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Access and Benefit-sharing for Farmers in Developing Countries

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Summary

The Food and Agricultural Organization of the United Nations estimates that as many as 840 million people are undernourished, most of them living in developing countries. Meanwhile many parties are looking to improve and create new plant varieties that gain greater yields, increased nutritional values, and other beneficial traits. These new plant varieties can gain protection by the international intellectual property regime allowing the owner of such protection to limit the ways in which the plant variety is used.

Increasingly, new, improved plant varieties are dependent on foreign genetic resources. The potential value of these genetic resources is expressed in the value of biological diversity. Countries with large biological diversity are more likely to possess natural resources of value than countries with smaller resources, but can also expect greater costs for preserving that biodiversity. To offset the costs for many developing countries that possess the greatest biological diversity international instruments put in place an Access and Benefit-Sharing regime. Users of genetic resources found in and held by a country would need to obtain a prior informed consent and reach mutually agreed terms with the country providing the genetic resources before it could obtain any genetic resources. In some cases, the above would also apply to *ex-situ* holdings.

The benefits gained from the utilization of the genetic resources would then be shared with the country providing the resources, or in some cases shared with a benefit-sharing fund that would further share the benefits with farmers, and in particular farmers of developing countries. However, the benefit-sharing regime is primarily an incentive for states to preserve biodiversity, not for individuals to do so. Furthermore, many benefits acquired through research are not adapted to the needs of developing countries but go into crops and management techniques not suitable for developing countries.

The benefits that farmers in the developing world are likely to directly see and take part of still rely in large part on the improved plant varieties and crop

management techniques that are capable of gaining protection under the international intellectual property regime. Moreover, the conserved biodiversity may act as a safety net against the effects of genetic erosion that may arise in the future.

Sammanfattning

The Food and Agricultural Organization of the United Nations uppskattar att så många som 840 miljoner människor är undernärda, de flesta av dem människor i utvecklingsländer. Samtidigt försöker många parter förbättra och skapa nya växtsorter som ger större skördar, ökade näringsvärden, och andra fördelaktiga egenskaper. Nya växtsorter kan få skydd genom den internationella immaterialrätten vilket gör att ägaren av ett sådant skydd ges rättigheter att begränsa de sätt som växtsorten används.

Nya, förbättrade växtsorter är alltmer beroende av främmande genetiska resurser. Det potentiella värdet av dessa genetiska resurser uttrycks i värdet av den biologiska mångfalden. Länder med stor biologisk mångfald äger med större sannolikhet naturresurser av värde än länder med mindre biologisk mångfald, men kan också räkna med högre kostnader för att bevara den biologiska mångfalden. För att kompensera kostnaderna för många u-länder som har störst biologiska mångfald har internationella instrument infört en så kallad ”Access and Benefit-sharing” regim. Användare av genetiska resurser som finns i, och som innehas av ett land behöver få ett förhandsgodkännande och nå ömsesidigt överenskomna villkor med det land som tillhandahåller genetiska resurser innan användaren kan erhålla några genetiska resurser. I vissa fall gäller det ovan sagda också för *ex-situ*-bevarande.

De fördelar som erhölls från nyttjandet av genetiska resurser skulle då delas med det land som tillhandahöll resurserna, eller i vissa fall delas med en stiftelse som ytterligare skulle fördela vinsterna med jordbrukare, och i synnerhet jordbrukare i utvecklingsländerna. Dock är fördelningen av vinsterna i första hand ett incitament för stater att bevara den biologiska mångfalden, inte för enskilda personer att göra det. Dessutom är många förmåner som förvärvas genom forskning inte anpassat till behoven i utvecklingsländerna, utan gäller grödor och tekniker som inte är lämpliga för utvecklingsländer.

De fördelar som jordbrukare i utvecklingsländerna sannolikt direkt får se och ta del av förlitar sig fortfarande till stor del på de förbättrade växtsorter och tekniker som sannolikt kan bli skyddade av den internationella immaterialrätten. Dessutom kan den bevarade biologiska mångfalden fungera som ett skyddsnät mot effekterna av genetisk utarmning som kan uppstå i framtiden.

Preface

This thesis could not have been made without several people I am lucky enough to have in my life.

I would like to thank my supervisor for insightful comments, discussions and help.

I would also like to thank my girlfriend who has made writing this thesis much smoother and enjoyable, and has encouraged me and offered insight throughout.

Last, but not least, I would like to express my gratitude for my parents who pushed me when it was needed and offered help when and where they could.

Abbreviations

ABS	Access and Benefit-Sharing
CBD	Convention on Biological Diversity
DSU	Understanding on Rules and Procedures Governing the Settlement of Disputes
FAO	Food and Agricultural Organization of the United Nations
ICESCR	International Covenant on Economic, Social and Cultural Rights
IPR	Intellectual Property Right
ITPRGFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LDC	Least Developed Countries
PGRFA	Plant Genetic Resources for Food and Agriculture
SMTA	Standard Material Transfer Agreement
TRIPs Agreement	Agreement on Trade-Related Aspects of Intellectual Property Rights
TWAIL	Third World Approach to International Law
UPOV	The International Union for the Protection of New Varieties of Plants
UPOV Convention	International Convention for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Introduction

1.1 General

Few human rights can measure up to the right to food; without adequate food and nutrition almost all other rights a human is endowed with become moot. Yet the Food and Agricultural Organization of the United Nations (FAO) estimates that 842 million persons went undernourished in 2011-2013, most of whom – some 827 million – were living in the developing countries of the world.[1] Lack of sufficient micronutrients is still prevalent; one study estimates that deficiencies in vitamin A and zinc intakes accounted for more than one million deaths of children under 5 years old in 2004 and was a major cause for disability for children of the same age.[2]

With the expected rise in population in the near future, agricultural yields will have to increase as well. Increasing agricultural yields globally can be done by expanding the amount of land that is being cultivated, by increasing the productivity of the land that is already being cultivated or by a combination of the two. Increasing the cultivated lands has negative effects on the environment as well as biological diversity and will face decreasing yields as the available soil will be of lesser quality.[3]

Increasing the yields of the currently cultivated lands, then, becomes of much larger importance if we want to preserve biological diversity while still increasing the world's food supply. Increasing the yields of crops is the goal for plenty of private sector entities and organisations as well as many public

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[1] FAO, IFAD and WFP, *The State of Food Insecurity in the World 2013. The multiple dimensions of food security.* Rome, FAO, 2013, page 8.
[2] Black, Robert E., Allen, Lindsay H., Bhutta, Zulfiqar A., Caulfield, Laura E., Onis, Mercedes de, Ezzati, Majid, Mathers, Colin, Rivera, Juan, "Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences" in *The Lancet*, vol. 371 (2008), pages 243-260, at pages 243 and 253.
[3] Mechlem, Kerstin, and Raney, Terri, "Agricultural Biotechnology and the Right to Food", in Francesco Francioni (ed.), *Biotechnologies and international human rights*, Hart Publishing, Oxford, 2007, page 136-137.

sector entities. The current trends indicate that biotechnology and, in particular, genetic engineering will be the means to this goal. This so called Gene Revolution – also known as the era of genetic engineering – may, like its predecessor the Green Revolution, bring increased yields without having to cultivate new land. However, there are differences between the Green Revolution and the Gene Revolution. Whereas in the Green revolution, most of the research done, and knowledge gathered was in the public sector, in the Gene Revolution the locus of the research and knowledge lie in the private sector with intellectual property rights (IPR) protecting the outcome of the research and the knowledge gathered.

As its name suggests, the Gene Revolution's focus is on improving crops and plants through biotechnology, and in particular genetic engineering. Examples of the improvements biotechnology has already brought include introducing genetic material from bacterium to a plant, which produces a toxin that kills certain insects feeding off the plant, and transferring genetic material to a plant variety, thereby introducing a resistance towards glyphosate-based herbicides.

A large biodiversity helps corporations and organizations in their genetic engineering. With a more varied genetic composition of individual organisms, as well as whole species, comes more opportunity to find valuable genetic material. Preserving the biological diversity is therefore a common interest of both private and public sector.

To preserve the biological diversity is the objective of the Convention on Biological Diversity (CBD), and it recognizes the importance of biodiversity, the necessity of access to the genetic material of the organisms making up the biodiversity and the significance of sharing technologies in the calling to meet the need for food and eradicate hunger.[4]

[4] Convention on Biological Diversity, June 5 1992,1760 U.N.T.S. 79, preamble, paragraph 20.

Farmers are, as seen above, expected to ensure food security and protect biological diversity. However, the current tools to fulfil each goal undermine each other. The often hailed solution to global hunger, the Gene Revolution, creates vast monocultures where biological diversity is scarce and the price of protected seeds is high. Securing biodiversity on the other hand can often be economically detrimental to the farmer in the form of smaller harvests. The purpose of this thesis will thus be to examine access and benefit-sharing (ABS) and, in particular, its effects for farmers in the developing world.

Given that farmers in many situations are the ones who actually preserve biological diversity and the strong protection and increased scope of IPRs relevant for the field my research question for this thesis will be two-pronged;

- are farmers likely to see and benefit from ABS regimes set out in international instruments?
- If yes, in what form?

1.2 Method and Material

A large part of this thesis will be regarding what the law actually is and says. This part will therefore focus on the international instruments available and applicable to the question posed above. Thus, instruments in the fields of intellectual property and, in particular, the instruments regarding ABS are studied in detail. The opinions of others as expressed in articles and books related to the subject are used to clarify the provisions of the instruments used.

As the assessment of the law as it is focuses on the application of ABS in the developing world, the assessment will be conducted with a Third World Approach to International Law (TWAIL) in mind. This method will be useful in determining why the law is as it is, but also assessing its effectiveness. The thesis will not use TWAIL methodology and theory throughout the thesis, but rather it will be used as a tool when helpful and when necessary. As this thesis will attempt to assess the impact of ABS on farmers, primarily, in the

developing world, TWAIL offers a critical view to look at international law from the viewpoint of developing countries and their population.

TWAIL is a critical school of thought that views international law as a tool of domination and subordination for developed countries at the expense of the third world. TWAIL argues that international law, in its history, set out a hierarchy, Europeans and non-Europeans, to subordinate the non-Europeans under the Europeans and that this subordination continues and is active to this day. As said by Julius Nyerere when speaking of the third world: "In international rule-making, we are recipients, not participants."[5]

TWAIL is suspicious of, if not in direct opposition to, international norms of European origin and in particular against norms claimed to be universal. Examples include many human rights but more notably economic values as expressed, *e.g.*, in the World Trade Organization (WTO) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs Agreement). While universal values may exist it is important that these values are not forced upon third world nations and peoples as the Truth.[6]

In relation to this, I would also like to remark on the terminology used in the thesis. The terms "developed" and "developing" country are used throughout the thesis. These terms are problematic for several reasons: first, because it portrays states as belonging to homogenous groups based solely on their development and wealth, second because the terms are inexact and wrong (all states are in fact developing), and third because its use in the discourse produces a hierarchy between states based on wealth and development. It has however become an often-used term with a somewhat clear meaning. Alternative terms that explore the same dynamic ("North" versus "South",

[5] Nyerere, Julius, "South-South Option", in Gauhaf, Altar (ed.) *Third world strategy: economic and political cohesion in the South*, Praeger in coop. with the Third world foundation, London, New York, 1983, at page 10.
[6] For more on TWAIL, see Mutua, Makau, and Anghie, Antony, "What Is TWAIL?" *American Society Of International Law: Proceedings Of The Annual Meeting* (2000), Vol.94 Am. Soc'y Int'l L. Proc. 31 2000 pages 31-38.

