the position that in order to be effective a *sui generis* system “should possess the same basic characteristics as those that generally apply in relation to the protection of property rights, whether real, tangible or intangible.”⁴ This would include intellectual property rights, and more specifically patents. The EU on the other hand has taken a more flexible approach, stating that Members could design a protection regime that is appropriate to their specific national situation. They can take account of, for instance, overall agricultural development policy objectives or the need to protect the rights of small or subsistence farmers in doing so.⁵

Not surprisingly, developing countries have insisted on the flexibility to design their own systems in accordance with their specific needs and situations. For example the African Group has stated that

Members have the right and the freedom to determine and adopt appropriate regimes in satisfying the requirement to protect plant varieties by effective *sui generis* systems. ... The appropriate and beneficial approach is to have systems of protection which can address the local realities and needs.⁶

⁴ IP/C/W/369/Rev.1 - TRIPS Council, *Review of the Provisions of Article 27.3(B) Summary of Issues Raised and Points Made*, 9 March 2006, paragraph 51.

⁵ IP/C/W/383 - TRIPS Council, *Communication from the European Communities and their Member States, Review of Article 27.3(b) of the TRIPS Agreement, and the Relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the Protection of Traditional Knowledge and Folklore, “A Concept Paper,”* 17 October 2002, paragraph 73.

⁶ IP/C/W/404 - TRIPS Council, *Taking Forward the Review of Article 27.3(B) of the TRIPS Agreement, Joint Communication from the African Group*, 26 June 2003, page 2.

13.2.2 *Plant variety protection based on UPOV or plant breeders' rights*

At the outset it must be noted that there is no provision in the TRIPS Agreement which suggests that UPOV is the model of choice for a *sui generis* system of plant variety protection. However, developed countries are strongly in favour of a UPOV style system being adopted in this regard as an alternative to patent protection.⁷ The reasons given for this position are that the UPOV system is the most favourable for encouraging the development of new plant varieties in all WTO Member countries, and the uniformity provided by this system would facilitate trade in such plants. Further, a growing number of countries have signed onto UPOV and the number of protected varieties under it is increasing. In view of the difficulties associated with creating and administering *sui generis* systems to protect plant varieties, the most efficient way to implement Article 27.3(b) would be to rely on an already existing and harmonized system which could possibly be adapted to meet national needs. In regard to the concerns expressed about its impact on farmers' and plant breeders' rights, especially in developing countries, it was argued that the UPOV system was flexible enough to allow countries to address these issues by way of, for example, the farmers' privilege and the breeders' exemption.⁸

Developing countries have countered that firstly, Article 27.3(b) does not bind Members to adopt UPOV as a model, and Members are free to choose other models such as those based on the International Undertaking on Plant Genetic Resources (IUPGR) or the CBD. They have also argued that UPOV is designed to protect plant breeders in developed countries rather than users in developing countries.⁹

The merits of the two UPOV conventions were also discussed in the TRIPS Council.¹⁰ While UPOV 1978 is still in force, most countries are in the process of ratifying UPOV 1991. Unsurprisingly, developed countries favour the latter stating that it achieves the proper balance of rights and obligations which work to the benefit of all countries, and provides the most appropriate system and level of protection. They have also made the point that UPOV 1991 does

⁷ Bilateral treaties also require developing countries to accede to one of the UPOV Conventions – Chapter 11 above.

⁸ IP/C/W/369/Rev.1, above n 4, paragraph 61. See also the position of Switzerland in IP/C/M/30 - TRIPS Council, *Minutes of Meeting from 2 to 5 April 2001*, 1 June 2001, paragraph 166.

⁹ IP/C/W/369/Rev.1, above n 4, paragraph 62.

¹⁰ *Ibid* paragraph 64.

not limit the plant species eligible for protection and those that would not have been protected under UPOV 1978 would now be eligible. They further stated that most Members who responded to the questionnaire regarding the implementation of Article 27.3(b) have adopted UPOV 1991 and its membership is increasing.

Some developing countries have stated that many countries are resisting signing UPOV 1991 in view of its limited flexibility compared with the 1978 Act.¹¹ Their objections are primarily based on the restrictions in UPOV 1991 of farmers' rights. Developed countries' response is that the farmers' exemption can be justified under either Article 27.3(b) or Article 30¹² of the TRIPS Agreement and there is no need to change its wording to accommodate this.¹³

13.3 SUI GENERIS SYSTEMS OF PROTECTION OF PLANT VARIETIES

13.3.1 What is an "effective" system of sui generis protection?

While Article 27.3(b) requires Member countries to devise and implement an "effective" *sui generis* system of plant variety protection, the TRIPS Agreement does not define this term. Two views have been expressed in the Council in regard to this question. These are that (i) there are

¹¹ See for example IP/C/W/228 - TRIPS Council, *Review of Article 27.3(b) Communication from Brazil*, 24 November 2000, page 3.

¹² Article 30 states: "Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties."

¹³ IP/C/W/369/Rev.1, above n 4, paragraph 65-66. Commentators have noted that for example, in Asia the seed industry is aggressively pushing for UPOV 1991 style protection for plants and Asia is fast conforming to this type of legislation. While the need to conform to TRIPS is one reason for doing so, a more fundamental reason is the pressure from industry to privatise resources and knowledge. The study notes that while Asian countries have taken the *sui generis* option seriously and attempted to protect their farming communities, the overriding trend is towards harmonization rather than *sui generis* systems tailored to specific situations. This process has also been exacerbated by the trend in bilateral treaties, many of which require the signatory country concerned to adhere to UPOV 1991. A similar process is taking place in Africa – Devlin Kuyek, *Intellectual property rights: Ultimate Control of Agricultural R&D in Asia* (2001) 6 <http://www.grain.org/briefings_files/asiaipr.pdf> at 25th February 2008; Devlin Kuyek, *Intellectual Property Rights in African Agriculture - Implications for Small Farmers* (2002) <http://www.grain.org/briefings_files/africa-ipr-2002-en.pdf> at 4th April 2008. It has also been noted that the UPOV Secretariat is also strongly advocating the UPOV Convention as the appropriate form of *sui generis* protection – Biswajit Dhar, *Sui Generis Systems for Plant Variety Protection - Options under TRIPS* (2002) Quaker United Nations Office, Chapter 2 <<http://www.agradepolicy.org/output/resource/agiprs4.pdf>> at 4th April 2008

specific criteria available to judge the effectiveness of a *sui generis* system; and (ii) the TRIPS Agreement does not specify criteria by which to judge whether a *sui generis* system is effective, and therefore this should be left to Members to decide.¹⁴

Since developing countries have, in general, not been amenable to the suggestion that UPOV constitutes an “effective” form of *sui generis* protection, many have taken initiatives to formulate their own systems in accordance with their own specific needs. However, in this debate too, developed countries have specified what they believe should be the minimum required criteria of such a system.¹⁵ Accordingly, it must have provision for a legally defined and enforceable right over plants, it must include the principles of national treatment and most favoured nation treatment, and it must provide for the effective enforcement of rights under the TRIPS Agreement. These provisions would essentially result in bringing *sui generis* systems in line with TRIPS. Further, specifying such criteria at the outset also imposes constraints on countries formulating them. It appears that developed countries are interpreting an “effective” system to mean one that is TRIPS compliant.¹⁶ The debate on the topic as discussed below illustrates this. It must also be noted that the final arbiter of what constitutes an effective system would be the dispute resolution mechanism of TRIPS.

13.3.2 *Alternate sui generis systems of plant protection*

As noted above, Member countries of TRIPS have reserved their right to formulate their own form of *sui generis* protection of plant varieties rather than adopting the UPOV model. In regard to what such a system should comprise, the UK IPR Commission has for example, emphasised such aspects as the rights of farmers to save and plant back seed, including the possibility of

¹⁴ IP/C/W/369/Rev.1, above n 4, paragraph 50.

¹⁵ IP/C/W/383, above n 5, paragraph 77; IP/C/W/209 - TRIPS Council, *Review of the Provisions of Article 27.3(b) Further Views of the United States, Communication from the United States*, 3 October 2000, Section 2. See also IP/C/W/122 - TRIPS Council, *Review of the Provisions of Article 27.3(b), Illustrative List of Questions*, 22 December 1998 and IP/C/M/29 - TRIPS Council, *Minutes of Meeting from 27 to 30 November and 6 December 2000*, 6 March 2001, para 162.

¹⁶ Dwijen Rangnekar, *Access to Genetic Resources, Gene-based Inventions and Agriculture* Commission on Intellectual Property Rights Study Paper 3a (2002) 33 <http://www.iprcommission.org/papers/pdfs/study_papers/sp3a_rangnekar_study.pdf> at 4th April 2008; Tansey, above n 2, 8.

informal sale and exchange.¹⁷ The International Plant Genetic Resources Institute (IPGRI) has also produced a checklist for developing *sui generis* systems, noting that a system of IPRs suitable for industrialized export oriented agriculture would not necessarily be suitable for one based on subsistence farming. It has also emphasized that appropriate mechanisms should be used to prevent monopolist effects of IPRs, especially patents.¹⁸ The various aspects which must be addressed in such a system, and the differing views of developed and developing countries expressed in the TRIPS Council, are discussed below.¹⁹

13.3.2.1 The nature of the protectable subject matter

Developed countries have stated that the protectable subject matter (i.e. plant varieties) must be clearly defined, including the characteristics or qualities it must possess to qualify for protection. The U.S. view is that it is in Members' interests to include as many varieties as possible since this will encourage investment in developing new plant varieties from among the widest possible range of genera and species. Therefore protection should apply to plant varieties throughout the plant kingdom.

This position has been countered on the basis that Article 27.3(b) does not specify which plant varieties should be protected and even UPOV does not require protection of the entire plant kingdom.²⁰ It has also been suggested that in the absence of a definition of a plant variety in TRIPS, developing countries are free to produce their own definition which could cover both "modern" varieties as well as landraces. While the modern varieties could be protected under a UPOV like legislation on the basis of novelty, distinctness, uniformity and stability, farmers' varieties could be protected under more flexible criteria such as sufficient identification and distinctness.²¹

¹⁷ Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (2002) 66 <http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf> at 25th February 2008.

¹⁸ Tansey, above n 2, 10-11.

¹⁹ For a discussion on the possible aspects of a *sui generis* system see Philippe Cullet, 'Revision of the TRIPS Agreement concerning the Protection of Plant Varieties: Lessons from India concerning the Development of a *Sui generis* System' (1999) 2(4) *Journal of World Intellectual Property* 617, 652.

²⁰ IP/C/W/369/Rev.1, above n 4, paragraph 52.

13.3.2.2 The criteria to qualify for protection

The conditions for granting protection must be clearly defined. The EU has stated that in the context of plant varieties, novelty is an essential condition for protection. The U.S. has also argued that to qualify for protection the plant must meet the requirements of novelty, distinctiveness, uniformity and stability. Novelty is a criterion of patents and establishes a high threshold which the product in question must meet to qualify for protection. Farmers' varieties would not meet this criterion. Developing countries have counter argued that these requirements go beyond the determinants contained in existing models, and for example under UPOV, novelty is not strictly speaking, a criterion.²² India has pointed out that Members might wish to protect farmer's varieties under their *sui generis* laws and while such varieties may not be new they may be the result of further improvement. Such protection might, on the other hand, be based on other *sui generis* systems like the IUPGR (now the FAO Treaty) or the CBD.²³

While patent type criteria of protection would not be in the interests of developing countries, applying PVP standards as under UPOV may also be unsatisfactory. PVP laws have lower thresholds than the standards required for patents and there is no requirement of non-obviousness (i.e. inventive step or novelty) or utility. As a result such laws may allow breeders to protect varieties with very similar characteristics and lacking genuine improvement. This too could prove detrimental to farmers' varieties as negligible improvements could be made to them and protection obtained.²⁴ It appears therefore that either the presence or absence of novelty as a criterion for protection would be problematic.

It has been suggested that developing countries should raise the threshold so that only varieties with significant innovations with particular characteristics are accorded protection. These characteristics would be those that are considered socially beneficial, for example yield increases

²¹ Rangnekar, above n 16, 29; Michael Blakeney, *Access to Genetic Resources, Gene-based Inventions and Agriculture* (2002) Commission on Intellectual Property Rights, Study Paper 3b, 11 <http://www.iprcommission.org/papers/pdfs/study_papers/sp3b_blakeney_study.pdf> at 4th April 2008.

²² IP/C/W/369/Rev.1, above n 4, paragraph 53.

²³ IP/C/M/29, above n 15, paragraph 162.

²⁴ Commission on Intellectual Property Rights, above n 17, 61.

or traits of nutritional value. Therefore the criteria of distinctness could be strengthened and other criteria formulated to ensure the social and economic utility of the varieties.²⁵

13.3.2.3 The nature of the protection

There was extensive discussion as to the nature and duration of the rights as well as the exceptions to them. The EU argued that the right holder should at least be able to prevent third parties from carrying out certain acts in relation to the subject matter over a specified period of time. The law should also provide for national treatment and most favoured nation treatment.²⁶ The U.S. stated that the system must establish the period during which the rights are in force and the circumstances, if any, in which they may expire early or be extended, the former ideally being at least 20 years from the date the rights are granted, with some varieties being granted a period of 25 years. The U.S. was prepared to accept that certain limitations on these rights may be expressly provided for. These include non-commercial use, experimental use and use of a variety for the purpose of breeding other varieties. It would also accept a provision which permits farmers to save seed from the harvest of a protected variety to re-seed their own holdings for the following year.²⁷

African countries have responded that, regardless of what *sui generis* systems are adopted certain exceptions must be included as a matter of public policy to address, inter alia, issues of “food security, health, rural development and equity for local communities whose traditional knowledge systems have produced staple varieties, including varieties that have medicinal and biodiversity value.”²⁸ These exceptions include the non-commercial use of plant varieties and the farmers’ system of seed saving, exchange and selling of seeds. They have also taken the position that any *sui generis* system to protect plant varieties must also be consistent with the provisions of the CBD and the FAO Treaty.²⁹

²⁵ Ibid 61.

²⁶ IP/C/W/383, above n 5, paragraph 77.

²⁷ IP/C/W/209, above n 15, page 3. See also the EU position in IP/C/W/383, above n 5, paragraph 77 and IP/C/W/369/Rev.1, above n 4, paragraph 55 – 57.

²⁸ IP/C/W/206 - TRIPS Council, *Review of the Provisions of Article 27.3(b) Communication from Mauritius on behalf of the African Group 20 September 2000*, 2.

²⁹ IP/C/W/404, above n 6, page 3.

13.3.2.4 Who can obtain property rights over the subject matter?

An effective law must also establish who is entitled to the property rights. The U.S. has stated that such a law should ensure that protection for plant varieties is granted only to breeders or others specifically entitled either through contract or the law of succession. However, this would preclude the recognition of farmers' rights that have arisen through tradition rather than through contract or succession. Developed countries have responded that protecting farmers' rights would not be precluded but would not be an obligation under the TRIPS Agreement.³⁰ The EU has however, accepted that the farmers' exemption can be justified under Article 27.3(b) of TRIPS depending on the scope of the exemption.³¹

13.3.2.5 Farmers' rights in a *sui generis* system

While the inclusion of a farmers' and breeders' exemption in a patent or PVP system of plant protection is useful, a more positive *sui generis* system to ensure farmers' rights would be more effective. Certain issues would have to be considered in formulating such a system. One based on IPRs would not be effective in protecting farmers' varieties. Firstly, they would not meet the criterion of protection required under IPRs, particularly the requirement that a new variety is distinct from "varieties of common knowledge."³² Secondly, varieties developed by farmers cannot generally be attributed to an identifiable individual or individuals, thus making it more difficult to assign the rights. As Blakeney notes, the *sui generis* systems which are most relevant to developing countries are those which protect farmers' varieties and landraces, combining one of the versions of UPOV with the access principles of the CBD.³³ He cites the OAU Model Law as one such law which is based on UPOV 1991, but notes that most national systems prefer legislation based on UPOV 1978.³⁴

³⁰ IP/C/W/369/Rev.1, above n 4, paragraph 54.

³¹ IP/C/W/383, above n 5, paragraph 86.

³² Blakeney, above n 21, 3.

³³ Ibid 3-4.

³⁴ Ibid 36. See African Model Law, 2000. Examples of the latter are the Andean Community's Common System on Access to Genetic Resources, 1996, Biodiversity Law of Costa Rica, 1998, Community Intellectual Property Rights Act of India, 1999 and the Seeds and Plant Varieties Act of Kenya, 1975.

13.4 CONCLUSION

The TRIPS Agreement states that Member States may provide for plant variety protection by way of patents, or an effective *sui generis* system, or any combination thereof. On the face of it, this gives developing countries the opportunity to devise unique systems tailored to their specific needs for this purpose. The question that arises is whether these countries can, and will, make optimum use of this flexibility.

The debate in the TRIPS Council indicates that developed countries are attempting to negate this flexibility by insisting that a *sui generis* system must necessarily be based on a form of intellectual property rights, which need not necessarily be patents. To this end they are advocating a UPOV style system, which is very similar to patents. It is in the interests of developed countries to have a uniform and efficient system of plant variety protection, which is specifically tailored to recognize and reward the processes and end products of modern plant breeders working in laboratories. The question is whether such a system would provide developing country farmers with the same advantages.

In regard to the protection of farmers' varieties, it can be argued that IPRs would not achieve this objective since patent criteria of novelty, distinctness, uniformity and stability would be difficult to apply to landraces. Also, given the community based processes of breeding carried out by farmers, it would also be nearly impossible to identify the recipient or recipients of the patent. Further, the work of these farmers in not only breeding, but also in conserving and nurturing crop diversity, cannot be acknowledged or rewarded under an IPR system. Therefore the drawbacks of such a system for developing countries is that it does not recognize the work of farmers in the field whose breeding processes are different, but result in equally valuable products.

A *sui generis* system for developing countries should ideally be one which neutralizes the impacts of IPRs, on farmers as well as on national agricultural systems. The primary objective of such a mechanism should be to ensure that PGRFA is maintained in the public domain to the greatest extent possible. Therefore rather than extending a system of privatisation to farmers' varieties, it would be more effective to put in place a system which would prevent farmers' landraces, or aspects of them, which may be of value, from being appropriated and privatised.

Such a system would have to be devised within the boundaries of the TRIPS Agreement, but there are sufficient flexibilities contained in Articles 27.2 and 27.3 (discussed earlier), which

could be made use of for this purpose. Currently, the liberal application of the novelty standard in effect permits plants with minimal variation to be patented, and also permits discoveries to be interpreted as inventions. As suggested by the UK IPR Commission, developing countries should raise the threshold of novelty so that only varieties, which are clearly distinct and innovative, would be accorded protection. This would prevent negligible variations on farmers' varieties from being accorded patent protection. Further, they should strictly interpret the terms "inventions" and "discoveries" in order to prevent, for example, genes that are isolated from existing varieties from being patented. Instances such as the patenting of basmati and jasmine rice, discussed in Chapter 3 above, and the gene isolated from the wild rice variety in Mali discussed in Chapter 12, would need to be prevented in the future. Further, developing countries should maintain the position that TRIPS does not define what is meant by an "effective" system of protection, and Member States have the flexibility to determine the various aspects of it.

The second aspect of a *sui generis* system would be to obviate the effects of the monopolistic control of plant varieties on farmers and agriculture in developing countries. The IPGRI has also advocated this. An important aspect of negating this control is to maintain the rights of farmers to save and re-use seed and also protect their role as breeders of new varieties. Since UPOV 1991 has further restricted the rights of farmers and breeders to do so, adherence to this agreement would not be in the interests of developing countries. A system which is more conducive to furthering the interests of developing countries, particularly in regard to farmers' and breeders' rights, can be found in the UPOV 1978 Act which is considerably less stringent than that contained in UPOV 1991 or in a patent system. A *sui generis* system could also take advantage of the flexibilities in TRIPS, particularly those which permit inventions to be excluded from patentability in the interests of ordre public and morality, including to protect human, animal or plant life or health, or to avoid serious prejudice to the environment.

Although implementing *sui generis* systems of plant protection has been cited as a positive measure to protect the biological resources of developing countries, it seems that it would need to be formulated rather as a defensive strategy against the impacts of IPRs. As noted earlier, the question is to what extent developing countries can in fact put *sui generis* systems in place. TRIPS is sufficiently flexible to permit them to put in measures protecting their interests within the framework of the Agreement. Nevertheless the majority of such countries have not done so, and the debate on the nature of such a system is continuing in the TRIPS Council. Concurrently with the debate, provisions in bilateral treaties are requiring many such countries to adopt UPOV

1978 or UPOV 1991. This would of course, effectively pre-empt any further attempts by such countries from formulating their independent systems.