"First world" versus "Third world") could be used, but similar problems arise under each one.

1.3 Delimitation

There are several ways to address the issue of ABS in relation to human rights, as is my aim: through the right to health, the right to food, or the right to development to mention a few.

While it would be interesting and worthwhile to, also, examine ABS in relation to genetic resources used in the pharmaceutical sector, it is not for this thesis. While there are similarities between the right to food and the right to health in relation to pharmaceutical products, IP protection and ABS this thesis will not discuss or answer questions regarding the right to health and pharmaceuticals. Focus will instead be on the right to food in relation to IPRs and ABS.

Moreover, ABS could be considered more connected to the right to development (sustainable development in particular) than it is to the right to food. However, this aspect will not be discussed other than in relation to the right to food and as necessary.

The UN Convention on the Law of the Seas [7] also contains an ABS regime, it, however, only applies to non-living resources.[8] Consequently, the CBD will be applicable within the jurisdictional zones set out in the Convention in relation to genetic and living resources. The applicability of the Law of the Seas Convention to this thesis is therefore negligible.[9]

[7] UN General Assembly, *Convention on the Law of the Sea*, 10 December 1982, 1833 U.N.T.S. 3.
[8] Lawson, Charles and Downing Susan, "It's patently absurd - Benefit sharing genetic resources from the sea under UNCLOS, the CBD and TRIPs", *Journal Of International Wildlife Law And Policy*, vol. 5, particle 3, 1 January 2002, pages 211-233, at page 223.
[9] For more on the relationship between the CBD and the UN Convention on the Law of the Seas see Lawson and Downing, *supra* note 8.

I would also like to point out that this thesis will not go through the instruments article by article explaining the obligations it imposes. Rather relevant provisions of the instruments are extracted, studied and explained.

1.4 Outline

In order to comprehend the issues discussed in this thesis fully the reader will need some knowledge of the right to food. Chapter two of this thesis will therefore be dedicated to a short introduction on the right to food. However, by no means will this introduction serve as complete account of the right to food, it is merely a quick introduction for the readers convenience.

The third chapter of this thesis will discuss IPRs in relation to agriculture, and plant varieties. IPR and protection over intellectual property has become a part of the agricultural sector in much the same way it is a part of the pharmaceutical sector. Similarly as well, it is the cause of concern for many parties. It will therefore be necessary to give an account of the contemporary IPRs affecting the agricultural sector.

The fourth chapter explains ABS with a view of introducing the reader to the relevant instruments on ABS and will expound, briefly, on their relationships.

The fifth chapter will be dedicated to show and explain some of the issues faced by farmers, mostly in the developing world, due to IPRs whereas chapter six will examine whether or not ABS is a workable solution for the problems introduced in the previous chapter.

The Right to food

Several instruments proclaim the right to food. The right to food can be found in article 25 of the Universal Declaration of Human Rights[10] as well as article 11 of the International Covenant on Economic, Social and Cultural Rights (ICESCR).[11] An indirect right to food can however also be detected in the right to life. In reviewing the obligations under the right to life contained in article 6 of the International Covenant on Civil and Political Rights, it called on states to adopt "measures to eliminate malnutrition".[12]

The provision most relevant for the right to food is article 11 of the ICESCR because of the amount of states having become party to the ICESCR,[13] its resemblance to the right to food as it was expressed in the Universal Declaration of Human Rights, and because it is more detailed than other norms on the subject.[14] According to the article, every person has the right "to an adequate standard of living for himself and his family, including adequate food."[15] The article also recognizes "the fundamental right of everyone to be free from hunger."[16] Moreover, limitations on the right to food must be "compatible with the nature of [the right]."[17] Arguably, any limitation on the right to food would not be consistent with the nature of the right.[18] Article 4 of the ICESCR further provides that any limitation must be

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[10] UN General Assembly, *Universal Declaration of Human Rights*, 10 December 1948, 217 A (III), article 25.
[11] UN General Assembly, *International Covenant on Economic, Social and Cultural Rights*, 16 December 1966, 993 U.N.T.S. 3, article 11.
[12] UN Human Rights Committee (UNHRC), CCPR General Comment No. 6: , The Right to Life (Art. 6), 30 April 1982, UN Doc. HRI/GEN/1/Rev.9 (Vol. I), page 177, para 5.
[13] 161 states are party to the covenant as of 2014-04-08. Number according to https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-3&chapter=4&lang=en [accessed 2014-04-08].
[14] Alston, Philip, " International Law and the Right to Food" in Eide, Asbjørn, Barth Eide, Wenche, Goonatilake, Susantha, Gussow, Joan, and Omawale (eds.), *Food as a human right*, United Nations Univiversity, Tokyo, 1984, page 165.
[15] UN General Assembly, *supra* note 11, article 11.1.
[16] *Ibid*, article 11.2.
[17] *Ibid*, article 4.
[18] Haugen, Hans Morten, *The right to food and the TRIPS agreement: with a particular emphasis on developing countries' measures for food production and distribution*, Martinus Nijhoff Publishers, Leiden, 2007, page 205.

established in legislation in order to be complying with the ICESCR. It must be noted in relation to article 4 that the article is not to be interpreted as opening up for limitations, but rather as a protective barrier for the rights provided for in the ICESCR.[19]

Article 5.1 of the ICESCR recognizes that no right in the ICESCR may be interpreted as to counteract another right provided for in the Covenant. Only those limitations recognized and allowed by the ICESCR may be implemented or executed.[20] Article 5.2 provides that no article in the ICESCR may be used to prejudice a human right recognized in domestic law, other international instrument or custom.[21]

There is debate, however, as to whether or not there actually exist a right to food, whether or not the instruments available lay out an actual obligation for states. The right to food is hardly justiciable in the same manner as the right to freedom from torture,[22] or the right to form trade unions,[23] and the right, if it exists, must be realized progressively, in steps.[24] The Committee on Economic, Social and Cultural Rights have nonetheless recognized that certain elements of the right to food are core obligations that a state must fulfil in order to comply with the ICESCR. The core content of the right as identified by the Committee on Economic, Social and Cultural Rights

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[19] The Limburg Principles on the Implementation of the International Covenant on Economic, Social and Cultural Rights, UN Doc. E/CN.4/1987/17, Annex, paragraph 46. See also UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 13: The Right to Education (Art. 13), 8 December 1999, UN Doc. E/C.12/1999/10, para 42, and UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 14: The Right to the highest attainable standard of health (Art. 12), 11 August 2000, UN Doc. E/C.12/2000/4, para 28 where they recite the view given in the Limburg Principles.

[20] Haugen, *supra* note 18, page 210 and The Limburg Principles on the Implementation of the International Covenant on Economic, Social and Cultural Rights, *supra* note 19, paragraph 57.

[21] Haugen, *supra* note 18, page 210 and The Limburg Principles on the Implementation of the International Covenant on Economic, Social and Cultural Rights, *supra* note 19, paragraph 58.

[22] See UN General Assembly, *International Covenant on Civil and Political Rights*, 16 December 1966, 999 U.N.T.S. 171, article 7.

[23] See UN General Assembly, *International Covenant on Economic, Social and Cultural Rights*, 16 December 1966, 993 U.N.T.S. 3, article 8.1 (a).

[24] See *ibid*, article 2.1 and UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 12: The Right to Adequate Food (Art. 11) , 12 May 1999, UN Doc. E/C.12/1999/5, paras 6 and 14.

obligates states to make available, and accessible, food of sufficient quality and quantity for individuals in a way that does not interfere with other human rights.[25]

Furthermore, the Committee on Economic, Social and Cultural Rights have found that to achieve, progressively, the full realization of the rights in the convention any retrogressive measures taken may only be justified by reference to the "totality of the rights provided for in the [ICESCR] and in the context of the full use of the maximum available resources."[26]

The states parties to the ICESCR have an obligation to respect (avoid depriving), protect (prevent third parties from depriving) and fulfil (take positive steps to secure) the right to food.[27] Moreover, for the obligations of state parties under the ICESCR to be fulfilled the food must be available accessible, "acceptable within a given culture", and adaptable.[28]

The obligation to progressively realise the right to food also mandate states to take measures "to improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge".[29] This obligation shall be done individually as well as through international cooperation.

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[25] UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 12: The Right to Adequate Food (Art. 11), *supra* note 24, para 8. For more on core obligations see UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 3: The Nature of States Parties Obligations (Art. 2, par. 1), 14 December 1990, UN Doc. E/1991/23(SUPP), pages 83-87.
[26] UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 3: The nature of States parties obligations (Art. 2, par.1), *supra* note 25, para 9.
[27] Schutter, Olivier de, *International human rights law: cases, materials, commentary*, Cambridge University Press, Cambridge, 2010, page 242 and UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 12: The Right to Adequate Food (Art. 11), *supra* note 24, para 15.
[28] Schutter, *supra* note 27, pages 253-256 and UN Committee on Economic, Social and Cultural Rights (CESCR), CESCR General Comment No. 12: The Right to Adequate Food (Art. 11 *supra* note 24, paras 8-13.
[29] UN General Assembly, *supra* note 11, article 11.2.

The right is not only limited to food but also include "access to the means of producing it."[30] The Special Rapporteur on the Right to Food has continuously emphasized access to seeds and other propagating material as an important aspect of the right food and has highlighted the international IPR regime as a cause for concern in this regard.[31] In this regard, it should be noted that IPR may be viewed as a policy measure adopted by state parties to ensure that research is done in order to improve methods of production of food.

With regard to the Committee on Economic, Social and Cultural Rights, they have not been able to consider individual communications nor inter-state communications in the past. However, the optional protocol to the ICESCR[32] does allow for both individual and inter-state communications for states upon ratification or accession to optional protocol and acquiesce to the competence of the committee to hear inter-state communications. The optional protocol only entered into force last year, it is thus too early to evaluate the work of the committee in this regard.

[30] UN Special Rapporteur on the Right to Food, Report to the UN Commission on Human Rights, 10-11, UN Doc. E/CN.4/2001/53 (7 February 2001) (prepared by Jean Ziegler), para 73.
[31] Schutter, Olivier de, UN Special Rapporteur on the Right to Food, Address at High-Level Conference on World Food Security: *The Challenges of Climate Change and Bioenergy* (June 3-5 2008), available at http://www.fao.org/foodclimate/conference/statements/day3-am/en/ [accessed 2014-04-09]
[32] UN General Assembly, *Optional Protocol to the International Covenant on Economic, Social and Cultural Rights*, 10 December 2008, UN Doc. Doc. A/63/435.

IPRs and genetic resources

For a long time genetic resources have been of fundamental importance to humans having particular importance in the fields of agriculture and medicine. Today, genetic resources continue to be important in these two fields but it is also of growing importance in many other fields.[33] This thesis will however focus on one of the two fields in which genetic resources have been, and continue to be, of great importance: agriculture.

Technological advances within the field can lead to protection over the advancements, mainly, in the form patents or other intellectual property rights (IPRs). The TRIPs Agreement,[34] as an annex to the Agreement Establishing the World Trade Organisation,[35] is a multilateral instrument imposing legal obligations on all WTO members. As the WTO, at the time of writing, has 159 members,[36] the TRIPs Agreement serves as a good starting ground for an examination of the protection offered for intellectual property in the relevant field due to the widespread acceptance of the terms conditioned by the agreement and its relevance to the matter at hand. It will, however, be necessary to examine other international instruments as well for a complete picture of the offered protection, more on that below.

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[33] Jeffery, Michael I., ”Bioprospecting: Access to Genetic Resources and Benefit-Sharing under the Convention on Biodiversity and the Bonn Guidelines”, in *Singapore Journal of International & Comparative Law*, vol. 6 (2002), pages 747-808, at page 747-748.
[34] Agreement on Trade-Related Aspects of Intellectual Property Rights, April 15 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299; 33 I.L.M. 1197 (1994).
[35] WTO Agreement: Marrakesh Agreement Establishing the World Trade Organization, April 15 1994, 1867 U.N.T.S. 154, 33 I.L.M. 1144 (1994).
[36] Number according to http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm [accessed 2014-03-18]

1.5 Patent protection in the TRIPs Agreement

Patents are the relevant IPR referred to in the TRIPs Agreement concerning agriculture and pharmaceutical products. While TRIPs Agreement sets out minimum standards, which the member states of the WTO are obligated to put in place, it is important to note that member states in their domestic legislation may set standards that are higher than those required by the TRIPs Agreement.[37] In accordance with the TRIPs Agreement member states are obligated to enact laws that give protection and ensure enforcement over patentable subject matter proscribed in article 27 (1) of the TRIPs Agreement. Patents are to be made available as protection for "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".[38] Subject matter over which a state does not have to grant patents include inventions where it is necessary to omit the invention from patent protection to protect *ordre public* or morality in accordance with article 27 (2). States also do not have to give patent protection on "plants and animals other than micro-organisms organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes."[39] In this case, states have a choice as to how to protect the subject matter: through patents, through an effective *sui generis* system or a combination of the two.[40]

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[37] Helfer, Laurence R. & Austin, Graeme W., *Human rights and intellectual property: mapping the global interface*, Cambridge University Press, Cambridge, 2011, page 28 and Roffe, Pedro, Spennemann, Cristoph and von Braun, Johanna " Intellectual property rights in free trade agreements: moving beyond TRIPS minimum standards" in Correa, Carlos M. (ed.) *Research Handbook on the Protection of Intellectual Property under WTO Rules*, Edward Elgar, Cheltenham, UK, 2010, page 267.

[38] Agreement on Trade-Related Aspects of Intellectual Property Rights, s*upra* note 34, article 27(1).

[39] *Ibid*, article 27 (3) (b).

[40] *Ibid*.

The patent allocates certain exclusive rights onto its owner. Such rights include the right to prevent a third party from "making, using, offering for sale, selling, or importing for these purposes that product" or process without consent from the patent owner.[41] In relation to agriculture it is important to note that using in the sense it is used in article 28 (1) includes "planting, harvesting, saving, re-planting and exchanging seeds".[42]

Exceptions in the TRIPs Agreement to the exclusive rights conferred to the owner of the patent are permitted provided they (i) are limited, (ii) "do not unreasonably conflict with the normal exploitation of the patent" and (iii) "do not unreasonably prejudice against the legitimate interests" of the owner of the patent.[43]

Moreover the TRIPs Agreement also allows for a more limited and specific exception in article 31. The exception in article 31 allows a state to authorize the use of an invention under patent protection, even by third parties, *i.e.* a compulsory license. The exception laid out in article 31 does require not only that adequate remuneration is paid to the rights-holder but also that, in circumstances not involving a national emergency; unsuccessful negotiations have taken place prior to the issuing of a compulsory license.[44] While the exception in part targets the abuse of the patent by its rights-holder,[45] any authorization of use of a patent must be considered on its individual merits.[46]

Concerning genes and genetic material, it is worth noting that the TRIPs Agreement does not expressly mention them. While a divergence has emerged between developed states and developing states where developed states are more inclined to allow patents on purely isolated or purified genes

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[41] *Ibid*, article 28 (1).
[42] Mechlem and Raney, *supra* note 3, page 156.
[43] Agreement on Trade-Related Aspects of Intellectual Property Rights, s*upra* note 34, article 30.
[44] *Ibid*, article 31 (b) and (h).
[45] Yamane, Hiroko, *Interpreting TRIPS: globalisation of intellectual property rights and access to medicines*, Hart, Oxford, 2011, page 170.
[46] Agreement on Trade-Related Aspects of Intellectual Property Rights, s*upra* note 34, article 31 (a).

and developing states less inclined to allow for patent protection on genes and genetic material at all, the patentability of genes and genetic material will depend on the interpretation of "invention".[47] If genes and genetic material are considered discovered rather than invented, it would prevent them from being patentable subject matter under the TRIPs Agreement. If, instead, the genes are considered invented after having been isolated or purified they would be part of the patentable subject matter prescribed by the TRIPs Agreement. Modified genes unavailable in nature, on the other hand does seem to fall within the ambit of patents in the TRIPs Agreement; refusal to grant patents on such genes, thus, does not comply with the TRIPs Agreement.[48]

There are several factors contributing to the success of the TRIPs Agreement. One is the fact that the TRIPs Agreement sets out extensive requirements as for the effective enforcement of the IPRs protected by the TRIPs Agreement.[49] Not only must state parties adopt legislation in line with the provisions regarding protection for intellectual property, they must also, and unlike previous treaties on intellectual property, make sure that they offer effective enforcement of the rights granted through the TRIPs Agreement.[50] If a member state of the WTO is of the view that another member states is not in compliance regarding its obligations under the TRIPs Agreement (or one of many other agreement listed in the appendix to the DSU)[51] the former state may institute proceedings before the dispute settlement body. [52] The DSU mandates that a dispute settlement body is to be established in article 2 of the DSU. The dispute settlement body itself establishes panels and a standing

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[47] Helfer & Austin, *supra* note 37, page 387 and Mechlem and Raney, *supra* note 3, page 155.

[48] Helfer & Austin, *supra* note 37, pages 387-388.

[49] *Ibid*, page 28.

[50] Yamane, *supra* note 45, page 175 and Helfer & Austin, *supra* note 37, page 28.

[51] See Understanding on Rules and Procedures Governing the Settlement of Disputes, 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 2, 1869 U.N.T.S. 401; 33 ILM 1226 (1994), article 1.1 and Petersmann, Ernst-Ulrich, *The GATT/WTO dispute settlement system: international law, international organizations and dispute settlement*, Kluwer, London, 1997, page 177. Note that the Understanding is also applicable to agreements set out in appendix 2 to the Understanding, subject to special and additional rules that may apply according to article 1.2 of the Understanding.

[52] Helfer & Austin, *supra* note 37, page 28.

appellate body that hear the disputes, and then adopts the panel reports as well as the appellate body reports.[53] If a panel has found that a state does not comply with its obligations and yet the state does not take measures to bring itself into compliance, then the complaining state is to enter into negotiation concerning appropriate compensation.[54] If no such compensation can be agreed upon, the complaining state may apply for an authorization to "retaliate", that is, "to suspend the application to the Member concerned of concessions or other obligations under the covered agreements" within the same sector as the panel has found a violation.[55] Moreover, a state may be allowed to "cross-retaliate", that is, to suspend application of concessions or other obligations in other sectors under the agreements in appendix 1 to the Understanding.[56] The "retaliation" may not go beyond nullifying the impairment.[57]

1.6 *Sui Generis* protection of plant varieties

In accordance with article 27 (3) (b) states are not obliged to grant patent protection on plants, animals, and essentially biological processes for the production of plants and animals. While the TRIPs Agreement allow states to grant patents on these classes, they also have the option of providing an alternative protection, for plant varieties, in the form of an effective *sui generis* system or a combination of patent protection and a *sui generis* system.

What the *sui generis* system entails specifically is unstated, but the provision declares that the system must be effective. What an effective system involves is unclear. However, an effective *sui generis* system, arguably, must: (i) provide protection for all species and genera, and (ii) give the rights-holder

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[53] See Understanding on Rules and Procedures Governing the Settlement of Disputes, *supra* note 51, articles 6, 16, and 17 and Cameron, James & Campbell, Karen (eds.), *Dispute resolution in the World Trade Organisation*, Cameron & May, London, 1998, page 32.
[54] Yamane, *supra* note 45, page 182.
[55] Understanding on Rules and Procedures Governing the Settlement of Disputes, *supra* note 51, articles 22.2 and 22.3 (a).
[56] Understanding on Rules and Procedures Governing the Settlement of Disputes *supra* note 51, article 22.3 (b).
[57] Yamane, *supra* note 45, page 182.

an exclusive right to determine how the protected material is used or receive compensation when the protected material is used. Furthermore, it must (iii) mandate that the principles of national treatment as well as most-favoured nation treatment are provided to plant breeders, and (iv) provide an effective enforcement mechanism allowing breeders to uphold their exclusive rights.[58]

While states are permitted to design their own domestic *sui generis* system, they are also free to enter into and become members of international organizations designed to provide an effective *sui generis* system. One such organization is the International Union for the Protection of New Varieties of Plants (UPOV), which is recognized as fulfilling the requirements on an effective *sui generis* system.[59]As the UPOV, at present, have 71 member states it provides a useful entry point into an examination of a *sui generis* system in accordance with article 27(3)(b) of the TRIPs Agreement.[60] To juxtapose the International Convention for the Protection of New Varieties of Plants (UPOV Convention),[61] the *sui generis* system adopted by India, who is not a member of UPOV, will be examined as well. Whereas developed countries favour the UPOV Convention it is not favoured by the least developed countries (LDC),[62] and, to a lesser extent, developing countries. The *sui generis* system adopted by India, in contrast, has been recognized as more suited to the needs of developing countries.[63]

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[58] Helfer & Austin, *supra* note 37, pages 385-386.

[59] Dhar, Biswajit, *Sui Generis Systems for Plant Variety Protection*, Quaker United Nations Office, Geneva, 2002, page 7, and UPOV, *Press Release no 30*, Geneva, 21 April 1998, and statement made by Matthijs Gueze at the Diplomatic Conference for the Revision of UPOV held in 1991, *Records of the Diplomatic Conference for the Revision of the International Convention for the Protection of New Varieties of Plants*, Geneva. 1992, para 74.2, p 180.

[60] Member states according to http://www.upov.int/members/en/ [accessed 2014-03-20].

[61] International Convention for the Protection of New Varieties of Plants, December 2, 1961, 815 U.N.T.S. 89, as well as its revised acts from 1978 and 1991.

[62] Out of the 71 member states to the UPOV Convention, none is also recognized as a least developed country. Compare list of members to the UPOV Convention at http://www.upov.int/export/sites/upov/members/en/pdf/pub423.pdf [accessed 2014-03-27] and list of least developed countries at http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf [accessed 2014-03-27].

[63] Sahai, Suman, " India's plant variety protection and Farmers' Rights Act, 2001", in *Current Science*, vol. 84, no. 3, 10 February 2003, page 407-412, at page 407.

1.6.1 Protection for plant varieties in the UPOV Convention

Becoming a contracting party to the UPOV Convention is by no means necessary to fulfil the requirement of article 27 (3) (b) in the TRIPs Agreement, it is but one of the options states have regarding plant variety protection. Since many states have become members of the UPOV, the UPOV Convention represents a widely accepted *sui generis* system for providing plant variety protection.

After the initial adoption of the 1961 UPOV Convention,[64] and the adoption of the amending act in 1972, the convention was revised in 1978,[65] and in 1991.[66] Now, only one out of 71 members of the UPOV is bound, solely, to the act of 1961 and the additional act adopted in 1972, and only 19 are bound by the act of 1978.[67] The remaining 51 parties of the UPOV are bound by the act of 1991.[68] With the entry into force of the act of 1991 in 1998,[69] states looking to become members of the UPOV can only do so by acceding to the act of 1991.[70] The act of 1991 will therefore be used for the examination of the UPOV Convention, as the majority of the members of the UPOV are parties to the act of 1991 and new members can only accede to the act of 1991.