13.5 SUI GENERIS PROTECTION OF TRADITIONAL KNOWLEDGE - INTRODUCTION

As noted earlier both defensive and positive measures are required to protect traditional knowledge from misappropriation, and *sui generis* protection of traditional knowledge has been cited as a form of positive protection. *Sui generis* protection of traditional knowledge is not specifically mentioned in any of the international environmental documents, and the issue has evolved in relation to the traditional knowledge associated with plant varieties which often serves to provide leads to their uses.

The issues which need to be considered in *sui generis* systems include what is to be protected and from whom, for what purpose, for whose benefit and in what form.³⁵ Three broad objectives have also been identified in this regard, namely, preservation, protection and promotion.³⁶ It has also been suggested that specific regimes may have to be created for specific components of traditional knowledge, such as artistic creations, including expressions of folklore, PGRFA and associated knowledge, and traditional medicine.³⁷ This section will consider traditional knowledge in relation to PGRFA.

Whatever the form and content of such a system, an over riding question is whether such measures should go beyond merely preventing the misappropriation of traditional knowledge and ensuring the sharing of the benefits derived from it, or whether it should take a more holistic

³⁵ Surinder Kaur Verma, 'Protecting Traditional Knowledge: Is a *Sui generis* System an Answer?' (2004) 7(6) *Journal of World Intellectual Property* 765, 766.

³⁶ Sophia Twarog "Preserving, Protecting and Promoting Traditional Knowledge: National Actions and International Dimensions" in UNCTAD/DITC/TED/10 Sophia Twarog and Promila Kapoor (eds) (2004) *Protecting And Promoting Traditional Knowledge: Systems, National Experiences And International Dimensions*, 61 at 63.

³⁷ Carlos M Correa , *Issues and options surrounding the protection of traditional knowledge* (2001) Quaker United Nations Office Geneva, 14
<<http://www.iucn.org/themes/pbia/themes/trade/training/TK%20and%20Intellectual%20Property.pdf>> at 4th April 2008.

approach to the issue, promoting its further development and conservation in the interests of the communities which hold it.³⁸

The Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity (WG8J) has taken the view that the primary purpose of *sui generis* systems to protect traditional knowledge is to provide safeguards against claims of third parties to intellectual property rights over such knowledge. In other words it would be a defensive mechanism. Sustainable development and poverty alleviation are possible subsidiary purposes of such systems.³⁹ This appears to be a restricted view of their objectives. *Sui generis* systems in regard to traditional knowledge protection should not be confined to the discourse on PGRFA alone and should involve a broad range of indigenous rights in regard to this knowledge. To be effective therefore, they must go beyond the defensive or even the positive mechanisms of traditional knowledge protection currently being debated in international fora. Several Declarations of indigenous peoples have, for example, demanded a guarantee of rights to intellectual property and control over the development and manipulation of traditional knowledge, and the right to define for themselves their own intellectual property.⁴⁰ Indigenous peoples have also declared that the protection of traditional knowledge must be linked to their rights to self determination and territory.⁴¹ They have also stated that they have a fundamental

³⁸ See TD/B/COM.1/EM.13/2- United Nations Conference on Trade and Development, *Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices*, 22 August 2000 for a list of objectives to be considered when designing systems to protect TK.

³⁹ UNEP/CBD/WG8J/5/6 - Ad Hoc Open-Ended Inter-Sessional Working Group On Article 8(J) And Related Provisions Of The Convention On Biological Diversity, 15-19 October 2007, *Development of Elements of Sui generis Systems for the Protection of Traditional Knowledge, Innovations and Practices to Identify Priority Elements*, 20 September 2007, 2.

⁴⁰ See for example the *Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples* - First International Conference on the Cultural & Intellectual Property Rights of Indigenous Peoples (1993) http://www.wipo.int/tk/en/folklore/creative_heritage/indigenous/link0002.html at 10th May 2008; *Charter of the Indigenous and Tribal Peoples of the Tropical Forests* - Statement of the International Alliance of the Indigenous and Tribal Peoples of the Tropical Forests (Established Penang, Malaysia, 15 Feb 1992) (Revised Nairobi, Kenya, 22 Nov 2002) <www.international-alliance.org/Documents/charter_eng.do> at 10th February 2008; *Jalayinbul Statement on Indigenous Property Rights*, 1993 cited in WIPO/IPTK/RT/99/3 - World Intellectual Property Organization, *Roundtable on Intellectual Property and Traditional Knowledge, November 1 and 2, 1999, What Is Traditional Knowledge? Why Should It Be Protected? Who Should Protect It? For Whom?: Understanding The Value Chain*, Prepared by Professor Michael Blakeney, Centre for Commercial Law Studies Queen Mary and Westfield College, University of London. See also UN Declaration on Indigenous Peoples 2007 – Article 31.

⁴¹ Michael Halewood, 'Indigenous and Local Knowledge in International Law: A Preface to *Sui generis* Intellectual Property Protection' (1999) 44 *McGill Law Journal* 953.

right to practice their culture and to use their customary laws to maintain and protect their knowledge, and a fundamental right to participate in decision-making processes that affect their well being.⁴²

13.6 OPTIONS FOR SUI GENERIS SYSTEMS TO PROTECT TRADITIONAL KNOWLEDGE

A report of the United Nations Conference on Trade and Development (UNCTAD) has noted that *sui generis* systems are in fact only one possible option to protect traditional knowledge, other measures being strengthening customary law, IPR protection including existing IPR instruments, prior informed consent and access and benefit-sharing mechanisms, documentation of traditional knowledge, and other measures to strengthen and develop traditional knowledge protection systems.⁴³

Prior informed consent and access and benefit sharing methods have already been discussed and documentation of traditional knowledge falls under the category of defensive mechanisms of protection. *Sui generis* systems in relation to customary law and IPRs will be considered here.

13.6.1 Sui generis systems for the protection of traditional knowledge based on intellectual property rights

A question which has been debated is whether intellectual property rights, particularly patents, can provide adequate positive protection for traditional knowledge. Developing countries and indigenous communities have generally taken the position that they cannot, and several reasons have been cited in this regard. First, IPRs protect individual property rights while traditional knowledge is generally created, improved and transmitted collectively. Second, traditional knowledge is generally developed over a period of time and either codified in texts or retained in oral traditions over generations. Therefore the conditions of novelty and innovative steps necessary for the granting of patents may be questionable. Third, knowledge is often held by

⁴² UNCTAD/DITC/TED/10 - Sophia Twarog and Promila Kapoor (eds) *Protecting and Promoting Traditional Knowledge: Systems, National Experiences And International Dimensions* (2004) 83. See also Rosemary J Coombe, 'Protecting Traditional Environmental Knowledge and New Social Movements in the Americas: Intellectual Property, Human Right, or Claims to an Alternative Form of Sustainable Development?' (2005) *Florida Journal of International Law* 115, 122.

⁴³ TD/B/COM.1/EM.13/2, above n 38, 10.

different independent communities and this would make it difficult to identify a single holder of that knowledge. Fourth, patents grant protection for a limited period of time whereas traditional knowledge is passed on from generation to generation.⁴⁴

While it has also been suggested that other forms of IPRs such as copyrights, trade secrets, trademarks and geographical indications may be useful in protecting traditional knowledge, the general consensus is that they too are not appropriate mechanisms in this regard.⁴⁵ As a study of the United Nations Permanent Forum on Indigenous Issues (UNPFII) has noted

[i]ndigenous traditional knowledge is not simply a different type of intellectual property; it is a completely different entity. This is a distinction that is not generally appreciated, and as long as it remains unrecognized, questions will persist about the appropriateness of existing intellectual property regimes to protect indigenous interests.

Therefore if *sui generis* systems are required as foils to IPR systems, using the latter for the purpose would be inappropriate and ineffective.⁴⁶

13.6.2 Sui generis systems for the protection of traditional knowledge, based on customary laws

It has been pointed out that access to, and use of, traditional knowledge, both within and outside communities, is governed by a diversity of unwritten, customary laws which carry responsibilities as well as customary rights.⁴⁷ In countries where such laws already exist and are granted

⁴⁴ IP/C/W/347/Add.1 - TRIPS Council, *Review of the Provisions of Article 27.3(b), Relationship between the TRIPS Agreement and the Convention on Biological Diversity and Protection of Traditional Knowledge and Folklore, Information from Intergovernmental Organizations*, 10 June 2002, 6. See also Eliana Torelly de Carvalho, 'Protection of Traditional Biodiversity-Related Knowledge: Analysis of Proposals for the Adoption of a Sui generis System' (2003) 11 *Missouri Environmental Law & Policy Review* 38.

⁴⁵ Graham Dutfield, *Intellectual Property, Biogenetic Resources and Traditional Knowledge* (2004) Chapter 10.

⁴⁶ UNEP/CBD/WG8J/5/INF/12 - Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(J) and Related Provisions of the Convention on Biological Diversity, Fifth meeting, 15-19 October 2007, *UNPFII Study on Customary Laws Pertaining to Indigenous Traditional Knowledge and on to What Extent Such Customary Laws should be Reflected in International and National Standards Addressing Traditional Knowledge*, paragraph 21. For a discussion on the issue see Bernard O'Connor, 'Protecting Traditional Knowledge. An Overview of a Developing Area of Intellectual Property Law' (2003) 6(5) *Journal of World Intellectual Property* 677. For a comprehensive analysis of *sui generis* intellectual property laws to protect TK see The Crucible II Group, *Seeding solutions Volume 2. Options for national laws governing control over genetic resources and biological innovations* (2001). See also Halewood, above n 41.

recognition along with the mainstream legal systems, perhaps the most appropriate method of protection would be to strengthen and implement them. However, as noted, even giving customary laws only minimal recognition would still inhibit the assumption that traditional knowledge is in the public domain and therefore open access to all.⁴⁸

At the UNPFII held in 2006, the recommendations included that the Forum should commission a study on customary laws pertaining to traditional knowledge in order to investigate the extent to which they should be reflected in international and national laws. The study should include an analysis of such laws as a potential *sui generis* system for protecting traditional knowledge.⁴⁹ Principles of customary law relevant to genetic resources and traditional knowledge constitute *sui generis* systems for managing such resources and knowledge.⁵⁰ The WG8J has also stated that the scope of such systems “should consider the collective nature of indigenous and local communities and their holistic approach to resource use and management, including its ideology and relationship to local environment.”⁵¹

The WG8J goes on to note that in practice no single overarching international, regional or national *sui generis* system can embrace all the aspects of traditional knowledge in its original cultural context and its related customary law, in view of the diversity of the world’s indigenous communities. Therefore it is essential that such systems be local in nature but supported by national and international frameworks and guidelines.⁵²

⁴⁷ TD/B/COM.1/EM.13/2, above n 38 5. See also WIPO/GRTKF/IC/8/6 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Eighth Session, June 6 to 10, 2005, *Practical Means of Giving Effect to the International Dimension of the Committee’s Work*, paragraph 13.

⁴⁸ TD/B/COM.1/EM.13/2, above n 38, 5.

⁴⁹ E/C.19/2006/2 – United Nations Economic and Social Council, Fifth session, 15-26 May 2006 *Report of the International Technical Workshop on Indigenous Traditional Knowledge*, 15 December 2005, 12. This recommendation was adopted - E/C.19/2006/11 - United Nations Permanent Forum on Indigenous Issues, *Report on the fifth session - (15-26 May 2006)*.

⁵⁰ E/C.19/2007/8 - United Nations Economic and Social Council, Sixth Session, *Report of the International Expert Group Meeting on the International Regime on Access and Benefit-Sharing and Indigenous Peoples’ Human Rights of the Convention on Biological Diversity*, 14 March 2007, paragraphs 43-44.

⁵¹ UNEP/CBD/WG8J/5/6, above n 39, paragraph 15.

⁵² *Ibid* paragraph 15.

13.6.3 *Sui generis systems for the protection of traditional knowledge based on Community Rights*

The term “community rights” refers to the collective rights of communities over their traditional knowledge and biological resources. A community rights system could be all encompassing or address specific issues. The term includes more specific definitions, as for example, “community intellectual property rights,” “community intellectual rights,” “community based property rights” (CBPR) and “traditional resource rights (TRR).” While there are points of difference between these terms, they generally take a holistic approach to the question of indigenous rights and are not restricted to issues of traditional knowledge alone. Community rights have been incorporated in many national and regional laws and the point in issue is less the terminology used than the rights which have been acknowledged in them.

The concept of traditional resource rights is perhaps the most all encompassing of community rights, covering the gamut of human rights including resources rights. Traditional resource rights have been defined as

an integrated rights concept that recognises the inextricable link between cultural and biological diversity and sees no contradiction between the human rights of indigenous and local communities including the right to development and environmental conservation. Indeed, they are mutually supportive since the destiny of traditional peoples largely determines, and is determined by, the state of the world’s biological diversity. TRR includes overlapping and mutually supporting bundles of rights.⁵³

Community based property rights (CBPR)

by definition emanate from and are enforced by communities. The *distinguishing feature* of CBPRs is that they derive their authority from the community in which they operate, not from the nation-state where they are located. Formal legal recognition or grant of CBPRs by the state, however, is generally desirable and can help to ensure that CBPRs are respected and used in pursuit of the public interest.⁵⁴

Community intellectual property rights

⁵³ Darrell A Posey and Graham Dutfield, *Beyond intellectual property: toward traditional resource rights for indigenous peoples and local communities* (1996) Chapter 9.

⁵⁴ Center for International Environment Law (CIEL) *Whose Resources? Whose Common Good? Towards a New Paradigm of Environmental Justice and the National Interest in Indonesia* (2002) Chapter 1 <http://www.ciel.org/Publications/Whose_Resources_3-27-02.pdf> at 4th April 2008.

would enable farmers to assert their “rights to seed” by claiming that any corporation using local knowledge or local resources without the permission of local communities is engaging in intellectual piracy.⁵⁵

They would need to be included in national legislation with reciprocal recognition in other countries, an international database would have to be created for trading the germplasm, and an institutional mechanism would be required to address conflicts.⁵⁶ However community intellectual property rights are essentially an adaptation of mainstream IPRs and the concept has met with some opposition. GRAIN notes that in recent years the word “property” has been dropped from the phrase because the concept was found to be inimical to community views and the term has been rephrased as “community intellectual rights.”⁵⁷

Community rights have been incorporated in various forms in the national legislation of several countries as well as in regional frameworks. At present five regions have developed or are developing regional agreements, frameworks or model laws for *sui generis* systems based on customary laws to protect traditional knowledge.⁵⁸ The national legislation includes special intellectual property regimes, community intellectual property rights protection Acts, and indigenous peoples’ rights Acts.⁵⁹

A good example of community rights is found in Part IV of the OAU Model Law entitled “Community Rights.” Under Article 16 of the Law the State recognizes the rights of communities over the following:

- i) their biological resources;

⁵⁵ Posey and Dutfield, above n 53, Chapter 9.

⁵⁶ Ibid Chapter 9.

⁵⁷ GRAIN, *Signposts to Sui Generis Rights: 3 - Strategy Ideas for the 1999 TRIPS Review & Beyond* <<http://www.grain.org/briefings/?id=176>> at 28th February 2008.

⁵⁸ These include the African Union, the Andean Community, ASEAN, Latin America and the Pacific Forum. See also International Centre for Trade and Sustainable Development, *WIPO Committee on Genetic Resources, Traditional Knowledge Inconclusive Thus Far* (2007) <<http://www.ictsd.org/weekly/07-07-11/story3.htm>> at 25th February 2008; Kathryn Garforth, Isabel López Noriega, Jorge Cabrera Medaglia, Kent Nnadozie and Gabriel R Nemogá *Overview of the National and Regional Implementation of Access to Genetic Resources and Benefit Sharing Measures* (3rd ed, 2005) available at <www.cisd.org/pdf/ABS_ImpStudy_sm.pdf> at 4th April 2008.

⁵⁹ UNEP/CBD/WG-ABS/5/3, above n 3, paragraph 120.

- ii) the right to collectively benefit from the use of their biological resources;
- iii) their innovations, practices, knowledge and technologies acquired through generations;
- iv) the right to collectively benefit from the utilisation of their innovations, practices, knowledge and technologies;
- v) their rights to use their innovations, practices, knowledge and technologies in the conservation and sustainable use of biological diversity;
- vi) the exercise of collective rights as legitimate custodians and users of their biological resources.

These rights will be protected as they are enshrined and protected under the norms, practices and customary laws of the communities whether written or not.⁶⁰

The Third World Network has drafted a Model Draft Intellectual Rights Act, which is also based on the custodianship of traditional knowledge. This Model Act deals with “innovations” which include any collective and cumulative knowledge or technology of the use, properties, values and processes of any biological material. The local community shall be the lawful and sole custodians of such innovation in perpetuity and their rights in this regard shall not be impaired. Any exclusive monopoly right in respect of such innovation shall constitute an impairment of these rights.⁶¹

The Biodiversity Law of Costa Rica⁶² also recognizes *sui generis* community intellectual rights stating that the right

exists and is legally recognised by the mere existence of the cultural practice or knowledge related to genetic resources and biochemicals; it does not require prior declaration, explicit recognition nor official registration; therefore it can include practices which in the future acquire such status.

It goes on to state that “[t]his recognition implies that no form of intellectual or industrial property rights protection regulated in this chapter, in special laws and in international law shall affect such historic practices.”⁶³

The Pacific Community Regional Framework⁶⁴ is also based on a similar principle. It recognises the concept of traditional cultural rights and states that “[t]he traditional owners of traditional

⁶⁰ Article 17.

⁶¹ Community Intellectual Rights Act developed by the Third World Network <<http://www.lclark.edu/org/ielp/nijar2.html>> at 10th February 2008.

⁶² Biodiversity Law No. 7788 of 1998.

⁶³ Article 83.

knowledge or expressions of culture are the holders of the traditional cultural rights in the traditional knowledge or expressions of culture.” Such rights exist whether or not those expressions of culture are in material form, they are inalienable and continue in force in perpetuity.

13.7 THE INTERNATIONAL DEBATE ON SUI GENERIS SYSTEMS TO PROTECT TRADITIONAL KNOWLEDGE

While the debate on *sui generis* systems to protect traditional knowledge emerged out of the debate on the propertisation of PGRFA, it is important to note that its protection cannot be viewed only in the light of the latter. It is necessary to protect traditional knowledge from claims of third parties to IPRs and this is in fact the primary problem regarding the issue. It must however, be borne in mind that traditional knowledge which is held by indigenous and local communities is an intrinsic component of their lives, culture and rights. Therefore its protection cannot be isolated from these aspects and a more holistic approach must be taken in resolving the problems. As can be seen from the discussion in this section, indigenous peoples have consistently urged this position in international fora.

The debate on *sui generis* systems to protect traditional knowledge has taken place in several international fora including the TRIPS Council, the WIPO IGC and the CBD as well as in other UN agencies such as the Permanent Forum on Indigenous Issues. Apart from the last, none of the other fora have succeeded to date in producing specific proposals on either the nature or scope of such a system. In most fora too the emphasis has been on traditional knowledge protection in the context of IPRs rather than on a holistic consideration of indigenous rights.

13.7.1 The TRIPS Council

In the TRIPS Council, developing countries have stated that defensive measures to prevent the misappropriation of traditional knowledge are insufficient, and the Council may have to consider “proposals regarding an international framework to provide positive protection of traditional knowledge, which would recognize protection of traditional knowledge at the national and

⁶⁴ Regional Framework for the Protection of Traditional Knowledge and Expressions of Culture, Secretariat of the Pacific Community: Model Law for the Protection of Traditional Knowledge and Expressions of Culture (2005) 12 *International Journal of Cultural Property* 459.

regional levels.”⁶⁵ Some of the essential components of a framework for international recognition of various *sui generis* systems, customary law and others for protection of traditional knowledge were identified as:

- local protection to the rights of traditional knowledge holders through national level *sui generis* regimes including customary laws as well as others, and its effective enforcement inter alia through systems such as positive comity of protection systems for traditional knowledge;
- protection of traditional knowledge through registers of traditional knowledge databases in order to avoid misappropriation;
- a procedure whereby the use of traditional knowledge from one country is allowed, particularly for seeking IPR protection or commercialization, only after the competent national authority of the country of origin gives a certificate that source of origin is disclosed and prior informed consent, including acceptance of benefit sharing conditions, obtained; and
- an internationally agreed instrument that recognizes such national level protection.

This would not only prevent misappropriation but also ensure that national level benefit sharing mechanisms and laws are respected worldwide.⁶⁶

Developing countries have also advocated “a system of protection of traditional knowledge that provides proprietary rights [and] can ensure that market forces will operate to generate fairness and equity.”⁶⁷ The African Group has proposed that traditional knowledge be recognized as a category of IPRs but has also stated that Members may adopt *sui generis* systems for more extensive protection.⁶⁸ Given the fact that the discourse in the TRIPS Council is in fact grounded in the IPR system this approach is perhaps inevitable, but seems to undermine the alternate approach which requires a more holistic view of protecting traditional knowledge.⁶⁹

⁶⁵ IP/C/W/356 - TRIPS Council, *The Relationship between the TRIPS Agreement and the Convention on Biological Diversity and the Protection of Traditional Knowledge*, 24 June 2002, paragraph 16.

⁶⁶ Ibid paragraph 16.

⁶⁷ IP/C/W/370/Rev.1 – TRIPS Council, *The Protection of Traditional Knowledge and Folklore - Summary of Issues Raised and Points Made*, 9 March 2006, paragraph 33.

⁶⁸ IP/C/W/404, above n 6.

13.7.2 *The WIPO IGC*

In the WIPO it is the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) which has a specific mandate to address the issue of traditional knowledge protection including *sui generis* systems. The discussion in the IGC has revolved around locating traditional knowledge protection within the IPR system, focusing on such issues as disclosure obligations as protection from misappropriation rather than emphasizing *sui generis* measures.⁷⁰ There is substantive indigenous peoples' and non governmental participation in the IGC and these groups have expressed concern at the trends of the discussions. The issues they have raised include the inadequacy of the IPR system to protect traditional knowledge, the possible substance of a legally binding document, the recognition of customary laws, and mutual supportiveness with other agreements.⁷¹

While several developing countries have urged the formulation of a legally binding instrument to protect traditional knowledge,⁷² indigenous groups have cautioned that it should recognize issues outside of the IPR debate. These include that indigenous peoples must be recognized as custodians and owners of their knowledge and natural resources, and have exclusive rights of control over them; States should affirm that the land and territorial rights of Indigenous Peoples are fundamental to the retention of Indigenous Knowledge and cultural practices pursuant to the implementation of relevant international obligations; an international regime should expressly affirm the right of Indigenous Peoples to restrict and/or exclude access to their knowledge and natural resources; an international regime must ensure that the right to prior informed consent of Indigenous peoples was guaranteed and protected as a fundamental principle in the exercise of

⁶⁹ For a criticism of this approach see GRAIN, *The TRIPS review at a turning point?* (2003) <http://www.grain.org/briefings_files/trips-july-2003-en.pdf> at 4th April 2004.

⁷⁰ See for example WIPO/GRTKF/IC/12/7 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Twelfth Session, February 25 – 29, 2008, *Recognition of Traditional Knowledge Within the Patent System*, 12 February 2008.

⁷¹ South Center and CIEL, *The Proposed WIPO Framework on Traditional Knowledge: Does It Meet Indigenous Peoples' Demands?* Quarterly Update Second Quarter 2007 <http://www.ciel.org/Publications/IP_Update_2Q07.pdf> at 4th April 2008. See also WIPO/GRTKF/IC/12/6 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore Twelfth Session, February 25 to 29, 2008, *Summary of Options for the International Dimension of the Committee's Work*, 6 December 2007.

⁷² See for example WIPO/GRTKF/IC/9/14 Prov 2. - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Ninth Session, April 24 to 28, 2006, *Draft Report (Second Draft)*.

self-determination and sovereignty of Indigenous Peoples, and the right of PIC must be maintained throughout any ABS arrangement; an international regime must enable the effective implementation, application and enforcement of Indigenous customary laws and cultural practices; and in the event of a conflict, Indigenous customary laws and cultural practices should prevail over domestic law or an international regime.⁷³

While negotiations are continuing, as at the 12th Session of the IGC held in February 2008, the draft Policy Objectives and Core Principles (which include general guiding principles and substantive principles) for the protection of traditional knowledge had not been changed since earlier meetings, reflecting the difficulties in reaching consensus on this issue.

13.7.3 The CBD

Article 8 (j) of the CBD refers to the protection of traditional knowledge and this Article has been taken up in several fora including the WG8J, the Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing (WG-ABS), and the Conference of the Parties to the CBD (CoP), with the primary mandate being with the first forum. However, the work has to date been for the most part confined to compiling views and information on the issue.

The Fifth meeting of the WG8J in 2007 was mandated to identify the priority elements of *sui generis* systems. This forum too has prioritized the protection of traditional knowledge, innovations, and practices of indigenous peoples in the context of access and benefit sharing of such knowledge.⁷⁴ Sustainable development and poverty alleviation have been identified as possible subsidiary purposes of such systems.⁷⁵ It has referred to such aspects as the “holistic nature of traditional knowledge and the need to respect its cultural context”⁷⁶ and “the important link between protecting traditional knowledge and securing tenure and/or access over lands and

⁷³ See for example WIPO/GRTKF/IC/6/14 –Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore Sixth Session, March 15 to 19, 2004, *Report*, April 14, 2004, paragraph 228.

⁷⁴ UNEP/CBD/WG8J/5/6, above n 39, for example, paragraphs 7 and 13

⁷⁵ Ibid paragraph 10.

⁷⁶ Ibid paragraph 11.

waters traditionally occupied or used by indigenous and local communities.⁷⁷ Nevertheless the WG8J views *sui generis* systems as primarily furthering the objectives of the CBD. It has stated that

Sui generis systems could also promote a clear, transparent and effective system of traditional knowledge protection, which increases legal certainty and predictability to the benefit not only of knowledge holders, but also of society as a whole, including firms and research institutions, who are potential partners of knowledge holders in the pursuit of the goals of the Convention. By promoting such transparency and efficiency, *sui generis* systems would aim to lower transaction costs for local and indigenous communities for protecting their traditional knowledge or for those using it for commercial or non-commercial purposes.⁷⁸

Clearly the underlying principle of the WG8J is less on the overall interests of indigenous communities than on advancing the goal of the CBD to protect genetic resources and traditional knowledge in order that society as a whole can derive maximum benefits from them.

13.7.4 The United Nations Permanent Forum on Indigenous Issues (UNPFII)

It is in other fora such as the UNPFII that the issue of indigenous traditional knowledge has been approached more holistically.⁷⁹ For example at this forum it was noted that:

indigenous traditional knowledge raises a range of policy, procedural, conceptual, political and practical challenges in a wide variety of areas, such as the conservation of biological diversity, intellectual property, trade negotiations, agricultural policies, education, the environment, science, climate change, sustainable development, private sector activities, health, cultural policies, gender issues and human rights.⁸⁰

Indigenous participants at the forum also emphasized that adequate protection of their traditional knowledge demands respect for their human rights as a whole, including to territories and resources and the rights to self-determination. It was generally agreed that while intellectual property issues were important, they constitute only a limited part of the debate on indigenous traditional knowledge issues but have been taking up a disproportionate amount of attention to the detriment of other issues. This was however, understandable given the concerns of such communities in regard to this problem. It was agreed that since this was a multi-faceted and

⁷⁷ Ibid paragraph 14.

⁷⁸ Ibid paragraph 9.

⁷⁹ E/C.19/2006/2 – United Nations Economic and Social Council, Fifth session, 15-26 May 2006 Report of the International Technical Workshop on Indigenous Traditional Knowledge, 15 December 2005.

⁸⁰ Ibid paragraph 31.

complex issue, indigenous communities needed to carefully identify their needs and objectives and formulate strategies to deal with it.

13.8 CONCLUSION

The need to protect traditional knowledge, whether by “positive” or “defensive” mechanisms, has arisen as a result of its unauthorised appropriation and privatisation by way of IPRs. Since it may not always be possible (or appropriate) to prevent the use of traditional knowledge by others, particularly that which is widely known, the objective of a protection mechanism would be, to prevent it from being appropriated by the application of intellectual property rights over it. Several issues arise in determining what strategies would be most effective in this regard.

As noted in Chapter 10, there are two categories of knowledge relevant to this issue, i.e. knowledge that is in the public domain (i.e. nationally or regionally) or what could be called common knowledge, and that which is specific to a particular community. The debates on the issue have not always made this distinction clear, and it would be important in determining how the matter should be addressed. These would include the stakeholders who must be consulted in resolving the matter. The question of whether the knowledge is generally known or not, would also be relevant in defining the strategies to be adopted to protect it. In regard to strategies, as in the case of genetic resources, again the question arises as to whether a *sui generis* system based upon some form of IPRs would be the most appropriate way to prevent traditional knowledge from being privatised.

Much of the debate in international fora has centred upon *sui generis* measures to protect community based traditional knowledge, which would not be generally in the public domain. Views are divided between addressing the question as a distinct issue, or dealing with it on the basis that the knowledge of indigenous communities is inseparable from the totality of their lifestyles, cultures and rights. The second approach, generally taken by indigenous groups, particularly in the WIPO IGC and the UNPFII, views traditional knowledge in the context of indigenous rights and as an indivisible component of them. It also argues that the primary entitlements to traditional knowledge are vested in the respective communities for their use and benefit, and to further promote and develop their cultures. The commodification of such knowledge by outsiders is one threat among many, to the development and maintenance of their

cultural systems. Therefore the discourse on this topic is not confined to issues of trade and IPRs but is rooted in that of indigenous rights.

The holistic approach to traditional indigenous knowledge protection has been mainly supported by human rights fora, as for example the UNPFII whose mandate is to take a comprehensive view of indigenous rights. This forum is not constrained either by trade and IPR issues or by issues of biodiversity conservation and benefit sharing. It is therefore desirable that the current debate on traditional knowledge protection is extended to these fora and their input also incorporated in an international document on this subject.

Nevertheless there is also an immediate need to ensure that traditional knowledge whether within or outside the public domain is protected from privatisation, although the strategies to do so may need to vary. Knowledge in the public domain, including generally, traditional agricultural knowledge, can be addressed as a separate topic since it will not give rise to wider questions of rights and culture, as does community based knowledge. Where such knowledge is concerned the important issue would be to prevent its appropriation by way of the IPR system and it would be within the jurisdiction of States to do so. In the case of community based knowledge, wider issues including confidentiality and secrecy would need to be considered. A further discussion on such measures is found in Chapter 15. Again, it can be argued that as in the case of protecting genetic resources from privatisation, *sui generis* systems to protect traditional knowledge must also be essentially devised to counteract the effects of IPRs.

The approaches of the various international fora to the debate on traditional knowledge protection is rooted in their own aims and objectives. Not surprisingly the trade and IPR fora have been unenthusiastic about promoting holistic protection since it would restrict, at least to some extent, their access to the knowledge. This is evident in the proceedings of the TRIPS Council and the WIPO which have failed to reach agreement on either the nature or scope of such measures. The CBD has not progressed much further and again is rooted in its primary objective of sharing the benefits arising from such knowledge. In all three fora, despite the urgings of developing countries, no progress has been made towards an international agreement in this regard either binding or otherwise.

Notwithstanding the failure of international law to address the issue, several countries and regional groupings have taken their own legislative measures to regulate access to traditional

knowledge. However, these countries have continued to argue that national and regional measures must be supported by binding international rules. Although this element continues to be discussed, in the face of opposition by developed countries which continue to argue that ultimately protection of traditional knowledge is best carried out at the national level, the prospects of such an agreement are not promising.

CHAPTER 14

DEFENSIVE MECHANISMS TO PROTECT BIOLOGICAL RESOURCES AND TRADITIONAL KNOWLEDGE – DISCLOSURE OF ORIGIN OF GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE

14.1 INTRODUCTION

While the previous two chapters focused on positive measures to protect rights over genetic resources and traditional knowledge and the equitable sharing of their benefits, the next two chapters will deal with defensive measures to prevent their misappropriation. Disclosure of origin of these resources is a strategy advocated by developing countries in this regard. The other, discussed in the next chapter, is the recognition of traditional knowledge as prior art for the purposes of establishing novelty in a patent application. The significance of these proposals is that they attempt to use criteria of patent laws to prevent such misappropriation.

Disclosure is a core requirement of patent law since until full disclosure regarding all relevant aspects of the invention is made, it is not possible to determine whether it fulfills the criteria of patentability. For example, Article 29.1 of the TRIPS Agreement states:

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

Developing countries have been advocating, as a defensive strategy against misappropriation of genetic resources and traditional knowledge, a different aspect of disclosure in regard to the subject matter of the patent application. This is the mandatory requirement that patent applications should disclose the origin of these resources, and, where relevant, the traditional knowledge relating to them. The aim of these countries in requiring this process is to monitor the commercial use of the biological resources and associated traditional knowledge extracted from them (knowingly or unknowingly), by prospective inventors, in order to ensure that they receive a fair share of the benefits accruing from them.

The principle of disclosure of origin is a complex one and several issues would have to be clarified before it can be effectively implemented. Some general points as raised by authors on

the topic will be discussed first. Thereafter, the specific proposals and the debates in the various fora will be considered.

14.2 DEFINITION OF DISCLOSURE OF ORIGIN

According to Dutfield, disclosure of origin “has become a collective term for certain requirements to be incorporated into patent law.” While these requirements vary widely in terms of the obligations imposed on patent applicants, the most promising version is that of “proof of legal acquisition.” This essentially requires patent applicants to provide proof that genetic resources, and where relevant, traditional knowledge, acquired from provider countries was done in accordance with access and benefit sharing (ABS) regulations, including prior informed consent (PIC) and on mutually agreed terms between the parties.¹ More specifically, the requirement would address the following aspects:

- Disclosure of the country of origin, and legal source of the biological resources and traditional knowledge used or incorporated in the invention;
- Evidence of prior informed consent and approval by national biodiversity authorities when relevant;
- Evidence of prior informed consent and approval by national authorities in relation to traditional knowledge; and
- Evidence of fair and equitable benefit-sharing in accordance with national laws.²

14.3 OBJECTIVES OF A DISCLOSURE OF ORIGIN MECHANISM

From the perspective of developing countries, the primary objective of the disclosure of origin requirement is to ensure transparency, and thereafter equity, in the granting of patents based on genetic resources and related traditional knowledge, and to prevent misappropriation of these

¹ Graham Dutfield, *Protecting Traditional Knowledge: Pathways to the Future* (2006) ICTSD Issue Paper No. 16 <<http://www.iprsonline.org/unctadictsd/docs/Graham%20final.pdf>> at 25th February 2008.

² David Vivas-Eugui and Manuel Ruiz, ‘Toward an effective disclosure mechanism: justification, scope and legal effects’ (2005) in Martha Chouchena-Rojas, Manuel Ruiz Muller, David Vivas and Sebastian Winkler (eds), *Disclosure Requirements: Ensuring mutual supportiveness between the WTO TRIPS Agreement and the CBD*, 24 <http://www.iucn.org/en/news/archive/2005/12/disclosure_requirements_publication.pdf> at 25th February 2008.

resources. These countries have argued that such a requirement will improve the patent examination process and help to prevent biopiracy and the granting of “bad” patents. They point out that the defence of patent examiners to granting unjustified patents is largely based upon the argument that information on relevant state of the art was not available during the examination process. Mechanisms for making this information available have been mooted, but will not in themselves be adequate to combat the problem.³ Therefore a legally binding obligation to disclose the source and origin of the resources and the knowledge in question, will help the patent examiners to determine this issue, and also determine whether the invention is one that is excludable under Articles 27.2 and 27.3 of the TRIPS Agreement.⁴

It has also been noted that such a system would create a favourable environment among providers and users and facilitate the flow of genetic resources at all levels.⁵ Therefore amending the patent system to ensure transparency and eliminate misappropriation of these resources would seem to have the ripple effect of increasing access to them as envisaged in the CBD.

14.4 SCOPE OF THE DISCLOSURE OF ORIGIN MECHANISM

The scope of the disclosure of origin mechanism relates to what, in fact, should be disclosed, and what should trigger the requirement. In regard to the latter, developing countries have advocated that

any use, the disclosure of which is necessary to determine the existence of prior art, inventorship or entitlement to the claimed invention, the scope of the claim and/or is necessary for understanding or carrying out the invention, would be sufficient to trigger the disclosure obligation.⁶

This would apply even where the use was only incidental. Examples of uses which would trigger the obligation would include, where the genetic resources or knowledge in question is used to form part of the claimed invention; during the process of developing the claimed invention; as a

³ IP/C/W/368/Rev.1 - TRIPS Council, *The Relationship between the TRIPS Agreement and the Convention on Biological Diversity Summary of Issues Raised and Points Made*, 8 February 2006, 12.

⁴ IP/C/W/429/Rev.1 - TRIPS Council, *Elements of the Obligation to Disclose the Source and Country of Origin of the Biological Resources and/or Traditional Knowledge Used in an invention Submission from Brazil, Cuba, Ecuador, India, Pakistan, Peru, Thailand, and Venezuela, Revision*, 27 September 2004.

⁵ Vivas-Eugui and Ruiz, above n 2, 25.

⁶ IP/C/W/429/Rev.1, above n 4 paragraph 8.

necessary prerequisite for the development of the invention; to facilitate the development of the invention; and as necessary background material for the development of the invention.⁷

In regard to what should be disclosed, firstly, the definition could require disclosure of the geographical origin (i.e. the country, region, community) of the resources. In addition, it should also disclose the legal source of the resources, i.e. proof of legality of access. Several countries have specifically demanded that proof of PIC, and access and benefit sharing measures, should also be provided.⁸ This requirement therefore takes the concept beyond disclosure of sources to a requirement of proving equitable and legal access.

14.5 PROCEDURAL ASPECTS OF A DISCLOSURE OF ORIGIN MECHANISM

In order to ensure the effective implementation of a disclosure of origin mechanism, it is essential to have a workable procedure in place. The most practical method is that the patent application form should include a request/requirement for such disclosure. However, in view of the fact that disclosure of certain information may well result in non-issuance of the patent, it may be unrealistic to formulate a procedure based upon the bona fides of the applicant, and other safeguards would need to be put in place to prevent incomplete disclosures, fraud and misrepresentation. International co-operation among intellectual property and biodiversity offices, improved databases and other sources of information will be necessary to accommodate the developing countries' suggestions in this regard. The option of interested parties to present additional information would also be important.⁹ Monitoring of patent applications by civil society groups and interested persons would, in fact, be an effective strategy to prevent fraudulent or incomplete disclosures.

The actual information required would depend on the country in question, but at a minimum would obviously include the elements discussed above. Ensuring proper disclosure of the sources

⁷ Ibid paragraph 8. For a critique of this requirement see Graham Dutfield, 'Disclosure of Origin: Time for a Reality Check?' (2005) in Martha Chouchena-Rojas, Manuel Ruiz Muller, David Vivas and Sebastian Winkler (eds), *Disclosure Requirements: Ensuring mutual supportiveness between the WTO TRIPS Agreement and the CBD*, 44
<http://www.iucn.org/en/news/archive/2005/12/disclosure_requirements_publication.pdf> at 25th February 2008.

⁸ IP/C/W/429/Rev.1, above n 4, paragraph 15.

⁹ Vivas-Eugui and Ruiz, above n 2, 27.

of genetic resources, and also proof of PIC and ABS measures would be relatively easy, since documentation could be asked for. However, rather different issues would arise in the case of traditional knowledge where enforcing disclosure may be difficult, as it goes directly to the criterion of novelty and state of the art.

While some developing countries have such laws in place, in the absence of similar laws in developed countries these would not be effective due to the transnational nature of the use of genetic resources and associated traditional knowledge and the grant of patent applications for inventions based upon them.¹⁰ In as much as the territorial nature of intellectual property laws limits their efficacy in the international sphere, the territoriality of disclosure of origin laws would have the same effect. Therefore internationalizing the principle, like intellectual property itself, is essential to ensure its effectiveness.

14.6 LEGAL EFFECTS OF A DISCLOSURE OF ORIGIN MECHANISM

The legal effects of non-disclosure in patent applications are probably the most controversial issue in the debates on the subject taking place in international fora. The legal effects would depend on the form of the requirement, and there are three possible options in this regard.¹¹ Disclosure as an optional requirement would mean that non compliance would not incur any sanctions. A mandatory requirement would either result in the loss of the patent or, while keeping the patent intact, merely incur administrative, civil and/or criminal sanctions. While developing countries have advocated a mandatory requirement with loss of the patent as the penalty for non-compliance, developed countries have advocated one of the other two options.

¹⁰ Ibid 24.