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[64] International Convention for the Protection of New Varieties of Plants, December 2, 1961, 815 U.N.T.S. 89.
[65] International Convention for the Protection of New Varieties of Plants, December 2, 1961, as revised at Geneva on November 10 1972, on October 23 1978, 1861 U.N.T.S. 281.
[66] International Convention for the Protection of New Varieties of Plants, December 2 1961, as revised at Geneva on November 10 1972, on October 23 1978, and on March 19 1991.
[67] See list of members available at http://www.upov.int/export/sites/upov/members/en/pdf/pub423.pdf [accessed 2014-03-27].
[68] *Ibid*.
[69] Helfer & Austin, *supra* note 37, page 382, note 41.
[70] International Convention for the Protection of New Varieties of Plants, *supra* note 66, article 37 (3).

The act of 1991 fulfil the requirements of an effective *sui* generis system by requiring contracting parties to offer protection for all plant genera and species,[71] and by granting the rights-holder (breeder in the terms of the UPOV Convention) a set of exclusive rights.[72] Furthermore, with regard to an effective enforcement mechanism, the act of 1991 mandates that states grant and offer protection for the rights conveyed in the act to breeders of protected plant varieties and that it offers legal remedies for breeders to enforce, effectively, the rights granted to them in the convention.[73]

Concerning the principles of national treatment, it must be noted that the act of 1991 only obligates states to afford national treatment to nationals of other states members to the UPOV Convention.[74] It is unlikely that the act of 1991 complies with article 3 of the TRIPs Agreement.[75] States, members to both the act of 1991 and the WTO, will have to accord the same treatment to other WTO members regardless of whether or not they are also members of the UPOV.[76] Concerning the principle of most favoured nation the UPOV Convention does not have provisions in place, but what has been said regarding the principle of national treatment should hold true here as well.

In accordance with the act of 1991 the rights-holder, or breeder in the terms of the act of 1991, is the person who bred or discovered a variety.[77] The breeder gains protection on such plant varieties that are new, distinct, uniform and stable.[78] The exclusive rights granted to the breeder of a protected plant variety includes production and reproduction, the conditioning of propagating

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[71] International Convention for the Protection of New Varieties of Plants, *supra* note 66, article 3. Note that members are allowed a transitional period before which they are not obligated to protect all plant species and genera.
[72] *Ibid*, article 14.
[73] *Ibid*, articles 1 and 30 (1) (i).
[74] *Ibid*, article 4.
[75] Leskien, Dan and Flitner, Michael, *Intellectual Property Rights and Plant Genetic Resources: Options for a Sui Generis System*, Issues in Genetic Resources No. 6, International Plant Genetic Resources Institute, Rome, Italy, 1997, page 30-31.
[76] *Ibid*, page 31.
[77] International Convention for the Protection of New Varieties of Plants, *supra* note 66, article 1 (iv).
[78] *Ibid*, articles 2 and 5. See also articles 6-9 for more regarding the requirements.

material for the purpose of propagation, as well as offering propagating material for sale, exporting and importing.[79]

Article 15 of the act of 1991 provides for mandatory and optional exceptions to the breeders' rights. The mandatory exceptions in article 15 (1) cover "acts done privately and for non-commercial purposes", "acts done for experimental purposes", and, to a lesser extent, "acts done for the purpose of breeding other varieties".[80] The optional exception provided for in article 15 (2) would allow farmers to use propagating material on their own holdings that they have harvested from their own holding.[81] The provision only allows for personal use of their harvest, but it may be for commercial purposes.[82] However, the optional exception provided in the act of 1991 does not allow farmers to exchange or sell the propagating material with other farmers (so-called brown bagging) common in many developing as well as developed countries.[83] The optional exception was not meant to introduce a new exception to breeders' rights but rather to keep a farmers' privilege in countries where such a privilege existed and was commonplace.[84] The exception must however be limited so that it is "within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder."[85] The exact meaning of this passage is unclear but it has been suggested that compliance requires states to demand that remuneration is paid when the exceptions is used, safeguard that only farms of a certain size benefit from the

[79] *Ibid*, article 14.
[80] *Ibid*, article 15 (1).
[81] *Ibid*, article 15 (2).
[82] Compare *ibid*, articles 15 (1) (i) and 15 (2). If the optional exception did not in fact allow commercial use, the optional exception would be redundant as it covers the same acts as expressed in article 15(1) (i).
[83] Helfer & Austin, *supra* note 37, page 384, and Leskien and Flitner, *supra* note 75, page 60.
[84] See International Union for the Protection of New Varieties of Plants, *Explanatory Notes on Exceptions to the Breeder's Right under the 1991 act of the UPOV Convention*, adopted by the Council at its forty-third ordinary session on October 22, 2009, UPOV/EXN/EXC/1, page 8 when referring to the Records of the Diplomatic Conference for the Revision of the International Convention for the Protection of New Varieties of Plants.
[85] International Convention for the Protection of New Varieties of Plants, *supra* note 66, article 15 (2).

exception or limit the amount of one's harvest that can be saved to be reused to following year.[86]

1.6.2 Protection of Plant Varieties in India

As stated above, India is not a member of UPOV and has chosen to provide for the protection mandated by article 27 (3) (b) of the TRIPs Agreement with their own *sui* generis system through the Plant Variety Protection and Farmers' Rights Act of 2001.[87] The act allows for protection on plant varieties specified by the government, extant varieties, and farmers' varieties.[88] By mandating that the government specify which species and genera are eligible for protection the act allows the government of India to add, in increments, new genera and species that can be protected by the provisions of the act.[89]

A variety is eligible for protection if the variety is new, distinctive, uniform, and stable.[90] In the sense used in the act, new means previously unexploited on the market for a period of time; distinctive meaning distinguishable from other protected varieties or varieties whose existence is common knowledge; uniform meaning it's essential characteristics remain within the expected variation caused by its propagation; and stable meaning it retains the essential characteristics of the variety throughout propagation.[91]

Protection for a variety may be granted upon applications for registration made by the breeder of the variety, a farmer or group of farmers claiming to

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[86] International Union for the Protection of New Varieties of Plants, *supra* note 84, page 9-10.

[87] Plant Variety Protection and Farmers' Rights Act, 2001, act no. 53 of 2001, assented to October 30 2001 and Sahai, Suman, " India's plant variety protection and Farmers' Rights Act, 2001", in *Current Science*, vol. 84, no. 3, 10 February 2003, page 407-412, at page 407.

[88] Plant Variety Protection and Farmers' Rights Act, *supra* note 87, section 14, and subsection 2 of section 29.

[89] *Ibid*, subsection (a) of section 14 and subsection 2 of section 29. See also notifications in the Gazette regarding new crop-species available for protection at http://www.plantauthority.gov.in/gazette.htm [accessed 2014-03-28].

[90] *Ibid*, subsection 1 of section 15. Note however that according to subsection 2 of section 15 extant varieties does not need to conform to the requirement of novelty.

[91] *Ibid*, subsection 3 of section 15.

be the breeder of the variety, or a university or other "publicly funded agricultural institution", individually or jointly.[92] By allowing any person to apply for registration of a variety, the act does not distinguish between nationals and non-nationals.[93]

The rights conferred to the breeder of a registered variety include exclusive rights to "produce, sell, market, distribute, import or export the variety".[94] Furthermore, the act makes it a criminal offense to apply a false denomination,[95] but also allows the rights-holder to sue for relief in the form of an injunction and "damages or a share of the profit".[96]

The act does however also allow for some farmers' rights. Farmers are given a right to "save, use, sow, re-sow, exchange, share or sell" that which was produced on their farm. This includes protected varieties; provided the farmer does not use the breeders' brand, or otherwise make it known that the seeds are of a protected variety.[97] The provision protects the farmers' privilege as it was prior to the enactment of the act,[98] but also protects the breeder of the variety in that he maintains his right to control the market of his product.[99]

The farmers' right expressed in the Indian *sui generis* system is a broader exception to breeders' rights than that expressed, and discussed above, in the UPOV Convention.[100] Whereas the UPOV Convention only mandates an exception for personal and non-commercial usages, and allows an exception for personal but commercial, the Indian *sui generis* system allows for the

[92] *Ibid*, section 16.
[93] *Ibid*, section 16.
[94] *Ibid*, subsection 1 of section 28.
[95] *Ibid*, section 70-73.
[96] *Ibid*, section 64-66.
[97] *Ibid*, subsection 1 (iv) of section 39.
[98] Subsection 1 (iv) of section 59 of the act makes it clear that it does not intend to create a new exception or right for farmers by stating that the right only applies "in the same manner as [the farmer] was entitled before the coming into force of this act."
[99] Sahai, *supra* note 87, at page 409.
[100] See exceptions discussed in chapter 2.2.1 of this thesis.

exception both for non-personal, and for commercial use (by allowing farmers to both exchange and sell their seeds).[101]

Further provisions in the act benefitting farmers or extending the rights of farmers include a prohibition of GURT or other so-called terminator technology in registered and protected varieties,[102] and protection against infringements of breeders' rights where the farmer was not aware that such a right existed.[103]

Moreover, allowing for the registration of extant varieties and farmers' varieties has two main results: first, the registration prevents otherwise known varieties from being registered and protected as new varieties, and second, the registration allows those registering the extant and farmers' varieties to collect licensing fees should the variety be of interest for creating essentially derived varieties.[104] This is especially so as the act requires breeders to provide so called "passport data" regarding the new variety on which they seek registration. The passport includes data on the parental lines from which the variety was derived, geographical location of genetic material that contributed to the new variety as well as persons who have contributed in the creation of the new variety.[105]

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[101] Compare Plant Variety Protection and Farmers' Rights Act, *supra* note 87, subsection 1 (iv) of section 39 and International Convention for the Protection of New Varieties of Plants, *supra* note 66, article 15. See also Sahai, *supra* note 87, at page 407.
[102] Plant Variety Protection and Farmers' Rights Act, *supra* note 87, subsection 1 (c) of section 18. GURT (Genetic use restriction technology) or terminator technology can be used in plant varieties to restrict the use or benefit derived from the plant variety. This can be done by making seeds harvested from the plant variety sterile, and therefore unusable as propagating material, or by having desired attributes dependent on the use of a particular chemical sold. Whereas the first method restricts everyone from re-sowing harvested seeds (including for personal and non-commercial purposes), the second method only restricts certain benefits of the plant variety to those who also buy the specific chemicals and does not seem to be prohibited by the section.
[103] *Ibid*, section 42.
[104] Kochupillai, Mrinalini, "The Indian PPV&FR Act, 2001: Historical and Implementation Perspectives." in *Journal Of Intellectual Property Rights* vol. 16, issue 2 (2011): 88-101 at page 96.
[105] Plant Variety Protection and Farmers' Rights Act, *supra* note 87, subsection 1 (e) of section 18.

Access and Benefit-sharing

1.7 Convention on Biological Diversity

The Convention on Biological Diversity was adopted in 1992, and entered into force in 1993.[106] Since its adoption, the CBD has gathered 194 contracting parties, the latest member state being South Sudan, which deposited its instrument of accession in February of 2014.[107] The CBD has three main objectives: "the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources."[108] The CBD recognizes that biological diversity is distributed asymmetrically and that, at large, the main reservoirs containing a large biodiversity are currently found in the developing world.[109] This recognition, coupled with the realization that the conservation of biological diversity would put an undue burden and cost upon the biodiversity rich countries, relative to the biodiversity poor countries.[110] To counter the higher cost for the developing, biodiversity rich countries the CBD obliges the developed member states to provide financial resources so that developing states can achieve the objectives of the convention.[111] However, the CBD also reminds member states that the extent

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[106] Convention on Biological Diversity, June 5 1992,1760 U.N.T.S. 79.
[107] See press release by the Secretariat of the Convention on Biological Diversity, March 7 2014, available at http://www.cbd.int/press-releases/default.shtml [accessed 2014-04-04].
[108] Convention on Biological Diversity, *supra* note 106, article 1.
[109] Only two of the so-called megadiverse countries are in the top quartile of the United Nations Development Programme's Human Development Index: the United States and Australia. A megadiverse country is a concept introduced to highlight that certain areas are more biodiversity rich than others are. Megadiverse countries must be endemic to at least 5000 of the world's plants. For more on megadiverse countries see Mittermeier, A. Russel, 'Primate Diversity and the Tropical Forest: Case Studies from Brazil and Madagascar and the Importance of the Megadiversity Countries' in Wilson, Edward Osbourne (ed), *Biodiversity*, The National Academies Press, 1988, and the entry on Megadiversity countries in *A-Z Guide of Areas of Biodiversity Importance*. The UN Environment Programme & World Conservation Monitoring Centre, available at http://www.biodiversitya-z.org/areas/26 [accessed 2014-04-04].
[110] Glowka, Lyle *et al* (eds.), *A guide to the Convention on Biological Diversity*, IUCN the World Conservation Union, Gland, 1994, 2nd printing 1996, page 1.
[111] Convention on Biological Diversity, *supra* note 106, article 20 (2).

to which developing countries can fulfil its commitment to the CBD will be dependent upon the financial resources developed states can assist with as well as the transfer of technology.[112] In other words, and as the preamble of the CBD affirms, "the conservation of biological diversity is a common concern of humankind".

The preamble of the CBD also recognizes, and reaffirms in articles 3 and 15, that states have sovereign rights over their natural resources. This sovereign right is coupled with the duty to conserve the biological diversity and to use its components in a sustainable manner.[113] Although conservation is a matter and concern of all, the conservation of biological diversity within a state's jurisdiction is, ultimately, a matter for that state.[114]

The principle that a state has a sovereign right over resources found in that state's jurisdiction was first expressed in Principle 21 of the Stockholm Declaration of the United Nations Conference on the Human Environment.[115] Prior to the adoption of the CBD the prevailing view had been that, as expressed in the non-binding, International Undertaking on Plant Genetic Resources, "plant genetic resources are a heritage of mankind and consequently should be available without restriction."[116] It is important to note that IPR systems still afforded protection upon inventions stemming from genetic resources and that not all genetic resources were freely available.[117] It can also be worth noting that it is debated whether or not the

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[112] *Ibid*, article 20 (4).
[113] Glowka *et al*, *supra* note 110, page 3.
[114] See for example Convention on Biological Diversity, *supra* note 106, articles 6, 8 and 10.
[115] Glowka *et al*, *supra* note 110, page 26, and Stockholm Declaration, in UN, *Report of the Conference on the Human Environment*, A/CONF.48/14/Rev 1, New York, 1972, pages 3-5. Note that article 3 of the CBD copies *verbatim* Principle 21.
[116] FAO Conference, Rome, Italy, November 5-23 1983, *International Undertaking on Plant Genetic Resources*, UN Doc. C/83/REP, article 1. See also Jeffery, *supra* note 33, at page 758, Morgera, Elisa, Buck, Matthias & Tsioumani, Elsa (ed.), *The 2010 Nagoya Protocol on Access and Benefit-sharing in perspective: implications for international law and implementation challenges [Electronic resource]*, Martinus Nijhoff Publishers, Leiden, 2012, pages 3-4, and Jonge, Bram De, "What Is Fair And Equitable Benefit-Sharing?" *Journal Of Agricultural & Environmental Ethics*, vol. 24, issue 2, 2011, pages 127-146, at page 129.
[117] Andanda, Pamela, Schroeder, Doris, Chaturvedi, Sachin, Mengesha, Emezat

common heritage of mankind principle applies to samples taken abroad and now stored in developed countries or if the state from where these samples were taken have a right to those samples or compensation.

Including the principle of sovereign rights over natural resources in the CBD as a binding provision meant an end to the idea of genetic resources as a common heritage of humankind.[118] Access to the genetic resources of the member states to the CBD would from now on be conditioned on the prior informed consent of the state in whose jurisdiction the genetic resources exist,[119] and such access would be on "mutually agreed terms".[120] It must be noted that receiving the prior informed consent of the relevant state may not be the only requirement to be fulfilled. Article 8 (j) of the convention call on states to promote the "wider application [of traditional knowledge] with the approval and involvement of the holders of such knowledge", states therefore may implement national laws that require the consent of the group or person possessing knowledge coveted by the persons seeking the genetic resources.[121] States may however also obtain such consent from the group or person holding such knowledge on their own that would allow the state to consent on the behalf of that group or person.[122]

Assigning sovereign states rights over its genetic resources meant that states were now in possession of potentially great, untapped riches. The value in biodiversity lies in the differences in genetic composition between "individuals, communities, populations, species, and so on."[123] This idea of value is largely that of the private sector, it means that conserving the biodiversity of the world means conserving the genetic material that may be

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and Hodges, Tim, "Legal Frameworks for Benefit Sharing: From Biodiversity to Human Genomics", in Doris Schroeder and Julie Cook Lucas (eds.), *Benefit Sharing: From Biodiversity to Human Genetics* (eBook), Springer Netherlands, Dordrecht, 2013, pages 33-34.

[118] Morgera, Buck, and Tsioumani, *supra* note 116, pages 3-4.

[119] Convention on Biological Diversity, *supra* note 106, article 15 (5).

[120] *Ibid*, article 15 (4).

[121] Glowka *et al*, *supra* note 110, page 49.

[122] Jeffery, *supra* note 33, at page 763.

[123] Lawson and Downing, *supra* note 8, at page 214.

of instrumental value. This idea of instrumental value (that the value of something "lies in the use to which it may be put"[124]) in nature is not new.[125] Similar, and just as anthropocentric, is the idea that nature has an inherent value, an aesthetical value.[126] The CBD also recognize the instrumental and inherent values of biological diversity from an anthropocentric point of view, however, it also recognizes that biological diversity has an intrinsic value, a value in, of and for itself, a value that does not reflect its usefulness or beauty to an external appraiser.[127] It is, nonetheless, the instrumental values in biodiversity that the CBD emphasize and it is in the instrumental values that we find the reasons for access and benefit-sharing. Access to instrumentally valuable genetic material must be compensated for.[128] It was due to the expected values lying in the rich biological diversity that national sovereignty over natural resources was recognized.[129] The uneven distribution of the expected wealth that genetic resources would bring also explains the introduction of benefit-sharing as it could bring about equity on an inter-state level.[130] It was however also believed that benefit-sharing would serve as an incentive for developing countries to actually preserve the biodiversity that existed within its borders, despite the costs associated with such preservation.[131]

The main provision regarding benefit-sharing in the convention can be found in article 15. Article 15(7) maintains that contracting parties are to take "legislative, administrative or policy measures […] with the aim of sharing […] the results of research and development and the benefits arising from the

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[124] Bowman, Michael and Redgwell, Catherine (eds.), *International Law and the Conservation of Biological Diversity*, Kluwer Law International, London, 1996, page 15.
[125] *Ibid*, pages 15-16.
[126] See for example UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage, 16 November 1972, in force 17 December 1975, 1037 U.N.T.S. 151 article 2.
[127] Convention on Biological Diversity, *supra* note 106, preamble, paragraph 1.
[128] For more on the value of biodiversity and nature see Bowman, and Redgwell suprea note 124, pages 15-16.
[129] Morgera, Buck, and Tsioumani, *supra* note 116, page 4.
[130] *Ibid*, page 4 and Morgera, Elisa, and Tsioumani, Elsa "The Evolution Of Benefit Sharing: Linking Biodiversity And Community Livelihoods." *Review Of European Community & International Environmental Law*, vol. 19, issue 2 (2010), pages 150-173, at page 150.
[131] Morgera and Tsioumani, *supra* note 130, at page 153.

commercial and other utilization of genetic resources with the Contracting Party providing such resources." The paragraph further points to article 16 and 19 implying that benefits that are to be shared with the state supplying the genetic resources may include access to and transfer of technology, participation in the biotechnological research on said genetic resources and priority access to the results of research on said genetic resources.[132] Moreover, article 15(7) mandates that benefit-sharing shall be based on mutually agreed upon terms.[133]

There exist divergent views as to the link between access and benefit-sharing in article 15 of the CBD. While article 15(4) of the CBD states that access must be "subject to the provisions of this article",[134] Morgera and Tsioumani argue that article 15(7) concerns inter-state benefit-sharing and that therefore there is no link between granting access to a private entity and benefit-sharing in the mutually agreed terms between said private entity and the providing state.[135] Singh Nijar on the other hand is of the view, based on the loss of the link in the Nagoya Protocol, that such a link is implicit to the article.[136]

It is important to note that the benefits mentioned in the article are primarily benefits accruing in the private sector, and those seeking the access are likely to also be in the private sector.[137] It is for this reason the CBD does not mandate benefit-sharing as such but obliges state parties to establish a framework for, but allowing state parties and private parties themselves to arrange for, the benefit-sharing on mutually agreed terms.[138]

Benefit-sharing is, however, also mentioned in article 8 paragraph (j) in relation to traditional knowledge. The paragraph calls on states to encourage

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[132] Convention on Biological Diversity, *supra* note 106, article 16, article 19 (1), and article 19 (2). See also Glowka *et al*, *supra* note 110, page 82.
[133] Convention on Biological Diversity, *supra* note 106, article 15(7).
[134] *Ibid*, article 15(4).
[135] Morgera and Tsioumani, *supra* note 130, at page 154.
[136] Nijar, Gurdial Singh, 'The Nagoya Protocol on Access and Benefit Sharing of Genetic Resources: An Analysis', Ceblaw Brief, University of Malaya, 2011, at page 27.
[137] Jeffery, *supra* note 33, at page 764, and Glowka *et al*, *supra* note 110, pages 82-83.
[138] Convention on Biological Diversity, *supra* note 106, article 15 (7). See also Jeffery, *supra* note 33, at page 764, and Glowka *et al*, *supra* note 110, page 82.

sharing of the benefits that the relevant traditional knowledge may bring about.[139] It is clear from the wording of the paragraph that it does not demand that states enact domestic legislation requiring benefit-sharing with groups or persons holding the knowledge. Rather, states can fulfil the paragraph through other routes such as educating indigenous and local communities on how to negotiate the benefit-sharing agreements and making the holders of the knowledge aware of the value of the knowledge outside of the community.[140]

1.8 Nagoya Protocol

The access and benefit-sharing regime envisioned in the CBD was slow to take off on a domestic level.[141] Prior to the adoption of the CBD there was hardly any experience of ABS[142] and the vagueness of the relevant articles in the CBD coupled with the potential far-reaching effect of introducing ABS resulted in little implementation of ABS on a domestic level.[143] To address the situation the sixth ordinary meeting of the Conference of the Parties to the CBD adopted the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization.[144] While the Bonn Guidelines were non-binding,[145] they were adopted to guide governments in taking ABS measures.[146] The Bonn Guidelines aimed at clarifying obligations for both users as well as provides of genetic resources to provide a transparent framework. To accomplish this goal, the Bonn Guidelines identified, *inter alia*, requirements for mutually agreed terms,[147]