¹¹ UNEP/CBD/WG-ABS/2/INF/2 - Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, Second meeting, 1-5 December 2003, *Measures, Including Consideration of Their Feasibility, Practicality and Costs, to Support Compliance with Prior Informed Consent of the Contracting Party Providing Genetic Resources and Mutually Agreed Terms on which Access was Granted in Contracting Parties with Users of Such Resources under Their Jurisdiction – “Disclosure of Origin and Prior Informed Consent for Applications of Intellectual Property Rights Based on Genetic Resources: A Technical Study of Implementation Issues” Final Report by Cynthia M. Ho, July 2003.* See also Michael A. Gollin, Feasibility of National Disclosure of Origin Requirements (2005) ICTSD/CIEL/IDDRI/IUCN/QUNO Dialogue on Disclosure Requirements: Incorporating the CBD Principles in the TRIPS Agreement on the Road to Hong Kong WTO Public Symposium, Geneva, 21 April 2005 <http://www.iucn.org/themes/pbia/documents/trade-docs/gollin.pdf> at 25th February 2008.

The consequences of non disclosure could include presumption of abandonment of the application if full disclosure is not made. If the disclosure is incomplete the application could be suspended while the applicant's priority rights are safeguarded, with an opportunity to rectify any defects in the application. In the case of fraudulent non disclosure detected after the grant of the patent, some claims could be invalidated or the application suspended while the situation is rectified. The most severe option would be to revoke the patent and where necessary to also enable the complaining party to initiate legal action for violation of other laws including ABS laws, and for damages.

14.7 DEVELOPING COUNTRY STRATEGIES FOR THE INTRODUCTION OF DISCLOSURE OF ORIGIN PROVISIONS

14.7.1 National strategies

The moves to conceptualise the disclosure of origin requirement began with the Andean Community Decision 391.¹² While it initially met with scepticism, it gradually gained both interest and support from a range of groups including some indigenous peoples, civil society and policy makers. Several countries (both developed and developing) have also unilaterally incorporated it into their national laws in varying forms. These include the Andean Community countries, Belgium, Brazil, Costa Rica, Denmark, India, Nepal, Norway and the African Union (53 African countries). These provisions have been incorporated in either intellectual property legislation or in laws dealing with access and benefit sharing of genetic resources and traditional knowledge.¹³ In addition, regional agreements also include such provisions, the most significant being the Andean Community Decision 391 and the European Directive on Biotechnological Inventions.¹⁴

¹² Andean Community Decision 391: Common Regime on Access to Genetic Resources (1996).

¹³ Martha Chouchena-Rojas, Manuel Ruiz Muller, David Vivas and Sebastian Winkler (eds), *Disclosure Requirements: Ensuring mutual supportiveness between the WTO TRIPS Agreement and the CBD* (2005) IUCN and ICTSD, 9
<http://www.iucn.org/en/news/archive/2005/12/disclosure_requirements_publication.pdf> at 25th February 2008. See also Michael Blakeney, *Proposals for the Disclosure of Origin of Genetic Resources in Patent Applications* (date not available)
<<http://www.economia.uniroma2.it/conferenze/icabr2005/papers/Blakeney.pdf>> at 25th February 2008; Alison L Hoare and Richard G Tarasofsky, 'Asking and Telling: Can "Disclosure of Origin" Requirements in Patent Applications Make a Difference?' (2007) 10(2) *Journal of World Intellectual Property* 149.

¹⁴ No. 96/9/EC of 11 March 1996. See also IP/C/W/368/Rev.1, above n 3, 38-41.

The effectiveness of these national and regional endeavours to implement the obligation has been categorised into weak, medium and strong.¹⁵ The characteristics of the weak measures¹⁶ generally include that they are not mandatory, the disclosure is limited in relation to the information required,¹⁷ and the patent application and patent rights are not affected by the disclosure. Medium disclosure requirements generally require greater disclosure including evidence of PIC. However, non compliance will not invalidate the patent application although penalties under other laws may be imposed.¹⁸ Strong disclosure measures generally result in patent applications being refused on grounds of non compliance, have a wide scope which includes genetic resources and derivatives or “innovations involving elements of biodiversity,”¹⁹ and require submission of licenses and ABS contracts.²⁰

14.7.2 *International strategies*

Developing countries with strong disclosure measures have been in the forefront of the drive to put these requirements on the international patent agenda. These demands were originally brought before the TRIPS Council²¹ and later raised in WIPO²² and the CBD.²³ Coalitions of

¹⁵ Blakeney, above n 13. See also Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (2002) 86
<http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf> at 25th February 2008.

¹⁶ Blakeney cites countries with weak measures as Egypt, the European Union, Germany, Romania, Spain and Sweden – Blakeney, above n 13, 6.

¹⁷ Eg. the European Union Directive only requires disclosure of geographical source – Blakeney, above note 13, 6.

¹⁸ Countries with medium legislation include Denmark, Norway, Switzerland and New Zealand – Blakeney, above n 13, 9.

¹⁹ Biodiversity Law of Costa Rica, Article 81.

²⁰ Countries with strong measures include the Andean Community countries, Belgium, Brazil, Costa Rica, India and Peru – Blakeney, above n 13, 11.

²¹ Carlos Correa, *The politics and practicalities of a disclosure of origin obligation* (2005) QUNO Occasional Paper 16, footnote 2, <<http://www.quno.org/geneva/pdf/economic/Occasional/Politics-of-Dec-of-Origin.pdf>> at 25th February 2008.

²² WIPO’s work on disclosure of origin has taken place largely in the IGC but has also been addressed in the SCP and the Working Group on the Reform of the PCT - WIPO/GRTKF/IC/1/3 - Intergovernmental Committee On Intellectual Property And Genetic Resources, Traditional Knowledge And Folklore, First Session, April 30 to May 3, 2001 *Matters Concerning Intellectual Property And Genetic Resources, Traditional Knowledge And Folklore – An Overview*, 16 March 2001.

developing countries have also collectively called for such recognition. For example, the Cancun Declaration of 2002 issued by the Group of Like Minded Megadiverse Countries²⁴ states that one of its objectives is the creation of an international regime to promote the fair and equitable use of genetic resources, which regime would include

certification of the legal provenance of biological materials, prior informed consent and mutually agreed terms for the transfer of genetic material, as requirements for the application and granting of patents, strictly in accordance with the conditions of access agreed by the countries of origin.²⁵

The disclosure of origin would help to fulfill three main functions of the patent system. First, it would facilitate the substantive examination of patent applications, including determining the question of prior art. Second, it would also improve the determination of inventorship. Third, it would facilitate the actual execution of the invention, for example where a biological material is endemic to a particular location. If the demands of developing countries that proof of compliance with access legislation are also included in disclosure of origin obligations, it could also serve possible functions outside patent law, which would fulfill the purposes of the CBD.²⁶ In this respect the CBD has also served as a forum for discussion on the subject. The debate as it took place in these three fora will be discussed in this section.

²³ The CBD has discussed it in the CoP, the Ad Hoc Open-Ended Inter-Sessional Working Group on Access and Benefit Sharing and the Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions. The CBD discussions are considered below.

²⁴ The Group of Like Minded Megadiverse Countries (LMMC) established in 2002 is comprised of seventeen countries whose stated objective is to “act as a mechanism of cooperation to promote their interests regarding biological diversity and in particular the protection of traditional knowledge, access to genetic resources and the fair and equitable sharing of benefits derived from their use.” The countries are Bolivia, Brazil, China, Colombia, Costa Rica, Democratic Republic of Congo, Ecuador, India, Indonesia, Kenya, Madagascar, Malaysia, Mexico, Peru, Philippines, South Africa and Venezuela. Seventy percent of all biodiversity and 45 percent of the global population is located within these countries. See the website at <<http://lmmc.nic.in/>> last accessed 18th April 2008.

²⁵ Cancun Declaration of Like-Minded Megadiversity Countries, 18 February 2002, Article 1(h) available at <http://www.lmmc.nic.in/Cancun%20Declaration.pdf> at 4th May 2008. See also the Cusco Declaration on Access to Genetic Resources, Traditional Knowledge and Intellectual Property Rights of Like-minded Megadiverse Countries, 29 November 2002, available at <<http://www.lmmc.nic.in/Cusco%20Declaration.pdf>> at 4th May 2008.

²⁶ Carlos M. Correa, *Establishing a Disclosure of Origin Obligation in the TRIPS Agreement* (2003) Quaker United Nations Office Occasional Paper, 12 <http://www.uno.org/geneva/pdf/economic/Occasional/Dec-of-Origin.pdf> at 25th February 2008.

14.8 PROPOSALS FOR DISCLOSURE OF ORIGIN REQUIREMENTS IN INTERNATIONAL FORA

As noted above, the debate on disclosure of origin requirements has taken place in several fora including the TRIPS Council, the World Intellectual Property Organization (WIPO), and the Convention on Biological Diversity (CBD). Proposals for implementing the principle have been formulated by both developing and developed countries and have sometimes been submitted in two or more fora simultaneously. For the sake of clarity, the various proposals in the relevant fora will be described first, and the ensuing debate and negotiations will be analysed later.

The discussions have surfaced several suggestions on how the concept should be implemented. The most significant are the TRIPS disclosure proposal, the PCT disclosure proposal and the mandatory disclosure proposal.²⁷ The first was submitted by several developing countries to the TRIPS Council.²⁸ In addition, Norway also submitted a proposal to the TRIPS Council. The PCT disclosure proposal was submitted by Switzerland, and envisages that the Regulations under the Patent Co-operation Treaty (PCT) of WIPO will be amended to enable the national patent legislation of Member countries to require the disclosure of origin of genetic resources and traditional knowledge in patent applications.²⁹ The mandatory disclosure proposal was submitted by the European Union (EU) to the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC).

²⁷ IP/C/W/368/Rev.1, above n 3, 27.

²⁸ This proposal was initiated by developing countries including, the African Group, the Andean Community, Brazil, China, Colombia, Ecuador, India, Indonesia, Kenya, Pakistan, Thailand, Venezuela and Zimbabwe. Brazil and India were particularly strong proponents of the proposal. See IP/C/W/368/Rev.1, above n 3, documents cited in footnotes 135-156.

²⁹ See the following documents - IP/C/W/400/Rev.1 - TRIPS Council, *Article 27.3(b), The Relationship Between the TRIPS Agreement, and the Convention on Biological Diversity, and the Protection of Traditional Knowledge, Communication from Switzerland Revision*, 18 June 2003; IP/C/W/423 - TRIPS Council, *Additional Comments by Switzerland on its Proposals Submitted to WIPO Regarding the Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications, Communication from Switzerland*, 14 June 2004; IP/C/W/433 - TRIPS Council, *Further Observations by Switzerland on its Proposals Regarding the Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications Communication from Switzerland*, 25 November 2004.

14.8.1 *Proposals in the TRIPS Council*

14.8.1.1 **Developing country proposals**

The disclosure of origin debate in the TRIPS Council originated in the context of the discussion on the review of Article 27.3(b), and the relationship between the TRIPS Agreement and the CBD principles of access and benefit sharing of genetic resources.³⁰ According to the TRIPS disclosure proposal, the TRIPS Agreement should be amended to make it mandatory for Member States to require that a patent application relating to biological materials or traditional knowledge must include the following information.

- The source and country of origin of the biological resource and of the traditional knowledge used in the invention;
- Evidence of prior informed consent from the authorities under the relevant national regime; and
- Evidence of fair and equitable benefit sharing under the relevant national regime.

The TRIPS disclosure proposal of the developing countries goes beyond simply disclosing the source or origin of the invention. Rather, these countries have sought to formulate a mechanism which achieves two objectives – firstly, to combat the biopiracy of genetic resources and traditional knowledge which they claim has been facilitated by the patent system,³¹ and secondly as a strategy by which the ABS obligations of the CBD including that of PIC would be fleshed out and incorporated in the TRIPS Agreement as conditions of patentability.³²

³⁰ IP/C/W/368/Rev.1, above note 3.

³¹ See IP/C/W/470 – TRIPS Council, *Submission in response to the communication from Switzerland (IP/C/W/446), Communication from Bolivia, Cuba, Ecuador, India, Sri Lanka and Thailand*, 21 March 2006; IP/C/W/441/Rev.1 - Article 27.3(B), *Relationship Between the TRIPS Agreement and the CBD and Protection of Traditional Knowledge and Folklore, Communication from Peru, Revision*, 19 May 2005; IP/C/W/458 - *Analysis of Potential Cases of Biopiracy, Communication from Peru*, 7 November 2005; IP/C/W/484 - *Response to Comments Contained in Document IP/C/W/469, Relating to the Peruvian Communication IP/C/W/458, Communication from Peru*, 2 November 2006.

³² See the issues raised in IP/C/W/420 - TRIPS Council, *The Relationship between the TRIPS Agreement and the Convention on Biological Diversity (CBD) Checklist of Issues, Submission from Brazil, Cuba, Ecuador, India, Peru, Thailand and Venezuela*, 2 March 2004. See also IP/C/W/429 - *Elements of the Obligation to Disclose the Source and Country of Origin of Biological Resource and/or Traditional Knowledge Used in an invention, Submission from Brazil, India, Pakistan, Peru, Thailand, and Venezuela*, 21 September 2004.

As can be seen from the requirements below, several elements of the proposal also attempt to compensate for anticipated inadequacies in legislative and other capacities in countries and communities where genetic resources and traditional knowledge originate.

The obligation to prove PIC will be a positive obligation on the applicant on whom the burden of proof will rest. The applicant would have to provide evidence that the genetic resources and/or traditional knowledge on which the invention is based were obtained with the approval or consent of the national authorities of the country and/or the community concerned. The burden would be discharged by a declaration to this effect. Where relevant, actual evidence of the consent in the form of a certificate or duly certified contract between the parties would also be submitted. It has been pointed out that given the other information that a patent applicant has to submit, this additional requirement will not be unduly burdensome.³³

A high burden of proof has been proposed in regard to proving ABS. Proof is required of an existing or future benefit sharing arrangement that is based upon mutually agreed terms and is fair and equitable under the circumstances.³⁴ The agreed terms would cover issues relating to the conditions, obligations, procedures, types, timing, distribution, and mechanisms of the benefits to be shared, and the patent application would also have to show how the other party would enforce the terms. However, the applicant would only be required to provide information that is known or should have been known to him/her. Further, on the premise that traditional communities do not have the capacity to negotiate and enforce such agreements, any such agreement primarily negotiated with them should be subsequently confirmed by the national regulatory authority. The CBD principles of PIC and benefit sharing would have to be respected, even where the country of origin has not set up benefit sharing regimes, and in such cases the applicant would be required to

³³ For specific proposals regarding disclosure of prior informed consent see IP/C/W/438 - TRIPS Council, *The Relationship Between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the Protection of Traditional Knowledge-Elements of the Obligation to Disclose Evidence of Prior Informed Consent under the Relevant National Regime, Submission from Bolivia, Brazil, Cuba, Ecuador, India, Pakistan, Peru, Thailand and Venezuela*, 10 December 2004.

³⁴ While there may not be a straightforward way of determining what is fair and equitable, developing countries have noted some factors which could be used to do so - see IP/C/W/442 - TRIPS Council, *The Relationship Between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the Protection of Traditional Knowledge – Elements of the Obligation to Disclose Evidence of Benefit-Sharing under the Relevant National Regime, Submission from Bolivia, Brazil, Colombia, Cuba, Dominican Republic Ecuador, India, Peru and Thailand*, 18 March 2005.

state that fact and indicate that there has at least been consent from the relevant authority or community in compliance with other relevant laws of the country.³⁵

The legal effects of non-disclosure or inadequate or fraudulent disclosure have been formulated to provide sufficient deterrence. At the stage of processing, the process would be delayed until the requirements are satisfactorily complied with, within given time limits and with penalties. At the post grant stage the patent would be revoked. In addition, criminal and/or administrative sanctions could also be imposed. Where disclosure shows that the inventor is in fact another person, community or agency, a full or partial transfer of rights to the latter will take place. The scope of the claims would also be affected where a part of the patentable subject matter is affected by lack of novelty or by fraudulent disclosure. These remedies would also possibly be subject to judicial review. While there is flexibility in these legal effects, Members are obliged to ensure that there is sufficient deterrent, compensatory and equity value. Remedies should also be retrospective so as to cover past use.³⁶ The burden of proof in demonstrating disclosure is on the patent applicant.

Peru has specifically identified the U.S., the EU and Japan as countries that should incorporate disclosure of origin requirements in their patent legislation, while observing that a first step would be the inclusion of these requirements in the text of the TRIPS Agreement.³⁷ This should be done either as an exception to patentability under Article 27.3(b), or as an element of patentability under Article 29,³⁸ and specific suggestions for the text have also been proposed by several countries.³⁹

³⁵ IP/C/W/368/Rev.1, above n 3, 28.

³⁶ Ibid 29. See also IP/C/W/429/Rev.1, above n 4.

³⁷ IP/C/W/447 - *Article 27.3(b), Relationship between the TRIPS Agreement and the CBD and Protection of Traditional Knowledge and Folklore, Communication from Peru*, 8 June 2005.

³⁸ IP/C/W/368/Rev.1, above n 3, 30.

³⁹ IP/C/W/474 - General Council, Trade Negotiations Committee, TRIPS Council, *Doha Work Programme – The Outstanding Implementation Issue on the Relationship Between the TRIPS Agreement and the Convention on Biological Diversity, Communication from Brazil, China, Colombia, Cuba, India, Pakistan, Peru, Thailand and Tanzania, Revision*, 5 July 2006; IP/C/W/475 – TRIPS Council, *Response to Questions Raised on the Draft Amendment to TRIPS – Article 29bis, Communication From Brazil*, 26 July 2006.

14.8.1.2 Proposal of Norway

Of the developed countries, a concrete proposal on disclosure of origin was submitted by Norway in the TRIPS Council.⁴⁰ Norway proposed that a binding international obligation which would apply to all patent applications (international, regional and national) should be introduced to include information on the supplier country (and the country of origin, if known and different) of genetic resources and traditional knowledge in patent applications. If the supplier country or country of origin requires consent for access under its national law, the application must indicate whether such consent was obtained. If the country of origin is unknown, this must be disclosed. The application would not proceed if the applicant is unable to, or refuses to provide, the required information.

While these elements of the proposal appear to prima facie support the developing country position, it is made ineffective by the lack of post grant invalidation of the patent due to incorrect or incomplete information being originally submitted. Norway has emphasised that a post grant discovery of breach of the obligation would not affect the validity of the patent, which would only be subject to sanctions outside the patent system. As can be seen from other developed country proposals submitted to other fora, there has been a consistent refusal to accept invalidation of the patent as a sanction for incorrect information, even where it may have been due to fraud.

14.8.2 The Debate in the World Intellectual Property Organisation

As noted earlier, discussions on developing countries' concerns on the misappropriation of genetic resources and traditional knowledge and the equitable sharing of these resources were moved to the IGC which was established for this purpose. The topics taken up for discussion

⁴⁰ IP/C/W/167 – TRIPS Council, *Review of the Provisions of Article 27.3(b), Communication from Norway*, 3 November 1999; IP/C/W/473 – TRIPS Council, *The Relationship Between the TRIPS Agreement, the Convention on Biological Diversity and the Protection of Traditional Knowledge - Amending the TRIPS Agreement to Introduce an Obligation to Disclose the Origin of Genetic Resources and Traditional Knowledge in Patent Applications, Communication from Norway*, 14 June 2006; - IP/C/W/491 – TRIPS Council, *The Relationship Between the TRIPS Agreement, the Convention on Biological Diversity and the Protection of Traditional Knowledge, Amending the TRIPS Agreement to Introduce an Obligation to Disclose the Origin of Genetic Resources and Traditional Knowledge in Patent Applications, Answers from Norway to Questions Posed by Switzerland in the TRIPS Council, Communication from Norway*, 7 May 2007.

included the requirement for disclosure of origin.⁴¹ Subsequently, the issue has also been taken up in several other WIPO fora. However, apart from producing information and studies on the question, Parties have not reached agreement on substantive issues.⁴²

WIPO was invited by the Sixth Conference of the Parties to the Convention on Biological Diversity (CoP) of 2002 to prepare a technical study on methods which would be consistent with obligations under its Treaties for disclosing within patent applications the following information –

- genetic resources utilized in the development of the claimed inventions;
- the country of origin of genetic resources utilized in the claimed inventions;
- associated traditional knowledge, innovations and practices utilized in the development of the claimed inventions;
- the source of associated traditional knowledge, innovations and practices; and
- evidence of prior informed consent.⁴³

WIPO's study was submitted to the Seventh CoP in 2003.⁴⁴ At the outset it was specified that the study does not advocate any particular approach and is only meant to facilitate further discussions on the issue. It deals with the present and potential interaction between two distinct regulatory systems, namely, regulation of the access to, and benefit sharing of, genetic resources and associated traditional knowledge on the one hand, and laws governing the grant of patent rights for eligible inventions, on the other. The interaction has both a national and international dimension in that it is national laws which address both, while international law “establishes general principles for the operation of national laws, and also provides for administrative

⁴¹ For an update of the international developments on genetic resources including disclosure of origin see WIPO/GRTKF/IC/11/8 (b) - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore Eleventh Session, July 3 to 12, 2007, *Genetic Resources: Factual Update of International Developments, Document prepared by the Secretariat*, 30 May 2007.