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[139] Convention on Biological Diversity, *supra* note 106, article 8 (j).
[140] Glowka *et al*, *supra* note 110, page 49.
[141] Buck, Matthias, and Hamilton, Clare, "The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity", in *Review Of European Community & International Environmental Law,* vol. 20, issue 1, 2011, pages 47-61, at page 48.
[142] Morgera, Buck, and Tsioumani, *supra* note 116, page 21.
[143] Buck and Hamilton, *supra* note141, at page 48.
[144] Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization (Bonn Guidelines), CBD Decision VI/24, "Access and Benefit-Sharing as Related to Genetic Resources" (27 May 2002) UN Doc. UNEP/CBD/COP/6/20.
[145] The Bonn Guidelines itself stress that the use of the guidelines is voluntary for both the provider and user of genetic resources in paragraph 7 (a)
[146] Morgera, Buck, and Tsioumani, *supra* note 116, page 6-7.
[147] Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the

aspects and principles of prior informed consent important to both providers and users of genetic resources,[148] and the importance of involving all stakeholders in making the access and benefit-sharing arrangements.[149]

However, the failure to adopt domestic legislation and measures regarding ABS led to the decision at the World Summit on Sustainable Development to launch negotiations regarding an international regime on the sharing of benefits from the utilization of genetic resources.[150] The decision prompted the negotiations that resulted in the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity (hereinafter Nagoya Protocol).[151]

1.8.1 Scope and objective of the Nagoya Protocol

The Nagoya Protocol make the third objective of the CBD (the fair and equitable sharing of the benefits arising out of the utilization of genetic resources) operational.[152] Its objective is fair and equitable benefit-sharing contributing to the conservation of biodiversity and the sustainable use of the components of biodiversity.[153] There are, however, divergent views as for the meaning of *fair* and *equitable*. While it was noted, already in relation to the

Benefits Arising out of their Utilization, *supra* note 144, paragraph 42.
[148] *Ibid*, paragraph 24-32.
[149] *Ibid*, section III.
[150] United Nations, "Report of the World Summit on Sustainable Development" (2002) UN Doc. A/CONF.199/20, Resolution 2: Johannesburg Plan of Implementation, paragraph 44 (o).
[151] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, Nagoya, 29 October 2010, (not yet in force), CBD Decision 10/1, (20 January 2011) UN Doc. UNEP/CBD/COP/10/27.
[152] Glowka, Lyle, and Normand, Valérie, "The Nagoya Protocol on Access and Benefit-sharing: Innovations in International Environmental Law" in Morgera, Elisa, Buck, Matthias & Tsioumani, Elsa (ed.), *The 2010 Nagoya Protocol on Access and Benefit-sharing in perspective: implications for international law and implementation challenges [Electronic resource]*, Martinus Nijhoff Publishers, Leiden, 2012, page 27.
[153] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 1.

CBD, that the terms were vague and its meanings unclear,[154] the Nagoya Protocol does not offer a clarifying contribution.[155]

It is important to note that the scope of the Nagoya Protocol is slightly different from that of the CBD. The scope of the Nagoya Protocol includes that of article 15 of the CBD, but also applies in relation to benefits arising from the utilization of genetic resources.[156] However, the term "utilization of genetic resources" has a specific meaning within the convention with the effect of excluding any activity that does not involve "research and development on the genetic and/or biochemical composition of genetic resources".[157] Note that the biochemical composition of the genetic resources is now included unlike in the CBD; the application of the Nagoya Protocol is therefore broader than that of the CBD in this concern.[158] However, not all usages of plants and other matter are included, only those involving research and development on the genetic or biochemical composition are within the scope of the convention.[159] Therefore, accessing plants for the ornamental plant industry will not require prior informed consent of the state providing the genetic resources.[160]

1.8.2 Key components of the Nagoya Protocol

The key components of the Nagoya Protocol are the provisions on access, benefit-sharing and compliance. The following sections will go through these components in turn.

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[154] Jonge, *supra* note 116, at page 128.
[155] While the Nagoya Protocol mentions fair and equitable sharing of benefits in numerous articles as well as several times in the preamble, it does not clarify the meaning in any article or way.
[156] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 3.
[157] *Ibid*, article 2 (c).
[158] *Ibid*, article 2 (c), and Glowka and Normand, *supra* note 152, page 28.
[159] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 2 (c).
[160] Glowka and Normand, *supra* note 152, page 29.

1.8.2.1 Access and prior informed consent

Concerning the access to genetic resources the Nagoya Protocol, like the CBD, establish that states have sovereign rights over their natural resources and that access to genetic resources is dependent on the prior informed consent of the country providing the genetic resources.[161] However, unlike the CBD, the Nagoya Protocol also sets an obligation upon these provider countries to adopt several measures regarding access and prior informed consent.[162] It follows, arguably, from the relevant article that if a state fails to adopt the necessary measures, then no prior informed consent can be required and such an obligation upon the party seeking the genetic resources cannot be invoked.[163] If this, contested, interpretation holds true, prior informed consent imposes obligations not only on entities seeking genetic resources in a providing country, but also on the providing country itself.

The measures that must be taken by providing states regarding prior informed consent are many and detailed. They include obligations on providing states to provide "legal certainty, clarity and transparency of their domestic access and benefit-sharing legislation or regulatory requirements."[164] Arguably, this requirement could be beneficial for providing states, as it would make it easier for user states to fulfil their obligations on compliance (more on compliance below).[165] Moreover, measures taken by providing states regarding access must include information on how to apply for prior informed consent, clear rules for establishing mutually agreed terms, the issuance of a permit or

[161] See Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 6.1, and Convention on Biological Diversity, *supra* note 106, articles 3, 15 (1) and 15 (5).
[162] Nijar, *supra* note 136, at page 16.
[163] *Ibid*, at page 16.
[164] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 6.3 (a).
[165] Nijar, *supra* note 136, at page 16.

equivalent as evidence of prior informed consent and establishment of mutually agreed terms.[166]

1.8.2.2 Benefit-sharing

Whereas the provision regarding prior informed consent is extensive and detailed the same cannot be said regarding the provision on benefit-sharing.[167] Article 5 of the Nagoya Protocol refers to paragraphs 3 and 7 of article 15 of the CBD but does go further. The article clarifies what actions activate the obligation on benefit-sharing,[168] and points out, as had already been done in the Bonn Guidelines, that the benefits to be shared could be both of a monetary as well as non-monetary nature.[169]

In the Nagoya Protocol, any link between access and benefit-sharing that may have existed in the CBD (see passage regarding said link on page 32) is at least less explicit in the Nagoya Protocol than it was in the CBD. With access and benefit-sharing dealt with in two separate articles it has been argued that the Nagoya Protocol could be interpreted so to mean that there is compliance when there is a lack of prior informed consent but mutually agreed upon terms for benefit-sharing.[170] What the separation of access and benefit-sharing does affect are situations where genetic resources were accessed before prior informed consent was obligatory. Any subsequent benefits arising from the accessed genetic resources after the entry into force of the Nagoya Protocol

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[166] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 6.3.
[167] Nijar, *supra* note 136, at page 27.
[168] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, articles 2 and 5.1.
[169] Compare Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, Annex and article 5.4, and Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, *supra* note 144, paragraph 46 as well as Appendix II.
[170] Nijar, *supra* note 136, at page 27. Note that the author comes to the conclusion (rightly in my opinion) that any utilization of genetic resources from a providing country that has not granted access constitutes non-compliance, regardless of mutually agreed upon terms of benefit-sharing.

must be shared with the country providing the genetic resources, regardless of prior informed consent.[171]

The Nagoya Protocol, furthermore, adds value to benefit-sharing by directly linking it to the conservation of biodiversity.[172] The Nagoya Protocol recognizes that assigning an economic value to biodiversity, the fair and equitable sharing of benefits arising from that value can (and should) contribute to the preservation of biodiversity.[173] Examples of such benefits aimed at the preservation of biodiversity can be viewed in the annex to the Nagoya protocol and include fees paid to trust funds supporting the preservation of biodiversity,[174] transfer to the provider of genetic resources of technology relevant for the conservation of biodiversity,[175] and transfer of scientific information applicable to the preservation of biological diversity.[176]

The Nagoya Protocol also contains a provision regarding a multilateral benefit-sharing mechanism in article 10.[177] However, the article mandates parties to the Nagoya Protocol to consider the need for such a mechanism rather than mandating the establishment of such a mechanism. In any case, the multilateral benefit-sharing mechanism would only relate to benefits arising out of the use of genetic resources that occur in transboundary situations or where prior informed consent could not be obtained.[178] No such system has been created to date and it is far too early to discuss it, its effects and how it would work alongside the bilateral system set up in the CBD and Nagoya Protocol.

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[171] Nijar, *supra* note 136, at page 27.
[172] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, preamble paragraph 5 and article 1.
[173] See *ibid*, article 9.
[174] *Ibid*, annex paragraph 1(f).
[175] *Ibid*, annex paragraph 2(f).
[176] *Ibid*, annex paragraph 2(k).
[177] *Ibid*, article 10.
[178] *Ibid*, article 10.

1.8.2.3 Compliance

The articles regarding compliance are perhaps the most far-reaching and innovative in the Nagoya Protocol. They are mindful of the problems that may arise once genetic information has been extracted from a provider country without prior informed consent or mutually agreed terms regarding benefit-sharing. The relevant articles in the Nagoya Protocol concerning compliance are primarily articles 15 through 18. Article 15.1 obligates states to monitor the users of genetic resources within the state's jurisdiction and take measures to ensure that such genetic resources have been access in accordance with the domestic legislation on ABS in the providing state that is party to the Nagoya Protocol.[179] Article 16.1 is similar to article 15.1 but require states to monitor and ensure that domestic legislation in the providing state regarding ABS in relation to traditional knowledge are also complied with. Both articles also require states with users of genetic resources within their jurisdiction to take measures to address non-compliance with their respective first paragraphs,[180] and to cooperate with other parties to the Nagoya Protocol in "cases of alleged violation of domestic [ABS] legislation".[181]

Article 18 of the Nagoya Protocol concerns the resolution of disputes grounded on the non-compliance with mutually agreed upon terms. Its foundations lie in the concern of providing states that some users of genetic resources may misuse their access, not follow through with the benefit-sharing or in any other way breach the terms stipulated in the mutually agreed terms.[182] The article recognizes that the mutually agreed terms will likely be established in a private contract between the provider and the user of the wanted genetic resources.[183] To help facilitate the enforcement of such a contract the article obligates states to encourage parties of the mutually agreed

[179] *Ibid*, article 15.1. See also Glowka and Normand, *supra* note 152, pages 34-35.
[180] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, articles 15.2 and 16.2.
[181] *Ibid*, articles 15.3 and 16.3.
[182] Glowka and Normand, *supra* note 152, page 35.
[183] *Ibid*, pages 35-36.

terms to include provisions regarding jurisdiction, applicable law and alternative resolution of disputes.[184] To, further, facilitate dispute resolution, article 18 mandate states to give parties to mutually agreed terms an opportunity to seek recourse within the state's legal system.[185] Moreover, states must take, effective, measures concerning access to justice and "the utilization of mechanisms regarding mutual recognition and enforcement of foreign judgments and arbitral awards."[186]

Article 17 of the Nagoya Protocol establishes obligations upon states to adopt measures in order to monitor the utilization of genetic resources and to improve transparency in relation to the utilization of genetic resources. The article sets out specific measures to be taken by contracting parties such as providing one, or more, checkpoints that will collect information, from users of genetic resources, regarding prior informed consent, sources of genetic resources, mutually agreed terms and the use of the genetic resources.[187] Information gathered by the checkpoints shall be forwarded to relevant domestic authorities, the providing state and the Access and Benefit-sharing Clearing-House.[188] Furthermore, article 17 provides for the possibility of having a permit issued in accordance with article 6.3(e) of the Nagoya Protocol serve as an "internationally recognized certificate of compliance".[189] Such a certificate would provide evidence of the genetic resources having been accessed with prior informed consent and upon mutually agreed terms, in compliance with the domestic legislation of the providing state.[190]

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[184] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, articles 18.1.
[185] *Ibid*, articles 18.2.
[186] *Ibid*, articles 18.3.
[187] *Ibid*, article 17.1(a)(i) and (ii).
[188] *Ibid*, article 17.1(a)(iii). For more on the Clearing-House see article 14 of the Nagoya Protocol.
[189] *Ibid*, article 17.2.
[190] *Ibid*, article 17.3. For minimum requirements regarding information, which the permit must contain see article 17.4 of the Nagoya Protocol.

1.9 The FAO Treaty on Plant Genetic Resources

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPRGFA)[191] was adopted by the Conference of the Food and Agricultural Organization of the UN in 2001, nine years after the adoption of the CBD, and nine years before the adoption of the Nagoya Protocol. The ITPGRFA currently has 131 contracting parties.[192] The FAO view the ITPGRFA as a safeguard for food security, as a large diversity in crops helps preserve yield stability and helps crops retain their ability to resist pests and diseases.[193]

The foundations for the ITPGRFA lie in the International Undertaking on Plant Genetic Resources for Food and Agriculture. The International Undertaking was a non-binding resolution adopted at the 1983 FAO Conference. The International Undertaking had adopted the view that plant genetic resources were a common heritage of mankind,[194] but with the adoption of the legally binding CBD in 1992 there was a conflict between the two regarding the role of plant genetic resources.[195] In order to harmonize the views of the FAO on plant genetic resources with the views expressed in the CBD a new treaty had to be adopted: the ITPRGFA. The objectives of the ITPRGFA are twofold: (i) "conservation and sustainable use of plant genetic resources for food and agriculture" (PGRFA)" and (ii) fair and equitable benefit-sharing arising from the use of PGRFA.[196] The link between the ITPRGFA and the CBD is visible in the very first article of the ITPRGFA. The article makes express reference to the CBD and states that the objectives

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[191] International Treaty on Plant Genetic Resources for Food and Agriculture, adopted in Rome 3 November 2001, 2400 U.N.T.S. 303, entered into force on 29 June 2004.
[192] Number according to the FAO Legal Office, available at http://www.fao.org/legal/treaties/treaties-under-article-xiv/en/ [accessed 2014-04-25].
[193] Moore, Gerald and Tymowski, Witold, *Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture,* IUCN Environmental Policy and Law Paper No. 57, Switzerland, 2005, page 79.
[194] FAO Conference, Rome, Italy, November 5-23 1983, *International Undertaking on Plant Genetic Resources*, UN Doc. C/83/REP, article 1and preamble, paragraph 1 (a).
[195] See above under section 4.1 for more.
[196] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 1.1.

are to be achieved in harmony with the CBD, but also that the objectives will be achieved through linking the ITPGRFA to the CBD.[197]

1.9.1 Scope of the ITPRGFA

The ITPRGFA only covers "plant genetic resources for food and agriculture",[198] and defines such resources as "any genetic material of plant origin of actual or potential value for food and agriculture."[199] The scope of the ITPRGFA is therefore much smaller than that of the CBD. While the CBD covers all genetic material of potential or actual value, the ITPGRFA only covers genetic material originating in plants,[200] of potential or actual value for food and agriculture. It can therefore be argued that the ITPGRFA represents a *lex specialis* regarding genetic resources of plant origin in the agricultural field, whereas the CBD would constitute *lex generalis*.[201]

1.9.2 Farmers' Rights

With its heavy focus on the conservation and sustainable use of agricultural biodiversity it is understandable that the ITPGRFA has a provision regarding farmers' rights.[202] Paragraph 1 of article 9 is in part recognition of the contribution of past, current and future farmers to the diversity in agricultural crops we see today and part rationale for the coming obligations in paragraph 2 and 3 of the article. In paragraph 2 and 3, the article also obligates states to protect and promote farmers' rights.[203] The ITPGRFA does not offer a

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[197] *Ibid*, article 1.2 and Moore and Tymowski, *supra* note 193, page 30.
[198] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 3. Also note the similarities between the definition in the ITPGRFA and the CBD.
[199] *Ibid*, article 2.
[200] The ITPGRFA does not define plants but it is clear it excludes taxonomic ranks such as animals and fungi.
[201] Chiarolla, Claudio, Louafi, Sélim, and Schloen, Marie, "An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers' Rights", in Morgera, Elisa, Buck, Matthias, and Tsioumani, Elsa (ed.), *The 2010 Nagoya Protocol on Access and Benefit-sharing in perspective: implications for international law and implementation challenges [Electronic resource]*, Martinus Nijhoff Publishers, Leiden, 2012, page 93.
[202] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 9.2.
[203] *Ibid*, article 9.2.

comprehensive list of farmers' rights but give examples of what such an obligation entails.[204]

In the drafting of article 9 it was recognized that the parties to the negotiations were of different views as to the scope of the farmers' rights. There is no agreed upon definition for farmers' rights.[205] It is by some associated with intellectual property protection for plant varieties developed by farmers. This view would entail equitable benefit-sharing on the bases of an ownership over the genetic resources accessed by commercial plant breeders.[206] Others view farmers' rights as a right to not be limited by IPRs, a right that would allow farmers to save, sell, re-use, exchange and propagating material they had harvested, regardless of plant variety protection or any other IPR on the harvested crops.[207] Moreover, as discussed in section 3.2.1, many countries were now bound by international agreements that did not allow for vast farmers' rights at the expense of plant breeders' rights. Article 9.3 thusly states that any right to save, sell, re-use or exchange harvested propagating material and seeds shall not be limited by article 9. States wishing to have broad farmers' rights could legislate to that effect, in compliance with the ITPGRFA.

1.9.3 Multilateral System of ABS

The truly innovative aspect of the ITPGRFA is the Multilateral System of ABS. The ITPGRFA recognizes that while a large genetic diversity in agricultural crops has a value in itself, the instrumental value of genetic diversity to the safeguarding food security is of higher importance.[208] However, the instrumental value of the agricultural biodiversity can only be realized if there is access to the preserved genetic diversity. The access is of

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[204] *Ibid*, article 9.2(a), (b) and (c).
[205] Chiarolla, Louafi, and Schloen, *supra* note 201, page 99.
[206] Helfer & Austin, *supra* note 37, pages 392-393, Moore and Tymowski, *supra* note 193, page 68 and Andersen, Regine., *Protecting Farmers' Rights in the Global IPR Regime: Challenges and Options for Developing Countries*, Policy Brief, South Asia Watch on Trade, Economics and Environment (SAWTEE), 2007, page 2.
[207] Helfer & Austin, *ibid*, pages 392-393, Moore and Tymowski, *ibid*, page 68 and Andersen, Regine., *ibid*, page 2.
[208] Moore and Tymowski, *supra* note 193, page 79.

key importance as the ITPGRFA recognizes that plant breeders and farmers of all countries face challenges to which improved varieties may prove the answer. The ITPGRFA, furthermore, recognizes the costs inherent in creating bilateral access arrangements and comes to the simple conclusion: if all countries need access to genetic resources, the practical solution is to create a multilateral access and benefit-sharing regime.[209]

The multilateral system of ABS is established in article 10.2 of the ITPGRFA. The System has two main purposes, to facilitate access to PGRFA and to establish benefit-sharing arising out of the utilization of PGRFA in a fair and equitable manner.[210] The System has a narrow scope in that the System only covers PGRFA that are found in Annex I to the ITPGRFA.[211] Annex I contains a list of 64 species of crops and forages deemed important for food security. The list contains such species as maize, rice, wheat, oat and alfalfa.[212] Due to the requirement on the listed agricultural produce to be of importance to food security, it includes crops that serve as staple crops only regionally or even locally such as taro, coconut and yam.[213] However, as the list of crops had to be adopted by consensus, many crops could not be added to the list such as sugarcane, tomato, soybean, coffee and tea.[214] These crops, not appearing on the list, are therefore outside of the Multilateral System set up by the ITPGRFA. For some of the crops included in the list in the Annex I, only certain species in a genus are included in the list.[215] The Governing Body of the ITPGRFA may introduce species to be added to the Annex I, but such decisions will need to be made by consensus in the Governing Body.[216]

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[209] *Ibid*, page 79.
[210] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 10.2 and Moore and Tymowski, *supra* note 193, page 79.
[211] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 11.1.
[212] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, Annex I.
[213] Moore and Tymowski, *supra* note 193, page 81.
[214] Moore and Tymowski, *supra* note 193, page 82.
[215] See for example entry on Cassava in the International Treaty on Plant Genetic Resources for Food and Agriculture, adopted in Rome 3 November 2001, 2400 U.N.T.S. 303, entered into force on 29 June 2004, Annex I.
[216] See International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, articles 23.3 and 24.2. For more on the Governing Body see article 19.

The Multilateral System pools together the resources available in the public domain or held by states party to the ITPGRFA.[217] Resources held by private entities are not included, except on a voluntary basis, as some states felt it would encroach upon their property rights.[218] The ITPGRFA does not differentiate between material already held prior to the entry into force of the ITPGRFA and material acquired thereafter. This was aimed at the *ex situ* collections acquired without prior informed consent before such consent was necessary.[219] The ITPGRFA also covers collections found in *in situ* conditions.[220] Access to the pooled resources is only provided "for the purpose of utilization and conservation for research, breeding and training for food and agriculture."[221] Note that it is not the material itself that is of concern, but the use to which it is put.[222] Research into non-food purposes, such as pharmaceutical or chemical, is not included. If the research is multipronged, the importance for food security should determine the crops inclusion or exclusion from the Multilateral System.[223]

In order to gain access to the PGRFA, entities seeking access will need to acquiesce to a standard material transfer agreement (SMTA). The SMTA is set out in article 12.4 of the ITPGRFA. According to the article, access to genetic resources provided through the ITPGRFA shall be granted pursuant to a SMTA. Such an agreement shall be adopted by the Governing Body of the ITPGRFA and shall contain article 12.2 subparagraphs (a), (d) and (g), article 13.2(d)(ii) as well as other relevant provisions contained in the ITPGRFA.[224] Thus, the SMTA must contain provision regarding use of the accessed material, limitation of IPRs on the accessed material and continued

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[217] *Ibid*, article 11.2.
[218] Moore and Tymowski, *supra* note 193, page 83. Note that almost 90% of all plant genetic resources for food and agriculture that are held *ex situ* are held in national collections.
[219] *Ibid*, page 82 and 83.
[220] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 12.3(h).
[221] *Ibid*, article 12.3(a).
[222] Moore and Tymowski, *supra* note 193, page 83.
[223] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 12.3(a).
[224] *Ibid*, article 12.4.

availability of the accessed material.[225] Moreover, the SMTA must contain a provision making the SMTA apply to future subsequent transfers.[226]