⁴² For an account of WIPO's work on disclosure see WIPO/GRTKF/IC/7/10 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Seventh Session, November 1 to 5, 2004, *Patent Disclosure Requirements Relating to Genetic Resources and Traditional Knowledge: Update*, 15 October 2004.

⁴³ Decision VI/24 C, paragraph 4.

⁴⁴ UNEP/CBD/COP/7/INF/17 – CBD CoP, Seventh Meeting, 9-20 and 27 February 2004, *Technical Study on Disclosure Requirements Related to Genetic Resources and Traditional Knowledge, Submission by the World Intellectual Property Organization (WIPO)* 15 December 2003. Also referenced as WIPO Document - *Technical Study on Disclosure Requirements in Patent Systems Related to Genetic Resources and Traditional Knowledge, Study No. 3*.

facilitation.” While the study addressed these issues at both national and international level, it also raised an additional international issue, namely

the possibility that the national legal system of one country should take account of the operation of a different area of law in another country. In particular, the draft study deals with the possibility that the grant or validity of a patent in one jurisdiction may be dependent on compliance with the laws of another country that establish the conditions for access to genetic resources and TK.⁴⁵

The seventh CBD CoP having received the study requested WIPO to further examine issues regarding the interrelation of access to genetic resources and disclosure requirements in intellectual property rights applications. These include options for model provisions on proposed disclosure requirements and intellectual property related issues raised by a proposed international certificate of origin/source/legal provenance.⁴⁶ This document was submitted to the Eighth CoP, again with the caveat that it should not be seen as representing the views of WIPO, that it is technical input only and does not advocate any particular approach.⁴⁷

The disclosure of origin obligation was also raised in the negotiations of the Substantive Patent Law Treaty (SPLT). In this forum too countries have been divided over proposed provisions which enable or require Contracting Parties to comply with international obligations and applicable laws on protection of genetic resources and traditional knowledge. Developed countries have generally supported the view that the draft SPLT should be limited to provisions relating to the definition of prior art, grace period, novelty and inventive step. Other delegations took the view that all provisions of the draft should be examined as a whole “taking into account their interdependent nature and recalling the importance they attached to other matters” including disclosure of origin of genetic resources and traditional knowledge. There was also disagreement as to whether the Standing Committee on the Law of Patents (SCP) should deal with these latter issues.⁴⁸ As at the Eleventh SCP Session held in 2005 this matter had not been resolved.

⁴⁵ Ibid page 3.

⁴⁶ Decision VII/19 E, paragraph 8.

⁴⁷ UNEP/CBD/COP/8/INF/7 - CoP, Seventh Meeting, 9-20 and 27 February 2004, *Interrelation of Access to Genetic Resources and Disclosure Requirements in Applications for Intellectual Property Rights: Report of the World Intellectual Property Organization (WIPO)*, 16 January 1006.

⁴⁸ WIPO/IP/GR/05/01 - *Examination of Issues Relating to the Interrelation of Access to Genetic Resources and Disclosure Requirements in Intellectual Property Rights Applications, First Draft*, 31 January 2005, page 15

The European Community and Switzerland have also submitted separate proposals advocating disclosure requirements. These are discussed below. The issue was subsequently taken up by Switzerland in the SCP and also in the negotiations on the draft SPLT.

14.8.2.1 Proposal of Switzerland

Switzerland had initially submitted its proposal on disclosure of origin to the WIPO Working Group on Reform of the Patent Cooperation Treaty in May 2003.⁴⁹ For information purposes the proposal was also presented in other fora including the IGC, CBD, FAO and the WTO.⁵⁰ The most updated document in this regard was submitted to the Eleventh Session of the IGC in 2007.⁵¹

At the outset the Swiss proposal commented that there was a need to prevent the granting of “bad” patents which it was claimed occurs due to the unavailability of sufficient data on prior art. One way to improve this situation would be to collect traditional knowledge in databases, and both the PCT and the Patent Law Treaty (PLT) would be amended to accommodate the obligation.⁵² The proposal envisages that the PCT Regulations will be amended so as to

explicitly enable the Contracting Parties of the PCT to require patent applicants, upon or after entry of the international application into the national phase of the PCT procedure, to declare the source of

⁴⁹ PCT/R/WG/4/13 - Working Group on Reform of the Patent Cooperation Treaty (PCT) Fourth Session, May 19 to 23, 2003, *Proposals by Switzerland Regarding the Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications*, 5 May 2003; PCT/R/WG/6/11 - Working Group on Reform of the Patent Cooperation Treaty (PCT), Sixth Session, May 3 to 7, 2004, *Additional Comments by Switzerland on its Proposals Regarding the Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications*, 21 April 2004; PCT/R/WG/7/9 - Working Group on Reform of the Patent Cooperation Treaty (PCT) Seventh Session, May 25 to 31, 2005, *Further Observations by Switzerland on its Proposals Regarding the Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications*, 5 April 2005. For a comment on the role of Switzerland in international IPR negotiations see Richard Gerster, ‘Patents and Development, A Non - Governmental Organization View Prior to Revision of the TRIPS Agreement’ (1998) 1(4) *Journal of World Intellectual Property* 605.

⁵⁰ See IP/C/W/400/Rev.1, above n 29; IP/C/W/423, above n 29; IP/C/W/433, above n 29.

⁵¹ WIPO/GRTKF/IC/11/10 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore Eleventh Session, July 3 to 12, 2007 *Declaration of the Source of Genetic Resources and Traditional Knowledge in Patent Applications: Proposals by Switzerland*, 6 June 2007.

⁵² *Ibid* Annex paragraphs 9-10.

genetic resources and/or traditional knowledge, if an invention is directly based on such resource or knowledge.⁵³

Further, applicants will be afforded the possibility of satisfying this requirement at the time of filing an international application, or later during the international phase. Such a declaration would be included in the international publication of the international application. If the international application does not contain the required declaration, national law may prevent its further processing until the information is submitted. This process would also be linked to the PLT and Parties to the latter would be enabled to require in their national patent laws that applicants declare the source of genetic resources and/or traditional knowledge.⁵⁴

There are several weaknesses in the Swiss proposal from the developing country perspective. To begin with it would be optional for countries to introduce disclosure legislation. The optional approach has been defended on several grounds. First, since a final decision has not been made on the issue, faster progress can be obtained by such an approach rather than a mandatory one. Second, it would enable those countries who wish to introduce such legislation to do so, and the international community would gain experience in the matter without prejudice to further international efforts. This again appears to be a stalling measure. Third, the optional approach would not oblige developing countries, especially least developed countries, to introduce such a measure, since they most likely lack the capacity to implement it. Since most patent applications are applied for in developed countries, introducing such measures would not benefit developing countries.⁵⁵ This last argument essentially accepts the position that developing countries are unable to defend themselves against misappropriation of their resources. Therefore there is even greater reason for implementing defensive measures at international level for this purpose.

Aside from being optional the enforcement of the proposed process is weak. If the national laws require the declaration, the PCT rules will be amended to require the national Office to give the applicant at least two months to comply with the requirement. In the case of failure to do so, the Office may refuse the application or consider it withdrawn. However, if the applicant submitted the declaration with the international application or during the international phase, the national

⁵³ Ibid Annex paragraph 13.

⁵⁴ Ibid Annex paragraph 14.

⁵⁵ Ibid page 6.

office must accept the declaration and not require any further evidence regarding the source. Again this provides the patent applicant with a loophole to avoid compliance. Finally, as in all developed country proposals, post grant invalidation/revocation of the patent is not included, except in the case of fraudulent intention which would need to be proved.⁵⁶

14.8.2.2 The European Community proposal

The European Community submitted a document to the Eighth Session of the IGC in 2005.⁵⁷ While this proposal appears to be a broad acceptance of developing country requirements, certain clauses limit its efficacy.

At the outset the EU proposal states that a mandatory requirement should be introduced to disclose the country of origin or source of genetic resources in patent applications, and the requirement should apply to all international, regional and national patent applications at the earliest stage possible. In order to achieve this objective the PLT, PCT and regional agreements such as the European Patent Convention would need to be amended.⁵⁸

The applicant should declare the country of origin or, if unknown, the source of the specific genetic resource to which the inventor has had physical access, and which is still known to him/her. The applicant is required to disclose the specific source of traditional knowledge that is associated with the genetic resource only if he/she is aware that the invention is directly based on such traditional knowledge. This gives an applicant a broad loophole to bypass this requirement.

Further, the proposal argues that

there are concerns about the possibly unclear scope of the term “traditional knowledge”. In order to achieve the necessary legal certainty, a further in-depth discussion of the concept of TK is necessary.⁵⁹

⁵⁶ Ibid paragraphs 26-27.

⁵⁷ WIPO/GRTKF/IC/8/11 – Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Eighth Session, June 6 - 10, 2005, *Disclosure of Origin or Source of Genetic Resources and Associated Traditional Knowledge in Patent Applications, Document submitted by the European Community and Its Member States*, 17 May 2005.

⁵⁸ The TRIPS Agreement is a notable exception to this requirement.

⁵⁹ WIPO/GRTKF/IC/8/11, above n 57, 3.

The applicant is only required to give a positive or negative response to the question as to whether the invention is based on genetic resources or traditional knowledge. If the response is negative, no further information is necessary. In the event of a fraudulent declaration the proposals states that

[w]here it is proved that the patent applicant has disclosed incorrect or incomplete information, effective, proportionate and dissuasive sanctions *outside the field of patent law* should be imposed on the patent applicant or holder (emphasis added),

and

[f]or reasons of legal certainty, the submission of incorrect or incomplete information should not have any effect on the validity of the granted patent or on its enforceability against patent infringers.

Therefore even in the case of a fraudulently obtained patent, the rights of the patent holder remain intact and compensation is sought in methods other than the revocation of the patent.⁶⁰

14.8.3 *Developments in the CBD*

The issue of disclosure of origin was taken up by the Sixth CoP in 2002.⁶¹ The concept was incorporated in the Bonn Guidelines adopted by the Sixth CoP by Decision VI/24 A.⁶² The Sixth CoP also took Decision VI/24 C on the “Role of intellectual property rights in the implementation of access and benefit-sharing arrangements.” By this Decision the CoP invited

Parties and Governments to encourage the disclosure of the country of origin of genetic resources in applications for intellectual property rights, where the subject matter of the application concerns or makes use of genetic resources in its development, as a possible contribution to tracking compliance with prior informed consent and the mutually agreed terms on which access to those resources was granted.

Similarly, it invited Parties and Governments to encourage the disclosure of origin of relevant traditional knowledge, innovations, and practices of indigenous and local communities where the subject matter of the application concerns or makes use of such knowledge in its development.

⁶⁰ The EU has also reiterated this position in the TRIPS Council - IP/C/M/39 - *Minutes of Meeting on 18-19 February 2003*, 21 March 2003, paragraph 127.

⁶¹ See Decisions VI/10 F – Paragraphs, 31, 46 and VI/24 C entitled “Role of intellectual property rights in the implementation of access and benefit-sharing arrangements.”

⁶² UNEP/CBD/COP/6/20 - *Report of the Sixth Meeting of the Conference of the Parties to the Convention on Biological Diversity* - 27 May 2002.

The Decision also resolved to undertake further information gathering and analysis in this regard with the help of WIPO and other CBD institutions. In relation to disclosure requirements and patent applications the issues to be studied included:

- The consistency and applicability of requirements for disclosure of country of origin and prior informed consent in the context of international legal obligations;
- the efficacy of country of origin and prior informed consent disclosures in assisting the examination of intellectual property rights applications and the re-examination of intellectual property rights granted as well as in monitoring compliance with access provisions;
- the feasibility of an internationally recognized certificate of origin system as evidence of prior informed consent and mutually agreed terms; and
- the role of oral evidence of prior art in the examination, granting and maintenance of intellectual property rights.

The CBD is perhaps the forum where the most progress has been made to date on developing substantive provisions on disclosure requirements. These have been done in the context of the Bonn Guidelines and the draft International Regime on ABS.⁶³ In addition, a Group of Technical Experts was appointed by the Eighth CoP to consider an internationally recognized certificate of origin/source/legal provenance.

14.8.3.1 The Bonn Guidelines

Several provisions of the Guidelines are relevant to the present discussion on disclosure requirements. Even given the fact that the Guidelines are in fact no more than what they purport to be, an analysis of these provisions reveals that they do not support developing country requirements for disclosure of origin or proof of PIC and ABS measures.

The sole reference to disclosure of origin is found in Article 16(d) (ii) contained in the Section entitled “Responsibilities.” Subsection (d) states:

Contracting Parties with users of genetic resources under their jurisdiction should take appropriate legal, administrative, or policy measures, as appropriate, to support compliance with prior informed

⁶³ See Chapter 12 for earlier discussions on these documents.

consent of the Contracting Party providing such resources and mutually agreed terms on which access was granted. These countries could consider, inter alia, the following measures:

....

(ii) Measures to encourage the disclosure of the country of origin of the genetic resources and of the origin of traditional knowledge, innovations and practices of indigenous and local communities in applications for intellectual property rights.

While disclosure of country of origin of genetic resources and origin of traditional knowledge is proposed, there is no mention of providing proof of PIC or ABS measures. Further, the proposal has not been specifically linked with patent applications, which in fact are not mentioned in the Guidelines.

The other provisions in the Guidelines which are relevant to the disclosure of origin obligations appear ineffective and unrealistic, and seem to disregard the inherent inability of countries of origin of genetic resources and indigenous communities to deal with the situation under the present circumstances. For example, the Guidelines merely put the onus on national monitoring mechanisms to ensure compliance with the PIC and ABS provisions of the CBD. Article 55 which falls within provisions entitled “National monitoring and reporting” states that depending on the terms of access and benefit sharing, national monitoring may include, inter alia, whether the use of genetic resources is in compliance with the terms of access and benefit-sharing and applications for intellectual property rights relating to the material supplied. Section 56 states that

[t]he involvement of relevant stakeholders, in particular, indigenous and local communities, in the various stages of development and implementation of access and benefit-sharing arrangements can play an important role in facilitating the monitoring of compliance.

However, past experiences of misappropriation⁶⁴ have shown that both provider countries and communities lack the capacity to effectively monitor compliance with these measures and a different strategy is necessary in order to address the problem.

Articles 57 and 58 propose verification mechanisms to ensure compliance with ABS provisions of the CBD and national legal instruments of the country of origin providing the genetic resources, and a system of certification which “could serve as a means to verify the transparency

⁶⁴ For example, instances of biopiracy cited in other sections of this thesis and documents cited by countries in the TRIPS Council.

of the process of access and benefit-sharing.” However, once again these proposed mechanisms would be merely voluntary and it would be unrealistic to expect that they would provide an adequate remedy to the problem.

Section E relating to “Settlement of disputes” suggests that this should be in accordance with relevant contractual arrangements on ABS, and the applicable law and practices. Non-compliance would incur sanctions including penalty fees, which again would be set out in contractual agreements.

The Bonn Guidelines do not make any significant contribution to the debate on disclosure of origin obligations. It merely reiterates the CBD position that implementation of PIC and ABS provisions, including monitoring and enforcement, should be achieved by way of national legislation and contractual measures, though these measures have not proved effective. Therefore it puts the onus on provider countries to ensure that PIC and ABS laws are complied with, with no corresponding obligation on user countries. Further, it proposes that verification mechanisms, including a system of certification, should be merely voluntary. To this extent the CBD CoP has not addressed developing country concerns on this issue. However, further developments in the CBD have moved somewhat beyond the system envisaged by the Guidelines.⁶⁵

14.8.3.2 Disclosure obligations in the draft International Regime on Access and Benefit sharing

The elements to be considered for inclusion in the draft international regime included an internationally recognized certificate of origin/source/legal provenance of genetic resources and associated traditional knowledge, and disclosure of origin/source/legal provenance of genetic resources and associated traditional knowledge in applications for intellectual property rights.⁶⁶ As can be seen by the many options contained in the draft provisions, the regime is still far from being concluded.

⁶⁵ It should be noted that an UNCTAD analysis on disclosure requirements which was submitted to the CoP in response to Decision VIII/19 is unequivocal in its contention that that is a need for an international system of mandatory disclosure of origin – See UNEP/CBD/COP/8/INF/25 – CBD CoP, Eighth Meeting, 20-31 March 2006, *Analysis of Options for Implementing Disclosure of Origin Requirements in Intellectual Property Applications - Submission by UNCTAD*, 9 February 2006. A caveat to the document states that the views of the authors do not necessarily reflect that of the UNCTAD Secretariat.

⁶⁶ See Chapter 12 for an earlier discussion on the draft International Regime.

Some of the initial provisions of the international regime do not show much promise in fulfilling developing country requirements for an enforceable disclosure obligation. The potential objectives of the draft regime include

“[To establish a mechanism providing certainty about the [legal provenance] [origin] [source] of genetic resources]” and “[To prevent the misappropriation and misuse of genetic resources, their derivatives and associated traditional knowledge].”

The issue of disclosure is included in a clause within the section entitled “Fair and equitable benefit sharing” as “[Disclosure [of [legal provenance] [origin] [prior informed consent and benefit-sharing]]”⁶⁷ and it appears that disclosure of PIC and ABS as well as origin are all on the table for discussion. A specific section is also entitled “[[Certificate of origin] [International certificate of [origin/source/]legal provenance]” and this contains some promising points for discussion. The draft clauses state:

1. The international regime may establish an international certificate of origin/source/legal provenance of genetic resources, [derivatives and/or products] to be issued by the [provider country] [country of origin].
2. The international regime [may] [shall] establish a system to certify the [origin/source/legal provenance of genetic resources] [legal utilization of traditional knowledge, innovations or practices of indigenous and local communities associated to genetic resources].
3. Such certificates of origin/source/legal provenance [or utilization] may be [an integral part] [evidence] of PIC and MAT arrangements.
- [4. Such certificates of origin/source/legal provenance [or utilization] and, if existing, evidence of PIC and MAT related arrangements may be a precondition for patentability and other intellectually property applications.]
- [5. An international certificate of origin/source/legal provenance could be an element of an international regime.]
- [6. The potential needs, objectives, desirable characteristics/features, implementation, challenges, including costs and legislative implications of such an international certificate, are to be further explored.]
- [7. The certificate of origin/source/legal provenance may be used as a means of complying with the disclosure requirements according to national legislation.]]

Here again the primary question to be determined is whether these clauses, if accepted, will be firstly, mandatory or discretionary and secondly, whether they will constitute a part of a harmonised international system binding on States Parties to the CBD, or whether they will be relegated to national ABS systems.

⁶⁷ UNEP/CBD/WG-ABS/5/7 - Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, Fifth meeting, 8-12 October 2007, *Annex To Decision VIII/4 A on the International Regime on Access and Benefit-Sharing*, 14 September 2007, page 6.

Perhaps more promising are the provisions on compliance and enforcement. This has been the most disputed issue in other fora with developed countries paying lip service to the disclosure requirement in principle, while refusing to agree on credible enforcement measures including revocation of patents. The tabled options on enforcement include proof of PIC as a condition of patentability. The proposal states that

1. [Recipients of genetic material, [derivatives and products] shall make no applications for patents related to such genetic materials, [derivatives or products] without the prior informed consent of the [provider country] [country of origin.] [*Non compliance of this provision shall, inter alia, result in the rejection of the patent application and where necessary the revocation of such patent.*] (Emphasis added).⁶⁸

Other provisions propose that Parties may/shall develop national legislation to implement the international regime and each Party must comply with the national legislation of the provider countries on ABS measures in regard to genetic resources and traditional knowledge.⁶⁹ The international regime may/shall ensure that the mutually agreed terms including PIC and ABS measures are complied with and enforced, which may be done by way of co-operative procedures and institutional mechanisms.

Also, importantly, the draft international regime provides a definition of misappropriation.⁷⁰ It generally includes acquisition and use of the genetic resources⁷¹ without compliance with the provisions of the international regime or by unfair or illicit means. Misappropriation also includes deriving commercial benefits from such resources when the person using them knows, or is *negligent in failing to know* (emphasis added) that they were appropriated by unfair means. The provisions thereby require a high standard of conduct on a potential patent applicant. Other examples of misappropriation include other commercial activities “contrary to honest practices,” the use of the resources for purposes other than for which they were accessed and obtaining unauthorized information “that can be used for the reconstitution of genetic resources derivatives or products or traditional knowledge.”⁷²

⁶⁸ Ibid 7, Section entitled “Compliance and Enforcement,” paragraph 1.

⁶⁹ Ibid 7, Section entitled “Compliance and Enforcement,” paragraphs 2 and 3.

⁷⁰ Ibid 8.

⁷¹ The term “genetic resources” includes their derivatives and products and/or associated traditional knowledge.

⁷² Ibid.

14.8.3.3 Certificate of origin/source/legal provenance

CoP 7 took Decision VII/19E on measures to implement PIC and mutually agreed terms. It recognized that a number of critical issues, such as an international certificate of origin/source/legal provenance and disclosure of origin of genetic resources and associated traditional knowledge, need to be addressed to support compliance with national legislation of countries of origin and PIC of provider countries.⁷³ In this regard it requested the CBD Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing (WG-ABS) to consider the feasibility of an international certificate of origin/source/legal provenance and to identify issues related to the disclosure of origin of genetic resources and associated traditional knowledge in applications for intellectual property rights.⁷⁴ Subsequently, the Eighth CoP appointed a Group of Technical Experts to explore possible options for the form, intent and functioning of such a certificate of origin/source/legal provenance and analyse its practicality, feasibility, costs and benefits.⁷⁵

The Group of Technical Experts submitted its report in this regard to the Fifth Meeting of the WG-ABS in 2007.⁷⁶ The group noted that all countries are both providers and users of genetic resources and that national legal systems alone are not sufficient to guarantee benefit sharing once genetic resources have left the provider country. The certificate therefore could be an important tool to reduce this limitation and its basic function would be to provide evidence of compliance with national ABS regimes. Therefore the Group found it appropriate to refer to the certificate as a certificate of compliance with national law in accordance with the CBD. Given the appropriate legal framework the certificate would support the effective implementation of Articles 15 and 8(j).

⁷³ UNEP/CBD/COP/7/21 – CBD CoP, Seventh meeting, 9-20 and 27 February 2004, *Report of the Seventh Meeting of the Conference of the Parties to the Convention on Biological Diversity*, 13 April 2004, 304.

⁷⁴ Ibid Decision VII/19 E, paragraphs 6-7.

⁷⁵ Decision VIII/4 C – “Other approaches, as set out in decision VI/24 B, including consideration of an international certificate of origin/source/legal provenance.”

⁷⁶ UNEP/CBD/WG-ABS/5/2 - Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing Fifth Meeting, 8-12 October 2007, *Report of the Meeting of the Group of Technical Experts on an Internationally Recognized Certificate Of Origin/Source/Legal Provenance, Introduction*, 20 February 2007.

Regarding the characteristics and features of the certificate, the Group considered that the sovereign rights of Parties over their natural resources allowed them the flexibility to regulate access and determine the range of genetic resources and traditional knowledge which could be covered. However, harmonization of user measures and checkpoints may be necessary. Therefore a national certificate with standard features to allow its international recognition, together with control points in user countries to monitor the use of genetic resources and associated traditional knowledge in accordance with national laws, would ensure greater transparency and compliance with ABS requirements in both user and provider countries.

In regard to consequences of infringement, the Group's proposals do not make clear what impacts such infringement would have on patents already issued. It merely notes that in the case of false representation or forgery, legal consequences may entail administrative sanctions including fines, criminal sanctions and judicial review on the part of the issuing country. However, the consequences which should result in the user country, or the country of the patent applicant, have not been specified. While it may be argued that the CBD is not a forum in which issues of intellectual property are raised, in view of Article 16.4⁷⁷ the WG-ABS is not necessarily precluded from addressing this issue. Enforcement measures and penalties for non-compliance have been the most contentious point in the debate on disclosure, and it appears that once more international fora have stopped short of coming to grips with it. In the absence of adequate provisions in this regard it is unlikely that the disclosure requirement will serve its purpose.

14.8.4 The Governing Body of the FAO Treaty

The Interim Secretariat of the FAO Treaty has collaborated with WIPO mainly in regard to the work of the IGC. The issues under discussion of direct relevance to the Treaty include the possible role of a certificate of origin/source/legal provenance of genetic resources, in relation to patent applications. The Interim Secretariat has noted that in the event that such an instrument comes into force, the origin of materials from the Multilateral System of access and benefit

⁷⁷ Article 16.4 of the CBD states: "The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate 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."

sharing should be declared as the Multilateral System. The Standard Material Transfer Agreement would serve the role of such a certificate.⁷⁸

14.8.5 UPOV

The UPOV position on disclosure of origin is contained in its reply to the notification of the CBD in June 2003. In regard to both disclosure of origin requirements and the obligation to prove PIC, its stance is that additional conditions to the grant of plant variety protection rights are not acceptable.⁷⁹

14.9 ISSUES FOR CONSIDERATION

The positions of the North and the South on the disclosure debate give rise to two fundamental issues. In regard to the perspective of the Southern countries which are advocating the requirement, the question to be addressed is whether it will in fact ensure compliance with CBD objectives of PIC and ABS. The position of Northern countries is that it is both unnecessary and cannot be incorporated into patent laws as it is inherently incompatible with the latter. The validity of this position has also to be addressed.

In regard to the first question, there is a wide difference of opinion as to whether a disclosure of origin obligation will in fact ensure compliance with CBD objectives of PIC and ABS. One perspective is that the requirements are needed to help the patent system deter, rather than reward and perpetuate, unjust conduct including non compliance with ABS requirements. The patent system should shoulder the burden of doing so by the inclusion of this obligation in it. Patent rights may unjustly reward inventors whose inventions are based on illegally acquired genetic

⁷⁸ IT/GB-1/06/Inf.4 - International Treaty on Plant Genetic Resources for Food and Agriculture, First Session of the Governing Body, 12-16 June 2006, *Report on the Status of Cooperation With Other International Organizations*, May 2006; IT/GB-2/07/17 - International Treaty on Plant Genetic Resources for Food and Agriculture, Second Session of the Governing Body, 29 October-2 November 2007, *Report on the Status of Cooperation With Other International Organizations, Including Agreements Between the Governing Body and the International Agricultural Research Centers of the Consultative Group on International Agricultural Research and Other Relevant International Institutions*, paragraph 25.

⁷⁹ Access To Genetic Resources And Benefit-Sharing, Reply of UPOV to the Notification of June 26, 2003, from the Executive Secretary of the Convention on Biological Diversity (CBD) adopted by the Council of UPOV at its thirty-seventh ordinary session on October 23, 2003. See also UNEP/CBD/WG-ABS/5/4/Add.1 - Ad Hoc Open-Ended Working Group on Access and Benefit-Sharing, *Overview of Recent Developments at the International Level Relating to Access and Benefit-Sharing*, 30 August 2007.

resources or traditional knowledge. Further, even where the resources are acquired legally the benefits accruing from the invention may not be equitably shared with those from whom they have been taken. Since substantive patentability criteria does not currently address issues of equity, mandatory disclosure requirements are therefore needed to prevent illegal or unjust conduct. Such obligations will both compel the patent applicant to disclose the necessary information in this regard, and the patent examiner to enforce the requirement. If the patent is substantively valid, only a challenge based on non-compliance with ABS principles will prevent the patent from being granted.⁸⁰

Several arguments have been made against disclosure of origin as an effective strategy to combat misappropriation of genetic resources and TK.⁸¹ A practical problem which would arise is that it would often be difficult to pinpoint the source or origin of many plants which are not confined to a particular geographical location. The same argument would apply to traditional knowledge.⁸² A great deal of resources and traditional knowledge related to patents can be acquired without going to the countries of source/origin and therefore the requirement would not become necessary and consequently would be unenforceable.

In regard to the requirement as a criterion of patentability, it has been argued that information of source/origin is not relevant to standard patent criteria of novelty and inventive step and therefore its absence would likely be overlooked. It would also be difficult to agree on the relationship between the information and the invention so as to trigger the requirement.⁸³ Countries that do not have effective ABS regimes may be unable to use the requirement to prevent “bad” patents.⁸⁴ Consideration of previously cited instances of misappropriation has shown that the outcome would not necessarily have been significantly affected by the implementation of the obligation.⁸⁵

⁸⁰ See Joshua D. Sarnoff, *The Need to Address Disclosure of Origin Requirements in Patent Law Harmonization Initiatives*, WIPO Open Forum on the Draft Substantive Patent Law Treaty 1 March 2006, <http://www.wipo.int/export/sites/www/meetings/en/2006/scp_of_ge_06/presentations/scp_of_ge_06_sarnoff.pdf> at 25th February 2008.

⁸¹ See for example Dutfield, above n 7.

⁸² Graham Dutfield, *Thinking Aloud on Disclosure of Origin* (2005) QUNO Occasional Paper 18, <http://www.iprsonline.org/unctadictsd/docs/Disclosure_Dutfield.pdf> at 25th February 2008.

⁸³ Ibid.

⁸⁴ Gollin, above n 11.

Developing countries have acknowledged that disclosure obligations will not necessarily solve all the problems associated with the unauthorised use of genetic resources and traditional knowledge. However, the obligation will have some practical impacts in some situations. For example Peru has noted that

[s]ituations may arise where: it is impossible to determine the origin of a resource (or of components of an invention); the invention relates to derived or synthesized products that differ substantially from the original resources; the information on traditional knowledge may not have been available at the time of the assessments; etc. Nevertheless, the proposed changes to the system would in fact have practical effects in some circumstances (without entailing an excessively high cost/benefit ratio) and would in particular reflect an element of political will and good faith tending to generate consensus and the search for appropriate solutions.⁸⁶

A popular argument against disclosure obligations is that incorporating it into the TRIPS Agreement will ultimately be inimical to the interests of developing countries. A study supporting this view states that

[t]he new system will regulate property rights and intellectual property rights of any product containing biological resources in all countries. Under the CBD proposal, any national in a developing country with a property right to a genetic resource, would have the right to block applications for patents relating to any part of it by any other national. This system will deter researchers and investors in developing countries.⁸⁷

It further states

[t]he system will be detrimental to development of any industry in which intellectual property is important – food and food processing industries, biotechnology and pharmaceutical industries. These are important for growth in developing countries.⁸⁸

However, the question as to what extent the global intellectual property system benefits developing and especially least developed countries in the first place is debatable,⁸⁹ particularly

⁸⁵ Dutfield cites several instances of biopiracy, arguing that disclosure obligations in these case would either have not served any purpose or would have been irrelevant – Dutfield, above note 82. The U.S. has also strongly disputed in the TRIPS Council that a disclosure obligation would achieve its stated purposes - IP/C/W/434 - TRIPS Council, *Article 27.3(B), Relationship Between the TRIPS Agreement and the CBD, and the Protection of Traditional Knowledge and Folklore, Communication from the United States*, 26 November 2004.

⁸⁶ IP/C/W/447, above n 37, footnote 15.

⁸⁷ Alan Oxley, *Retarding Development - Compulsory disclosure in IP law of ownership and use of biological or genetic resources*” The Australian APEC Study Centre, Monash University, 4 <http://www.apec.org.au/docs/060605%20-%20APEC%20Report%20WTO.pdf> at 30th April 2008.

⁸⁸ Ibid 4

in the areas of agriculture. The study also overlooks the fact that many developing countries prohibit patenting of life forms in any case. Further, developing countries have been advocating the disclosure obligation after collectively concluding that the current plant patenting system is detrimental to their interests.

In regard to implementation, a pragmatic suggestion has been made that linking the patent application to the legality of the acquisition of the resources has some practical advantages, and proof of legal acquisition is a more appropriate measure to overcome the problems noted above, rather than either voluntary or mandatory disclosure of source or origin.⁹⁰ This method would not interfere with the substantive examination of the patent application, including consideration of the three conditions of patentability. It also avoids the difficult question as to the closeness of the link between the resources and the invention which would have to be established to trigger a disclosure requirement. Instead the applicant would submit proof of compliance with the ABS requirement of the country in question. It has also been suggested that the measure can go beyond merely dealing with misappropriation and encourage research partnerships which would benefit biodiversity rich countries which lack the technological capacity to exploit their resources.⁹¹

In regard to the question of whether the disclosure requirement is incompatible with the TRIPS Agreement, some writers have taken the view that it is not incompatible with patent regimes including the TRIPS Agreement.⁹² It can be argued that while the concept is not currently an aspect of patent requirements, there is no reason as to why it should not become so. Patent law has not remained static and has undergone significant change over time, both in regard to its substantive elements, and the way in which it has been interpreted and implemented. For example, there have been notable differences in the way in which plant patent laws have been implemented in the U.S. and the EU, both in regard to the criteria and subject matter of patentability. The negotiation of the patent provisions of the TRIPS Agreement also demonstrated these differences. Under the circumstances there is no inherent reason why patent

⁸⁹ See for example Curtis Cook, *Patents, Profits and Power: How Intellectual Property rules the global economy* (2002). See also generally Commission on Intellectual Property Rights, above n 15.

⁹⁰ Dutfield, above n 82.

⁹¹ Ibid.

⁹² Dutfield, above n 7, 45.

and plant variety protection laws should not be further adapted, to incorporate measures to prevent misappropriation of patentable subject matter.

This view has been advocated in the TRIPS Council by developing countries. While the U S has argued that the obligation may

add uncertainties in patent rights that may undermine the role of the delicately balanced patent system in its primary purpose of encouraging innovation, technological progress and economic development,⁹³

this has been disputed by Brazil and India. A submission by these two countries claims that it would in fact introduce much needed certainty and preserve the balance in the patent system in consonance with the objectives and principles of the TRIPS Agreement, and

[b]y establishing clear internationally agreed rules on disclosure, prior informed consent and benefit-sharing, the proposed requirement would go a long way in establishing certainty in these matters and not uncertainty.⁹⁴

Further, since these issues are of high importance to biodiversity rich countries and their local and indigenous communities

the proposed system will not only ensure the legitimacy of the patent system but will in fact preserve and strengthen the balance in the system. The balance will be preserved by recognizing the contributions of Members as well as of traditional and local communities to innovation directly, or through the conservation of biological resources and/or traditional knowledge. Establishing an equitable and balanced system for the acquisition, maintenance and enforcement of patent rights, which rely upon or are otherwise based on biological resources and/or traditional knowledge, would also help fulfil the objectives of the TRIPS Agreement as expressed in Article 7.⁹⁵

14.10 CONCLUSION

Disclosure of information in relation to the acquisition of genetic resources and related knowledge would be an effective strategy to prevent the unauthorized appropriation and

⁹³ IP/C/W/434, above n 85.

⁹⁴ IP/C/W/443 - TRIPS Council, *The Relationship Between the TRIPS Agreement and the Convention on Biological Diversity (CBD) and the Protection of Traditional Knowledge, Technical Observations on Issues Raised in a Communication by the United States (IP/C/W/434) Submission from Brazil and India*, 18 March 2005.

⁹⁵ Ibid.

propertisation of such resources. Unlike other forms of property over which IPRs are acquired, for example, industrial inventions or artistic works, in this instance resources which are usually either in the public domain or within the jurisdiction of communities, are being appropriated and converted to private property and IPRs applied to them. Therefore in principle, the patent process should rigorously examine the legality of the way in which such resources were acquired. It can be argued that there is no inherent obstacle to this condition being incorporated into patent law, which is not static, and like all laws, should necessarily adapt to the exigencies of a given situation. Such a requirement could also form a feature of a *sui generis* system of plant protection.

Under the circumstances, developing countries should maintain their position that information in relation to the acquisition of these resources should be made a condition of patentability. However, the actual workings of this condition and the information to be required will need to be closely examined. Mere disclosure of source or origin of either the genetic resource or the knowledge related to it, would not necessarily prevent misappropriation, and requiring documentary proof of legal acquisition seems to be a more practical option. Proof of legal acquisition would in any case necessarily include information of where the resources in question were acquired, and the circumstances under which this was done, including PIC and details of benefit sharing agreements if any. Thus this requirement would be more inclusive than a basic requirement to disclose origin or source.

Determining questions of PIC and ensuring ABS would not be easy, even with the requirement of proof of legal acquisition. For instance, as shown in the case studies discussed in Chapter 12, the resource may be first acquired by one institution, which may often be located in the country of origin of the resource, and then licensed to another, which may be the patent applicant for the end product based in another country. This took place in the case of the Hoodia plant of the San people. In the case of the wild rice from Mali, the University of Utah which patented the gene in question, acquired the rice variety in which the gene was incorporated from the International Rice Research Institute (IRRI) in the Philippines, although the original source of the gene was the variety conserved by farming communities in Mali. Therefore, while the patent applicant would be able to prove legal acquisition from the immediate source from which it was acquired, this would not always ensure equity for countries or communities. These issues would also have to be addressed. In order to be effective the requirement would have to be rigorously implemented so

as to provide a comprehensive history of the movement of such resources, which would be relevant to their final patentability.

It must also be noted that while disclosure of traditional knowledge must also be required, other issues would also arise in cases where traditional knowledge of the uses of the resource has been utilized. It would be difficult to prove that such knowledge was in fact used for the purpose, and also such disclosure is more easily avoided. In any case, the issue in relation to traditional knowledge is the fact that the existence of such knowledge, per se negates a fundamental criterion of patentability, that of novelty. Therefore a different strategy would also be necessary to address issues of traditional knowledge, and this is discussed in the next chapter.

It is clear that proof of legal acquisition as a condition of patentability would not necessarily ensure greater equity in the use of the benefits of genetic resources or traditional knowledge, or resolve all the problems related to their appropriation and propertisation. It is nevertheless a strategy which could be used to resolve some of the problems relating to this issue. However, in order to be effective, it is essential that non-compliance must result in the failure of the patent application, or at the post grant stage, the revocation of the patent. It is this requirement which is the stumbling block to its acceptance by developed countries. Some of these countries have been ostensibly supportive of the developing country concerns and have submitted several proposals for implementing the obligation. These proposals have in fact recommended that the obligation be made mandatory and have suggested amendments to patent treaties, specifically the TRIPS Agreement, the PCT and the PLT, to formalise it. Nevertheless, these countries have also been adamant that the obligation should effectively operate only at the patent application processing stage and it should not have any effect on patents already granted. This position has been justified on the grounds that it would cause uncertainty in the patenting process. However, given the complexities of the movement of genetic resources, it is possible that many facts may not come to light until a later stage, or may be suppressed initially. The Hoodia case is an example of this. Therefore the deterrent element must continue to be operative at all stages of obtaining and keeping a patent.

In view of the opposition of developed countries to revocation of patents, the prospects for adopting and implementing the requirement of proof of legal acquisition are not promising. Currently, the forum where it is most likely that such a proposal may be developed is the CBD CoP in the context of the on-going negotiations on the international ABS regime. It is clear that

the requirement would be most effectively implemented as a provision of a global legal instrument. This would in particular be advantageous to those countries which have either no legislation or weak laws in place in regard to acquisition of genetic resources. It is suggested that in the absence of international progress in this regard, an alternative strategy for developing countries to consider would be to incorporate it into national *sui generis* legislation as required under the TRIPS Agreement.

CHAPTER 15

DEFENSIVE MECHANISMS TO PROTECT BIOLOGICAL RESOURCES AND TRADITIONAL KNOWLEDGE – THE RECOGNITION OF TRADITIONAL KNOWLEDGE AS PRIOR ART

15.1 ISSUES OF TRADITIONAL KNOWLEDGE IN PATENTABLE INVENTIONS

Issues of traditional knowledge (TK) may arise in regard to claimed inventions which may be based on it, may be derived from it, or may be guided by or make use of it.¹ The World Intellectual Property Organisation (WIPO) has noted that traditional knowledge may be potentially relevant to an invention's novelty or inventiveness (non-obviousness), to an applicant's declaration of identity of the true inventor(s), to an applicant's obligation to declare all known prior art relevant to an invention's patentability or to the applicant's claim of entitlement to apply for an invention.²

One of the conditions of patentability is that a claimed invention must be novel/inventive, and this criterion is assessed in relation to what is already known or exists. This body of existing knowledge is termed state of the art or prior art.³ Developing countries have alleged that the patent system facilitates the misappropriation of traditional knowledge by granting unjustified patents on inventions based upon it, since the intellectual property rights (IPR) system does not recognise this body of knowledge as prior art.

The discussions in the TRIPS Council have put concerns about the misappropriation of traditional knowledge into two categories:

¹ WIPO/GRTKF/IC/11/7 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore Eleventh Session, July 3 to 12, 2007, *Recognition of Traditional Knowledge within the Patent System*, 6 June 2007, 1. For an overview of WIPO's work on TK see Shakeel T. Bhatti "Intellectual Property and Traditional Knowledge: The Work and Role of the World Intellectual Property Organization (WIPO)" in UNCTAD/DITC/TED/10 Sophia Twarog and Promila Kapoor (eds) *Protecting And Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions*, (2004) 121.

² WIPO/GRTKF/IC/11/7 above n 1, 1.

³ For example Article 54 (1) entitled "Novelty" of the the European Patent Convention states that "An invention shall be considered to be new if it does not form part of the state of the art" - *Convention on the Grant of European Patents* (European Patent Convention) 13 I.L.M. 268 (1974).

- Concern about the granting of patents or other IPRs covering traditional knowledge to persons other than those indigenous peoples or communities who have originated and legitimately control the traditional knowledge;
- Concern that traditional knowledge is being used without the authorization of the indigenous peoples or communities who have originated and legitimately control it and without proper sharing of the benefits that accrue from such use.⁴

Peru has articulated these concerns more specifically, stating that:

One of the main concerns of Peru and various other countries (including the Group of Like-Minded Megadiverse Countries) is the fact that the patent system, as currently operated, frequently gives rise to situations in which inventions based directly or indirectly on genetic resources of Peruvian origin or the traditional knowledge of Peruvian communities pass the novelty or inventiveness tests when they should not do so or, alternatively, that these resources or knowledge could have been obtained in an unauthorized or patently illegal manner.⁵

The second issue raised in this statement, namely the possibility that these resources or knowledge have been obtained in an unauthorised or illegal manner, has already been discussed in the previous chapter on disclosure of origin of genetic resources and traditional knowledge. The first point, that inventions based directly or indirectly on genetic resources or traditional knowledge pass the novelty or inventiveness test, will be discussed here. The concerns of developing countries have been summed up by Peru in the following terms – “[a]re the patents granted “good” patents in the sense that the inventions are actually new and involve an inventive step?”⁶

The debate on the relationship between the patent system and traditional knowledge therefore hinges on the question as to whether traditional knowledge is relevant to determining the patentability of inventions, specifically whether they meet the novelty criterion. The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional

⁴ IP/C/W/370/Rev.1- TRIPS Council, *The Protection of Traditional Knowledge and Folklore - Summary of Issues Raised and Points Made*, 9 March 2006, 3. See also the position of the African Group - IP/C/W/404 - TRIPS Council, *Taking Forward the Review of Article 27.3(B) of the TRIPS Agreement Joint Communication from the African Group*, 26 June 2003.

⁵ IP/C/W/447 - TRIPS Council, *Article 27.3(b), Relationship between the TRIPS Agreement and the CBD and Protection of Traditional Knowledge and Folklore, Communication from Peru*, 8 June 2005, 2. See also IP/C/W/493 – TRIPS Council, *Combating Biopiracy – The Peruvian Experience, Communication from Peru*, 19 September 2007 where Peru has documented several cases of inventions being patented in spite of evidence of prior art in relation to them.

⁶ IP/C/W/447, above n 5, 4.

Knowledge and Folklore (IGC) has unequivocally answered this question in the affirmative. It has noted that the “traditional” characteristic of traditional knowledge does not mean that it is irrelevant to determining issues of patentability, and it is a misconception to assume that it is not innovative, has no scientific or technological component, or that it is necessarily public domain information that can be freely used. Traditional knowledge holders who innovate within their knowledge systems have created inventions which are technically patentable.⁷

However, there are also characteristics of traditional knowledge which may hinder its integration into patent systems. The IGC has noted that it is viewed as being held collectively by communities, often through a form of custodianship, which contrasts with conventional notions of ownership of intellectual property. Consequently there is a difference of opinion among traditional knowledge holders as to whether the patent system should, in fact, be used to protect traditional knowledge. While this has been done to some extent, the majority have not used the patent system for this purpose. As a result, “much TK relevant to patentability of claimed inventions will not be disclosed in searches of patent literature.”⁸

15.2 THE PROTECTION OF TRADITIONAL KNOWLEDGE WITHIN THE INTELLECTUAL PROPERTY RIGHTS SYSTEM

Strategies for protecting traditional knowledge within the patent system have been defined as defensive protection, as opposed to positive protection. As discussed in Chapter 13, positive protection of traditional knowledge should, ideally, be based on a holistic approach to indigenous rights which goes beyond its relevance to IPR systems. The defensive protection of traditional knowledge does not envisage granting patent protection to this body of knowledge and would not necessarily prevent others from using it, but rather seeks to ensure that inventions based upon it are not themselves granted such protection unjustifiably and illegally. The strategy by which this objective is to be achieved is to ensure that it is recognised as forming part of the state of the art or prior art.

The WIPO IGC has defined defensive protection of traditional knowledge in the following terms and set out its components.

⁷ WIPO/GRTKF/IC/11/7 above n 1, 4.

⁸ Ibid.

‘Defensive protection’ of TK refers to strategies to prevent the acquisition of intellectual property rights over TK or genetic resources by parties other than the customary custodians of the knowledge or resources. Defensive protection has both legal and practical aspects. The legal aspect concerns whether TK is recognized as relevant prior art under the patent law of the jurisdiction concerned. Legal questions may include, for instance, recognition of orally transmitted knowledge, establishing a clear date of public disclosure of written or oral knowledge, and determining whether the TK was disclosed in such a way as to enable the reader to put the technology into effect. The practical aspect includes entails [sic] ensuring that information is actually available to search authorities and patent examiners, and is effectively accessible to patent authorities (such as being indexed or classified), so that it is much more likely to be found in a search for relevant prior art.⁹

These two aspects are considered below.

It should be noted that while disclosure of origin requirements discussed in the previous chapter also facilitate defensive mechanisms to protect genetic resources and traditional knowledge, traditional knowledge being an intangible resource requires more specific action. However, the two mechanisms are inter-linked since disclosing the traditional knowledge in question would be the first step in determining whether it is prior art under the circumstances.

15.2.1 The legal aspect of integrating traditional knowledge and prior art

The legal aspect of the defensive protection of traditional knowledge is based on the requirement that it be recognized in national and international patent law as part of the body of prior art, against which an invention would have to be measured for novelty and inventiveness. Since traditional knowledge is by and large an unwritten body of knowledge, the fundamental problem is whether oral traditions and knowledge can be legally and practically recognised as such when examining patent applications.

At the international level, the question of what constitutes prior art is found in the WIPO treaties. As noted earlier, prior art as a condition of patentability was raised in the discussions on the draft Substantive Patent Law Treaty (SPLT).¹⁰ The draft provision contained in Article 8(1) in fact appears promising for protection of traditional knowledge. It states:

⁹ Ibid paragraph 13.

¹⁰ Above Chapter 10.

(1) [*Definition*] The prior art with respect to a claimed invention shall consist of all information which has been made available to the public anywhere in the world in any form [,as prescribed in the Regulations,] before the priority date of the claimed invention.¹¹

This includes both written and unwritten knowledge. However, in view of the fact that the SPLT has not been finalised, the Patent Cooperation Treaty (PCT) would be currently applicable at the international level for this purpose. The current provisions of the PCT are more restrictive in this respect than those in the draft SPLT.

Article 15(2) of the PCT states that “[t]he objective of the international search is to discover relevant prior art.”¹² The definition of prior art is found in Rule 33.1 (a) of the Regulations of the PCT, which states:

For the purposes of Article 15(2), relevant prior art shall consist of everything which has been made available to the public anywhere in the world by means of written disclosure (including drawings and other illustrations) and which is capable of being of assistance in determining that the claimed invention is or is not new and that it does or does not involve an inventive step (i.e., that it is or is not obvious), provided that the making available to the public occurred prior to the international filing date.¹³

Unlike the draft SPLT, this provision excludes oral information and traditions from the purview of the PCT. In addition the IGC has stated that:

this rule only directly concerns the non-binding international search and examination, and the applicable rules for determining what prior art is relevant can vary according to national or regional laws. A strategy for defensive protection clearly needs to take account of the legal situation that applies in any particular country of interest.¹⁴

¹¹ SCP/10/4 – Standing Committee on the Law of Patents, Tenth Session, May 10-14, 2004, *Draft Substantive Patent Law Treaty*, 30 September 2003, Article 8.

¹² Article 27 (5) of the PCT.

¹³ WIPO Regulations under the Patent Cooperation Treaty (as in force from April 1, 2007). Similarly, Rule 64.1 (a) states “[f]or the purposes of Article 33(2) and (3), everything made available to the public anywhere in the world by means of written disclosure (including drawings and other illustrations) shall be considered prior art provided that such making available occurred prior to the relevant date.”

¹⁴ WIPO/GRTKF/IC/5/6 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Fifth Session, July 7 to 15, 2003, *Practical Mechanisms for the Defensive Protection of Traditional Knowledge and Genetic Resources within the Patent System*, 14 May 2003, 2. See also Manuel Ruiz, *The International Debate on Traditional Knowledge as Prior Art in the Patent System: Issues and Options for Developing Countries* South Centre, T.R.A.D.E. Series Occasional Paper 9, [2002] http://www.ciel.org/Publications/PriorArt_ManuelRuiz_Oct02.pdf at 30th April 2008.

The IGC therefore takes the position that national laws are the final arbiter on this issue. In view of the wide divergence in domestic laws in the potential recognition they accord to traditional knowledge, this would be disadvantageous to those countries trying to prevent its misappropriation. The U.S. for example does not recognize foreign uses of claimed inventions, and also requires documentation of the knowledge in question. Under the U.S. Patent Act,¹⁵ novelty is not established if

the invention was *known or used by others in this country*, or patented or described in a *printed publication* in this or a foreign country, before the invention thereof by the applicant for patent, (emphasis added)

or

the invention was patented or described in a *printed publication* in this or a foreign country or in *public use* or on sale *in this country*, more than one year prior to the date of the application for patent in the United States. . . . (emphasis added).

This means that the U.S. does not recognise foreign *uses* of claimed inventions and also requires the knowledge to be documented whether within or outside the U.S.¹⁶ A similar approach is taken in the PCT which requires written proof of prior art.¹⁷ The European Patent Convention in contrast has a wider definition of prior art, which encompasses everything made available to the public in any way.¹⁸

Restrictive national definitions of prior art have resulted in several conflicts on issues of genetic resources and traditional knowledge both internationally and within countries.¹⁹ These have

¹⁵ 35 U.S.C Sections 102 (a) and (b).

¹⁶ Shayana Kadidal, 'Subject-Matter Imperialism? Biodiversity, Foreign Prior Art and the Neem Patent Controversy' (1997) 37 *IDEA* 371; Leanne M Fecteau, 'The Ayahuasca Patent Revocation: Raising Questions about Current US Patent Policy' (2001) 21 *Boston College Third World Law Journal* 69 for a discussion of U.S. law.

¹⁷ Although one of the primary purposes of the PCT was to standardise the procedure for examining the criterion of prior art in patent applications, it categorically acknowledged that its provisions regarding prior art are exclusively for the purposes of international procedure. Consequently any country is free to apply the criteria of its national law in respect of this and other conditions of patentability not constituting requirements as to form and contents of applications – PCT, Article 17 (5).

¹⁸ "The state of the art shall be held to comprise everything made available to the public by means of a written or oral description, by use, or in any other way, before the date of filing of the European patent application" – *European Patent Convention*, above n 3, Article 54 (2).

included patents granted for products based on the uses of the neem tree,²⁰ the medicinal properties of turmeric, the ayahuasca vine of the Amazon Basin²¹ and the hoodia plant of the Kalahari desert.²² These controversies revolved around the issue of whether traditional but undocumented knowledge of the beneficial properties of these plants would constitute “prior art” within its meaning in national laws. In the case of neem and turmeric the patents were revoked only when ancient Sanskrit texts which documented their uses, were discovered.²³

The U.S. has argued in the TRIPS Council that the problem lies not with its laws but with the knowledge systems in question which

often depend upon face-to-face communication, thereby limiting access to the information to persons in direct contact with one another. The public at large does not benefit from the knowledge nor can the knowledge be built upon.²⁴

It has further stated that:

In addition, if information is not written down, that information is completely inaccessible to patent examiners everywhere as prior art when they are examining patent applications. It is possible, therefore, for a patent to be issued claiming as an invention technology that is known to a particular indigenous community. The fault lies not with the patent system, however, but with the inaccessibility of the knowledge involved beyond the indigenous community.²⁵

¹⁹ Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (2002) 76 <http://www.iprcommission.org/papers/pdfs/final_report/CIPRfullfinal.pdf> at 25th February 2008. See also the discussion on biopiracy in Chapter 3.

²⁰ Kadidal, above n 16; Emily Marden, ‘The Neem Tree Patent: International Conflict over the Commodification of Life’ (1999) 22 *Boston College International and Comparative Law Review* 279.

²¹ Fecteau, above n 16.

²² Rachel Wynberg, ‘Rhetoric, Realism and Benefit-Sharing: Use of Traditional Knowledge of Hoodia Species in the Development of an Appetite Suppressant’ (2004) 7(6) *Journal of World Intellectual Property* 851.

²³ GRAIN, *One global patent system? WIPOs Substantive Patent Law Treaty* (2003) <http://www.grain.org/briefings_files/wipo-splt-2003-en.pdf> at 25th February 2008; Report of the Commission on Intellectual Property Rights, above n 19, 76. See also Cynthia M Ho, ‘Biopiracy and Beyond: A Consideration of Socio-Cultural Conflicts With Global Patent Policies’ (2006) *University of Michigan Journal of Law Reform* 433, 449 and John Tustin, ‘Traditional Knowledge and Intellectual Property in Brazilian Biodiversity Law’ (2006) *Texas Intellectual Property Law Journal* 131.

²⁴ IP/C/W/209 - TRIPS Council, *Review of the Provisions of Article 27.3(b) Further Views of the United States, Communication from the United States*, 3 October 2000, page 4.

²⁵ Ibid.

While the inaccessibility of traditional knowledge, particularly oral traditions, does constitute a practical difficulty in defining it as prior art, it can still be argued that the first step in defensive protection is to grant it legal recognition whether written or unwritten. Thereafter the practical problems of implementing the provisions could be addressed. Therefore the U.S. position is not tenable. International recognition of non-written disclosures should not be left to the discretion of individual countries and a uniform standard should be made applicable. This position has been endorsed by the UK IPR Commission which has stated that it must be recognized that

much traditional knowledge will continue to be undocumented. The concept of absolute novelty whereby any disclosure including **through use**, anywhere in the world, is sufficient to destroy the novelty of an invention therefore remains a necessary safeguard. Without this safeguard, patents could continue to be granted for traditional knowledge that is already in the public domain, albeit not through written disclosure. Some countries do not include use outside their country as “prior art.”

Those countries that only include domestic use in their definition of prior art, should give equal treatment to users of knowledge in other countries. In addition, account should be taken of the unwritten nature of much traditional knowledge in any attempts to develop further the patent system internationally.²⁶

The WIPO IGC has also acknowledged that one possible means to improve defensive protection of traditional knowledge within the patent system is to clarify the legal criteria applicable to prior art. It notes the differences in national and regional standards in this regard, including whether the prior art was made available to the public, the circumstances or extent of its disclosure and whether it was disclosed in oral or written form. The IGC notes that at the international level, this might entail harmonization of substantive patent law in this regard.²⁷

The IGC has in fact acknowledged that recognition of orally disclosed information is a further means of enhancing defensive strategies to protect traditional knowledge, since non-recognition of such information would prejudice the interests of communities with a stronger oral tradition.²⁸

It goes on to note that

[f]rom the legal perspective, it is possible to recognize orally disclosed material as being relevant prior art, and this recognition may be universal, in the sense that knowledge disclosed by any

²⁶ Report of the Commission on Intellectual Property Rights, above n 19, 83.

²⁷ WIPO/GRTKF/IC/5/6, above n 14, paragraph 80.

²⁸ WIPO/GRTKF/IC/6/8 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Sixth Session, March 15 to 19, 2004, *Defensive Protection Measures Relating to Intellectual Property, Genetic Resources and Traditional Knowledge: An Update*, 15 December 2003, paragraph 17.

means, in any geographical location, may be considered as prior art relevant to the novelty of a claimed invention. Recognizing its legal status as relevant to the determination of validity of patent claims would clearly increase the legal basis for defensive protection, without necessarily requiring TK holders to disclose or publish their TK in violation of the principle of prior informed consent.

The EC has also been more amenable to the principle of defensive protection of traditional knowledge through the patent system. It has noted in the TRIPS Council that an effective way in which to prevent misappropriation would be make sure that traditional knowledge would always be duly recognised as prior art.²⁹ However, in view of the fact that the negotiations on the draft SPLT and the revision of the TRIPS Agreement are currently deadlocked, it is uncertain as to how this would be achieved.

15.2.2 The practical aspect of integrating traditional knowledge and prior art

15.2.2.1 Defensive publication of traditional knowledge

Even assuming that the concept of prior art is extended to traditional knowledge in national and international legislation, the practical problem remains as to how measures would be implemented to ensure that it is taken into consideration. The argument of patent applicants is that traditional knowledge is simply not available for examination in this regard. Therefore if traditional knowledge is to be made available as prior art in order to pre-empt patent claims, it may need to be recorded and published. This could be both beneficial and detrimental to the communities which possess it.

The Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity (WG8J) has pointed out that the protection aimed at by documenting and recording traditional knowledge can be “protection from extinction, protection from privatization and unjust enrichment, protection from unauthorized use, and protection for access and benefit sharing, among others.”

²⁹ IP/C/W/383 - TRIPS Council, *Communication from the European Communities and their member states, Review of Article 27.3(b) of the TRIPS agreement, and the relationship between the TRIPS agreement and the Convention on Biological Diversity (CBD) and the protection of Traditional Knowledge and Folklore, “A Concept Paper,”* 17 October 2002, paragraph 65.

On the other hand making information on traditional knowledge widely available would also give rise to some potential problems which could be detrimental to the communities concerned.³⁰ The WG8J has gone on to note that:

despite the potential benefits of documenting and recording traditional knowledge, the topic has been controversial, namely in terms of whether documenting traditional knowledge may itself constitute a threat to the preservation and nature of traditional knowledge and of whether it may, in practice, facilitate misuse and unauthorized use of such knowledge.³¹

India has submitted a proposal to the TRIPS Council, suggesting three possible methods of protection. These are (i) documentation of traditional knowledge; (ii) registration and innovation patent system (sic); and (iii) development of a *sui generis* system.³² This proposal also notes the same advantages and disadvantages to documenting and publishing traditional knowledge.

The first method could give rise to two possible scenarios. India has pointed out that on the one hand it is believed that proper documentation of traditional knowledge would help in checking biopiracy since such documentation would be available to patent examiners in order to check traditional knowledge as possible prior art. Further, India has observed that “[i]t is also hoped that such documentation would facilitate tracing of indigenous communities with whom benefits of commercialization of such materials/knowledge has to be shared.” However, there are also apprehensions that documentation may in fact facilitate biopiracy. India points out that:

a trade secret of an indigenous community would be maintained only until it is closely held by the community - as soon as it is put on paper, it will become accessible to pirates and would be purloined. This dilemma is the subject of discussions in national and international debates on benefit sharing. Some suggest the empowerment of the indigenous communities themselves so that they are able to get legal protection for closely-held knowledge without the involvement of

³⁰ For a discussion of the potential problems involved in documenting traditional knowledge see UNEP/CBD/WG8J/4/INF/9 - Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(J) and Related Provisions of the Convention on Biological Diversity, Fourth meeting, 23-27 January 2006, *Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities, The Advantages and Limitations of Registers*, 21 December 2005; UNEP/CBD/WG8J/5/3/Add.2 - Ad Hoc Open-Ended Inter-Sessional Working Group on Article 8(J) and Related Provisions of the Convention on Biological Diversity, Fifth meeting, 15-19 October 2007 - *Considerations for Developing Technical Guidelines for Recording and Documenting Traditional Knowledge and the Potential Threat of Such Documentation*, 28 July 2007.

³¹ UNEP/CBD/WG8J/5/3/Add.2, above n 30, 2. This document provides a comprehensive analysis of the issues to be considered in documenting TK, including draft recommendations on the possibility of developing technical guidelines for doing so.

³² IP/C/W/198 (WT/CTE/W/156) - Committee on Trade and Environment and TRIPS Council, *Protection of Biodiversity and Traditional Knowledge – The Indian Experience, Submission by India*, 14 July 2000.

outside agencies. Nevertheless, documentation has one clear benefit. It would check patents based on TK in the public domain that are today difficult to prevent due to lack of availability of information with patent examiners.³³

In regard to the first method, i.e. documentation of traditional knowledge, India has set out certain measures that it has taken in this regard. These include Community Biodiversity Registers and Peoples' Biodiversity Registers with the involvement of a range of stakeholders including non-governmental organizations. The Traditional Knowledge Digital Library is a navigable computerized database of documented traditional knowledge relating to the use of medicinal and other plants, such knowledge being already in the public domain.³⁴

However, India has reiterated that documentation is only one means of giving recognition to knowledge holders. It will not ensure that the benefits accruing from the use of such knowledge will be shared with the knowledge holders.³⁵ In fact a report submitted to the WG8J has cautioned that countries must be circumspect in resorting to databases as a means of protecting traditional knowledge. It states that

[m]any of the functions of traditional knowledge databases conflict with one another such that the benefits achieved for one function can produce costs for other goals. Other conflicts involve significant differences in how traditional knowledge is defined and regulated within the communities and externally in national and international jurisdictions. Knowledge for indigenous and local communities has multiple dimensions, such as cosmological, spiritual, ritual, kinship, inherited, and practical. Traditional knowledge is generally regulated under customary law and locally specific rules, taboos, and social and spiritual obligations that may differ greatly from national norms. Customary law regulates what can properly be stored in traditional knowledge databases, how this knowledge should be used, defines the benefits and harms from the distribution of this knowledge outside of its normal context.³⁶

The second method, i.e. the registration and innovation patent system involves creating a system of registration of innovations by inventors. This registration will give inventors the rights to challenge any use of the innovation without prior permission. The HoneyBee data base in India has been cited as an example. It was stated that:

The network has probably the world's largest database on grassroot innovations, having now about 10,000 innovations, with names and addresses of the innovators (individuals or communities).

³³ Ibid 3.

³⁴ For a description of various TK databases see UNEP/CBD/WG8J/4/INF/9, above n 30.

³⁵ IP/C/W/198, above n 32, 5.

³⁶ UNEP/CBD/WG8J/4/INF/9, above n 30.

Through the HoneyBee Newsletter, grassroots innovations have been disseminated to more than 75 countries. For example, this database has entries on traditional use of fish and fish products, improving crop productivity, etc.³⁷

In regard to the third suggestion, i.e. the development of a *sui generis* system, India has stated that:

Some experts have suggested that a *sui generis* system separate from the existing IPR system should be designed to protect knowledge, innovations and practices associated with biological resources. However, the parameters, elements and modalities of a *sui generis* system are still being worked out. This is in addition to the *sui generis* system of protection for plant varieties.

It appears therefore that documentation and registration of traditional knowledge will be necessary in order to bring it within the body of available prior art. However, the primary concern regarding this strategy is whether it may facilitate piracy rather than protecting it. In the context of this problem, knowledge that is in the public domain and that which is not, has been distinguished.³⁸ Several countries have noted this distinction in making suggestions for defensive measures. For example, at the outset of the deliberations of the IGC, the Asian Group and China noted that

[w]hen documenting the traditional knowledge, governments may take into account existing intellectual property standards and distinguish between traditional knowledge which is in the public domain and traditional knowledge which is not in the public domain. Based on this distinction, Member States may:

as appropriate, compile databases of traditional knowledge which is in the public domain and make these databases available to patent-granting authorities for the purposes of prior art searches, in order to prevent the grant of any intellectual property rights over such public domain knowledge;

establish registers of traditional knowledge elements which are not in the public domain and keep the contents of the registers undisclosed, pending the possible establishment of new protection standards for the traditional knowledge elements contained in the registers.³⁹

³⁷ IP/C/W/198, above n 32, 6.

³⁸ For an analysis of the contested domain of knowledge see Anil K Gupta, *WIPO-UNEP Study on the Role of Intellectual Property Rights in the Sharing of Benefits Arising From the Use of Biological Resources and Associated Traditional Knowledge*, (2000) jointly produced by the World Intellectual Property Organization (WIPO) and the United Nations Environment Programme (UNEP), Section A.

³⁹ WIPO/GRTKF/IC/2/10 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Second Session, December 10 to 14, 2001, *Position Paper of the Asian Group and China, Document submitted by the Asian Group and China*, 3 December 2001, 3.

The Asian Group subsequently submitted a further document detailing the experiences of Asian countries with the use of data bases and registries in regard to traditional knowledge and genetic resources.⁴⁰ The document noted inter alia, that the purpose of databases and registries is not to put undisclosed traditional knowledge and genetic resources into the public domain, and their objectives include defensive and positive legal protection in respect of their contents.⁴¹ There are risks involved in the compilation and digitisation of traditional knowledge which may lead to its ready access and unauthorised exploitation in the absence of clear international legal principles. This factor must be addressed,

These concerns regarding documenting of traditional knowledge have also been expressed by the IGC which has cautioned that the objectives of defensive protection should be carefully considered, and which has identified some points that traditional knowledge holders would need to take into consideration. It has noted that such defensive measures would often entail the first publication of traditional knowledge or information about genetic resources. This would mean that traditional knowledge holders may then forego patent rights over any innovations disclosed thereby, effectively precluding positive protection. Defensive protection would also make material more readily available, thus potentially enabling third parties to gain access to it and use it to the detriment of the holders. The IGC points out that:

For this reason, it is essential to consider carefully whether defensive protection is really what is intended, and whether the community or institution concerned would actually prefer to pursue a positive protection strategy or a combined positive and defensive approach. It would be important to secure the prior informed consent of any party providing information or material that would be disclosed in a defensive protection mechanism: this consent may need to be based on a full description of the implications of disclosure.⁴²

15.2.2.2 Enforcement of search and disclosure measures

The documentation of traditional knowledge would serve no purpose if patent examination processes did not take them into account, and this aspect also needs to be strengthened. Therefore

⁴⁰ WIPO/GRTKF/IC/4/14 - Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Fourth Session, December 9 to 17, 2002, *Technical Proposals on Databases and Registries of Traditional Knowledge and Biological/Genetic Resources, Document submitted by the Asian Group*, 6 December 2002, 2.

⁴¹ The full range of proposed objectives is set out in *ibid* Appendix of the Annexure.

⁴² WIPO/GRTKF/IC/5/6, above n 14, 10. The need for prior informed consent of the communities concerned has also been cited in other fora – see for example IP/C/W/228 - TRIPS Council, *Review of Article 27.3(b) Communication from Brazil*, 24 November 2000, paragraph 40.

such documentation must be made available to patent examiners, and measures to ensure that they are duly considered must also be put in place. This must be done at both national and international levels.

In regard to facilitating the implementation of the practical aspects of defensive protection, WIPO has cited two outcomes produced by the IGC, namely,

- [A]mendments to international patent systems that are administered by WIPO. These amendments rely upon changes to rules and systems established by international IP treaties; and
- [P]ractical products and tools for stakeholders. These tools do not amend existing systems, but allow TK holders and custodians of genetic resources to use these systems more effectively for their purposes.⁴³

In regard to the first outcome WIPO has proposed the expansion of the international search process under the PCT to include documentation of traditional knowledge. Article 15(4) of the PCT provides that

[t]he International Searching Authority referred to in Article 16 shall endeavor to discover as much of the relevant prior art as its facilities permit, and shall, in any case, consult the documentation specified in the Regulations.

The documentation in question is that contained in Rule 34 of the PCT Regulations entitled “Minimum Documentation.” This includes national patent documents, the published international (PCT) applications, the published regional applications for patents and inventors’ certificates, and the published regional patents and inventors’ certificates and such other published items of non-patent literature as the International Searching Authorities shall agree upon, and which shall be published in a list by the International Bureau when agreed upon for the first time and whenever changed. The IGC has proposed that published traditional knowledge would be integrated into the PCT minimum documentation in order to ensure that traditional knowledge is considered in the international search and examination process, and necessary changes would be made in this regard.⁴⁴ However, this still does not address the question of oral traditions as prior art.

⁴³ WIPO/GRTKF/IC/5/6, above n 14, 14.

⁴⁴ WIPO/GRTKF/IC/5/6, above n 14, paragraphs 31- 43; WIPO/GRTKF/IC/6/8, above n 28, paragraphs 10-15; WIPO/GRTKF/IC/11/7, paragraph 48.

In regard to the second outcome the IGC has agreed on such steps as the compilation of a non-exhaustive Inventory of Traditional Knowledge-related Periodical, a non-exhaustive Inventory of Traditional Knowledge-related Databases, and the establishment of the WIPO Task Force on Classification of Traditional Knowledge. The practical products and tools for stakeholders include a Toolkit for IP Management, an Online Portal of Registries and Databases of Traditional Knowledge and Genetic Resources, a sample database of Ayurvedic traditional medicine from South Asia, a Questionnaire on Databases and Registries of Traditional Knowledge and Genetic Resources, and Technical Proposals Concerning Databases and Registries of Traditional Knowledge and Biological/Genetic Resources.⁴⁵

15.3 CONCLUSION

This discussion highlights the fact that traditional knowledge is inherently incompatible with the patent system and cannot be brought under its aegis. While IPRs may be used to appropriate traditional knowledge, they cannot effectively protect it either by positive or negative mechanisms. Also, many traditional knowledge holders do not wish to use the IPR system to give positive protection to their body of knowledge even if they have created inventions which are practically patentable. Their concerns are rather to prevent others from using such knowledge in inventions and patenting them, in other words, protecting their knowledge heritage from the IPR system.

However, it appears that the best defensive measure in this regard is, in fact, to use that very system. Unlike in the case of the disclosure of origin requirement, which is not currently an aspect of patent law, the requirement of novelty is, and is in fact the most fundamental condition of patentability. Therefore in this instance, the point in issue is to make that condition enforceable in relation to traditional knowledge. The first aspect of doing so, the legal aspect, entails introducing and enforcing a universal novelty standard. The divergent national standards and criteria for recognizing what is prior art should be harmonized at international level and national law brought into conformity with it.

The second, practical, aspect of establishing what constitutes prior art has to be addressed very carefully. Documenting and publishing traditional knowledge may, in fact result in exposing it to the very threats from which the knowledge holders seek protection. Therefore a system needs to

⁴⁵ WIPO/GRTKF/IC/5/6, above n 14, 20.

be carefully worked out which will prevent, or at least minimize this possibility. In doing so a distinction can be made between knowledge which is common knowledge where the issue would not arise, and knowledge which is not in the public domain. In the case of the latter a possibility is to document such knowledge but keep it undisclosed until further protection standards have been worked out.

As in the case of disclosure of origin, in regard to issues of novelty, it is likely that many “bad” patent will slip through the net. Therefore, firstly, search and disclosure measures must be strictly enforced. One possible measure in this regard is to make the patent application public for a certain period of time in order that further information may be obtained from interested persons or communities. This would help to prevent unjustified patents from being granted. Nevertheless it is essential that post grant revocation of patents be made a feature of the system. There is even greater justification for doing so in this instance, since it can be argued that an invention which fails the novelty test should be rendered void ab initio.

CHAPTER 16: CONCLUSION

This thesis has examined the application of international law to the uses of plant genetic resources for food and agriculture (PGRFA) and has reached the conclusion that its effects in regard to these resources are inherently inequitable. The inequity results from the fact that international law governing the uses of these resources is dominated by the trade and intellectual property rights (IPR) regime, which both permits and facilitates PGRFA to be acquired and privatised, thereby restricting free access to them. The discourse on the uses of PGRFA as it has been played out in international institutions and as analysed in this thesis, is in effect, a recital of unsuccessful attempts, mainly by developing countries, to counteract the application and impacts of this regime.

In reaching this conclusion, I first considered the importance of PGRFA to human survival. Part 1 of the thesis examined the nature and historical development of PGRFA, and the institutional framework within which it was used by humans before the technological and legal developments in question came into being. In Chapter 2 of this Part, I discussed the values of biological resources to humans, and the values of PGRFA in particular, noting also the interdependence of countries in regard to the latter. The inequity of international trade and property law in its application to PGRFA is made worse by the fact that these resources are imperative for human survival, and restrictions on their accessibility would potentially have very adverse impacts on agriculture and food security globally, but particularly in developing countries. It is therefore a point of both equity and necessity that a free flow of such resources should be maintained across nations.

In Chapter 2, I also considered the issue of human cultural diversity which has been historically an instrumental factor in the accumulation of plant diversity. These two forms of diversity are essentially two sides of the same coin, and therefore this related topic, particularly traditional knowledge as a subset of culture, has also been an important aspect of the debate.

Chapter 3 considered the institutional factors which impelled the particular legal developments discussed in this thesis. The changes brought about in the law have been largely prompted by the ability of modern biotechnology to both enhance the commercial values of plants and now to provide the enabling technology to privatise them. These institutional developments must necessarily be supported by legal changes which validate the property rights claimed over crop

plants, and this thesis has explored how both national and international laws have fulfilled this purpose.

Chapter 3 further illustrated the possible negative impacts of current biotechnological developments on agriculture and livelihoods in developing countries, by referring to past experiences. The application of agricultural biotechnology in the context of the Green Revolution was cited as a precursor to the possible future impacts of industrial agriculture on nations and farmers. While it is undisputed that agricultural biotechnology potentially has benefits for humankind in enhancing global food security and nutrition, whether this potential is realised would depend on the legal and institutional framework within which it operates. It is the contention of this thesis that the current international legal framework of property rights does not allow this objective to be achieved. Rather, the present developments in agricultural biotechnology, together with the supporting legal framework of property rights over plant varieties, would potentially have even greater negative ramifications on these countries, including the loss of autonomy by nations and farmers over crop plant varieties and therefore over food security and agricultural systems.

The conflict over plant varieties is founded in a dispute over which regime of property rights should be applied to them. Since PGRFA can be classified as common property resources, Part 3 of this thesis explored the legal systems applicable to them. Having considered the conceptual basis of the notion of property in Chapter 4, Chapter 5 went on to discuss the competing international property regimes applicable to crop plants, as located in international agreements. The international trade and IPR regime, consisting of the TRIPS Agreement, UPOV and the several WIPO treaties provide the framework for private property rights. The CBD was negotiated on the basis of state sovereignty over biological resources, to a large extent as a reactionary measure to the former regime. The most recent agreement, the FAO Treaty, provides for specified crop plant varieties to be placed in the public domain as an open access regime. This too was intended as a foil to the private property regime. The current debate as explored in this thesis revolves around the question as to whether one or all of these regimes can ensure equity in the uses of crop plant varieties. The following points have emerged from the analysis.

This thesis has taken the position that it is the private property regime which has become the dominant paradigm by which PGRFA is regulated. This position has been entrenched by the application to these resources of plant breeders' rights under the 1978 and 1991 UPOV Acts, and patents under the TRIPS Agreement of 1994 respectively. Over the last two decades developing

countries have been compelled to enforce IPRs over plant varieties by a combination of agreements adopted in a cycle of bilateral and multilateral negotiations. In recent years developed countries have pushed for the upward harmonisation of IPRs which would also impact on the propertisation of PGRFA. Where they have failed to achieve their objective in multilateral fora, they are increasingly resorting to bilateral agreements to do so. Thus, developed countries have succeeded in anchoring an international private property regime, which importantly, is enforceable by way of sanctions.

Given this reality, the debate on PGRFA and related issues focuses on the strategies of developing countries to, if not prevent the patenting of crop plants, at least to ameliorate the impacts of doing so. Developing countries have been essentially fighting a defensive action in this regard, and this thesis has concluded that their strategies have been generally unsuccessful. While some seemingly positive measures have been instituted in agreements such as the CBD and the FAO Treaty, they have proved to be ineffective in the face of the IPR regime and the dominance exerted by developed countries and corporate interests.

The negotiations of the CBD were premised upon the principle of State sovereignty over natural resources, mainly at the insistence of developing countries. This provision refuted the position that PGRFA is the common heritage of humankind. However, the driving force behind the CBD are the provisions for equitable access to and benefit sharing of biological resources which include PGRFA *in situ*, as well as the traditional knowledge related to it. The intrinsic problem with this concept is that measures to ensure equitable access and benefits sharing are to be negotiated on a bilateral basis. In Chapter 12 I argued that bilateral negotiations may be inevitable in view of the divergences in resources and the circumstances in which they may be accessed. However, given the intrinsic imbalance in bargaining power between providers (particularly communities) and those seeking access to these resources, the access and benefit sharing system of the CBD is inherently disadvantageous to developing countries and their communities. As the case studies cited in Chapter 12 illustrate, they largely do not result in fair and reasonable contracts.

The injustice is reinforced by the fact that such agreements are not generally enforceable across borders. Critics of the system have therefore questioned whether the principles of prior informed consent and mutually agreed terms are merely intended to legitimise what is innately unjust. In any event, it must be questioned whether the propertisation of food plant varieties and their

removal from the public domain can be ever adequately compensated for by the type of benefits which have been advocated in this regard. In this sense the conceptualisation of the CBD is fundamentally flawed.

The most recent agreement in regard to PGRFA is the FAO Treaty of 2001. This Treaty deals with the *ex situ* collections of plants which are in the possession of countries across the world. It is founded on the principle of open access or no property in relation to crop plants, and has put in place a multilateral system of access to the varieties, which have been brought within its ambit. Since the process is regulated by the mechanisms of the Treaty, it obviates the need for ad hoc agreements between users and providers. The Treaty thus ensures the free flow of germplasm, at least as regards these varieties in their original form. However, as discussed in Chapter 12 it does not prevent these resources from being acquired for further development, and the modified form of the plants from being propertised and removed from the public domain. Thus the structure of the multilateral system may in fact facilitate the acquisition of these plants and their removal, at least of modified or enhanced versions, from the public domain.

Developing countries have not relied solely on the provisions of the aforementioned agreements in their attempts to achieve equity in the use of PGRFA. They have also attempted to negotiate amendments to the patent system to prevent or restrict the patenting of plant varieties. In the TRIPS Council in the context of the review of Article 27.3(b) of TRIPS and the relationship between TRIPS and the CBD, they have asked for, on the one hand, a total prohibition on the patenting of life forms, and on the other hand, restrictions on such patenting. Neither demand has been achieved to date. The response of developed countries has been that any problems or injustice caused by the status quo must be addressed by national legislation *but outside the patent system*. Further, in regard to the requirement in TRIPS that countries must provide for plant protection, including by a *sui generis* system, some developed countries have attempted to push for a system which is either a UPOV style model or one which is closely akin to patents.

As discussed in Chapters 14 and 15 defensive mechanisms to prevent the unauthorised appropriation and patenting of genetic resources and their attendant traditional knowledge have also been proposed by developing countries in several fora. The first is the requirement to disclose the origin of the genetic resources and traditional knowledge used in a patentable invention, and also to adduce proof that they were legally acquired with the consent of the provider country/community. Penalties for violation of this condition would include the

revocation of the patent. Unsurprisingly, developed countries vetoed these proposals, once again arguing that any problems which may arise in this regard must be addressed outside the patent system and by national legislation. A similar resistance was shown to the proposal that traditional knowledge be recognised as constituting part of the state of the art so as to defeat the novelty criterion of a patentable invention which is based on it. While developed countries appear to concur with developing country concerns about piracy of these resources, they are inflexible in their position that the patent system remains intact.

At present the debate on this point remains deadlocked at international level. While developing countries have stalled the negotiations of the Substantive Patent Law Treaty in the World Intellectual Property Organisation, they have not been successful in pressing their own case in the TRIPS Council. In the meantime some developing countries are bargaining away their positions in bilateral agreements. The International Regime on Access and Benefit Sharing presently being debated in the CBD shows some promise in instituting a globally applicable system on PGRFA, but it remains to be seen what the final outcome will be. Similarly, the multilateral system does provide for the free flow of specific crop plants, but the weaknesses in the system which permit the privatisation of further developed versions of these plants must be addressed.

It can be argued that there is a fundamental inequity in the patenting of plants which are critical for human survival and maintaining genetic diversity. The justification of applying IPRs to such things as industrial inventions and creative works is not disputed. However, plants are living organisms and cannot be invented, but only modified, and interpreting such modifications as inventions amounts to a distortion of the IPR system. The classic justification of IPRs is that the “labour” expended in creating new things must be adequately compensated or else there would be no incentive for individuals to do so. This would ultimately be detrimental to society as a whole. However, modification of crop plants has taken place throughout human history and the new varieties freely shared without any recompense to the “inventor.” Therefore the application of this argument to PGRFA does not have credibility. Further, the ethical issues in regard to granting private property rights over natural resources cannot be overlooked. At the least, it can be argued that doing so disregards the worldview of a large section of the world’s people.

Developing countries have countered the application of private property rights to these resources by asserting their own sovereign rights over them in the international sphere. At the national level debates have taken place as to whether farmers and indigenous communities should have

ownership over them. These counter measures are intended to ensure that the resources in question are legally acquired and much of the discourse has centred on the implementation of processes to ensure this. However, the fundamental question is not the legality of the acquisition, but whether these resources should be acquired and removed from the public domain at all. It is argued that ownership of PGRFA, whether assigned to States, farmers, indigenous communities or corporate entities is injurious to human welfare, and equity in regard to them can only be achieved by keeping them in the public domain.

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