As for benefit-sharing, the ITPGRFA recognizes that the access provided by the Multilateral System is in itself a benefit.[227] Further benefits ensuing from the use of genetic resources for food and agriculture will be shared through several mechanisms: exchange of information, capacity-building, access to and transfer of technology, and the sharing of monetary benefits arising from the commercialization of plant genetic products for food and agriculture using material obtained through a SMTA.[228] Monetary benefits arising from the commercialization of plant genetic resources will be accrued in a mechanism established by the Governing Body.[229] This mechanism has since become known as the Benefit-sharing Fund and invests money accumulated on the basis of SMTAs into projects aimed at supporting farmers in the developing world.[230]

1.9.4 Relationship between ITPGRFA and the Nagoya Protocol

It was previously stated that the ITPGRFA could be viewed as *lex specialis* in relation to the CBD, but what of its relationship with the Nagoya Protocol? Article 4.4 of the Nagoya Protocol was adopted with the ITPGRFA in

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[225] *Ibid*, article 12.3(a), (d) and (g) respectively. See also Moore and Tymowski, *supra* note 193, page 100.
[226] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 12.4.
[227] *Ibid*, article 13.1.
[228] *Ibid*, article 13.2. See also Standard Material Transfer Agreement in Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, 12-16 of June 2006, IT/GB-1/06/Report, Appendix G, articles 6.7 and 6.8.
[229] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, articles 13.2(d)(ii) and 19.3(f).
[230] See *Implementation of the Funding Strategy of the Treaty*, ITPGRFA Governing Body Resolution 3/2009, part 2, and *Report of the Co-Chairs of the Ad-Hoc Advisory Committee on the funding Strategy: Draft Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy*, IT/GB-3/09/7 App.2, and http://www.planttreaty.org/node/3072 [accessed 2014-04-28]. See also Moore and Tymowski, *supra* note 193, page 112 and International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 13.3.

mind.[231] According to article 4.4 of the Nagoya Protocol, countries that are party to a specialized ABS instrument, that is not running counter to the objectives of the CBD and the Nagoya Protocol, shall not apply the Nagoya Protocol in relation to the genetic resources and material covered by, and for the purposes of, the more specialized instrument. Moreover, in article 4.3 the Nagoya Protocol states that it shall be implemented in a mutually supportive manner with other relevant instruments. Article 4.1, furthermore, states that the Nagoya Protocol does not mean to create a hierarchy between itself and other international instruments, thereby circumventing article 30.2 and 30.3 of the Vienna Convention on the Law of Treaties.[232]

From the above, it seems clear that PGRFA that are included in the list found in Annex I to the ITPGRFA and where access is for utilization in research or development in food and agriculture, are outside of the scope of the Nagoya Protocol for the states that are party to both instruments. [233]

However, the ITPGRFA covers all PGRFA, whereas the Multilateral System only covers those found in Annex I.[234] Are PGRFA that is not listed in Annex I or where the access is not for utilization in research, or not in research for food and agriculture then covered by the ITPGRFA or the Nagoya Protocol? It is arguable that, as they are not included in the Multilateral System, the PGRFA not listed in Annex I are not covered by an international ABS instrument,[235] similarly would be the case when access is not for the purposes set out in article 12.3(a) of the ITPGRFA. Therefore, the exception in article 4.4 of the Nagoya Protocol would not apply, whereas the Nagoya Protocol would.

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[231] Chiarolla, Louafi, and Schloen, *supra* note 201, pages 101-102 and 105.
[232] See United Nations, *Vienna Convention on the Law of Treaties*, 23 May 1969, United Nations, Treaty Series, vol. 1155, p. 331, articles 30.2 and 30.3, and Chiarolla, Louafi, and Schloen, *supra* note 201, page 103.
[233] Chiarolla, Louafi, and Schloen, *supra* note 201, page 106.
[234] Compare International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, articles 3 and 11.2.
[235] Chiarolla, Louafi, and Schloen, *supra* note 201, page 107. Note however the counter-argument on pages 107-108 and the authors conclusion on page 109.

As for situations where a state party to the ITPGRFA provides access to a state not party to the ITPGRFA the Nagoya Protocol does not apply. From the wording of article 4.4 of the Nagoya Protocol, one can draw the conclusions that it is not necessary that both the provider and recipient of the PGRFA are parties to the ITPGRFA.[236] Therefore, the ITPGRFA will apply when the provider of the PGRFA is party to the ITPGRFA, but the recipient is not.

1.10 A Summary

Three instruments cover the issue of ABS, the CBD, the Nagoya Protocol and the ITPGRFA. The CBD has entered into force and is applicable to 194 states, with notable exception being Andorra, the United States and the Holy See.[237] The Nagoya Protocol has not entered into force yet having only acquired 33 ratifications.[238] The ITPGRFA on the other hand has acquired sufficient ratifications and has entered into effect for the 131 contracting parties to the ITPGRFA.[239] The interrelationship between the instruments can be complicated. As shown above, the Nagoya Protocol submits itself to the *lex specialis* nature of the ITPGRFA in relation to PGRFA included in Annex I of the ITPGRFA. In relation to PGRFA not included in the list in Annex I, which the Multilateral System set out by the ITPGRFA does not cover, the Nagoya Protocol will be applicable for states that have acquiesced to the Nagoya Protocol, once the Nagoya Protocol enters into force.

Much the same can be said for the relationship between the ITPGRFA and the CBD. The ITPGRFA removes the option of having the ITPGRFA

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[236] *Ibid*, pages 109-110..
[237] See list of parties available at https://www.cbd.int/convention/parties/list/ [accessed 2014-05-02].
[238] The Nagoya Protocol require that 50 states ratify the Protocol before it enters into effect 90 days after the 50th ratification. See Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 33 and Status of Signature, and ratification, acceptance, approval or accession, available at https://www.cbd.int/abs/nagoya-protocol/signatories/default.shtml [accessed 2014-05-02].
[239] Number according to the FAO Legal Office, available at http://www.fao.org/legal/treaties/treaties-under-article-xiv/en/ [accessed 2014-04-25].

supersede the CBD due to it being *lex posterior*.[240] However, since the ITPGRFA regulates a subset of the scope of the CBD, namely PGRFA, it acts as *lex specialis* for the relevant subset as long as it complies with the CBD.[241]

Which instrument to apply in any given circumstance will depend on the parties involved, the nature of the genetic resources as well as the intended use of the genetic resources, as explained above.

[240] See International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, preamble, paragraphs 9-11.
[241] See Moore and Tymowski, *supra* note 193, page 11.

Motivations behind ABS

De Jonge identifies six different motivations that characterize different approaches to benefit-sharing. These are:

1. The North-South divide, and in particular the divide in the allocation and exploitation of biodiversity
2. So-called biopiracy and a perceived imbalance in IPRs
3. A protection of local and indigenous communities and in particular their cultural identity
4. Food security
5. The conservation of biodiversity
6. A perceived imbalance between IPRs and public interest [242]

According to De Jonge, the first approach recognizes that developing countries, rich in biodiversity, do not have the resources to invest into the biotechnology industry to exploit their resources. Instead, it is the developed countries, poor in biodiversity, which can invest the necessary resources into, and benefit from, the biotechnology industry.[243] By including genetic resources into the principle of national sovereignty over natural resources, the CBD allows states providing genetic resources to negotiate mutually agreed terms, which can include fair and equal benefit-sharing.[244] Thus, the ABS regime set out in the CBD allows for the fair compensation for providing genetic resources.[245]

The second approach focuses on the imbalance created by IPRs. It is argued that IPRs cannot offer protection for developments made in the developing world. Patents exclude most traditional knowledge since it often lacks a particular author, or because it lacks the requirements of novelty and

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[242] Jonge, *supra* note 116, at page 129.
[243] *Ibid*, at page 129 and Busch, Fabian, and Kern, Florian, *Governing Biodiversity: The Realisation of Access and Benefit Sharing under the Convention on Biological Diversity* (University of Roskilde, 2005) , page 53.
[244] Glowka *et al*, *supra* note 110, page 5.
[245] Jonge, *supra* note 116, at page 129 and Glowka and Normand, *supra* note 152, page 22.

inventive step.[246] Moreover, the requirements on plant varieties to gain protection are often too onerous for farmers to acquire protection.[247] Instead, entities in the developed world build upon the unprotected traditional knowledge or the unprotected plant varieties to create something that can be protected by IPRs.[248] With an ABS regime in place, states could request compensation for the advances made based on resources or knowledge gained in the developing world that cannot otherwise be protected.

However, protecting indigenous communities' traditional knowledge also involves giving them a seat at the negotiating table as well as giving them the tools to negotiate fairly with the seeker of the genetic resources.[249] At the same time, the culture of many communities are foreign to the idea of ownership of land and natural resources, even more so to ownership of genetic resources. The negotiations will be framed in terms foreign to indigenous groups who perhaps cannot fathom the potential value of the knowledge or resources that the rest of the world views as theirs.[250] Arguably, the threat to cultural diversity constitutes a threat to biodiversity if we consider cultural diversity as a source of biological diversity.[251] It should be noted that this motivation expressly targets individuals and groups of individuals and not just states.

The ITPGRFA expresses the fourth approach. The ITPGRFA states that its aim is the conservation of PGRFA and fair and equitable sharing of benefits

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[246] Jonge, *supra* note 116, at page 131.
[247] Mechlem and Raney, *supra* note 3, page 158 and Salazar, Rene, Louwaars, Niels P. and Visser, Bert, *On Protecting Farmers' New Varieties: New Approaches to Rights on Collective Innovations in Plant Genetic Resources*, CAPRi Working Paper # 45, January 2006, page 21.
[248] For examples see Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy*, Commission on Intellectual Property Rights, London, 2002, pages 76-78, available at www.iprcommission.org/papers/pdfs/final_report/ciprfullfinal.pdf [accessed 2014-05-02].
[249] Jonge, *supra* note 116, at pages 133-134.
[250] Jonge, *supra* note 116, at pages 133-135.
[251] See Olembo, Reuben, "The Potential Effectiveness of a New Biodiversity Convention" in Schaik, Netty van, Wijgerde, Ankie & Bilderbeek, Simone, (eds.), *Biodiversity and International law: the Effectiveness of International Environmental Law*, IOS Press, Amsterdam, 1992

arising from its use for sustainable agriculture and food security.[252] Moreover, the ITPGRFA recognizes that access to PGRFA is in itself a benefit of the Multilateral System it sets up,[253] and recognizes that further benefits ensuing from the System shall be directed towards farmers, and in particular to farmers in developing countries and countries with economies in transition.[254] However, the benefits accrued through the System do not necessarily have to benefit farmers directly. Rather, the benefits must support the objectives of the ITPGRFA: sustainable agriculture and food security.[255]

It should however be noted that the issue of biodiversity and food was recognized already in the CBD, and was an expressed purpose behind ABS as set up by the Convention.[256] The concerns regarding food security in the CBD does not relate to farmers in the way the ITPGRFA does. The CBD envisions bilateral benefit-sharing, between the provider and user of genetic resources, except for indigenous and local communities.[257] On the other hand, the benefit-sharing envisioned by the ITPGRFA is more directly linked at farmers and other persons preserving the diversity in PGRFA.

ABS is also founded upon the motivation that it will help conserve biological diversity.[258] By preserving biodiversity, states have more opportunities to receive benefit-sharing from parties seeking their genetic resources. In this way, ABS serves as an incentive for the conservation of biodiversity.[259]

The last approach relates to the power invested into IPRs who actually benefits from the application of the inventions and developments. The issue

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[252] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 1.
[253] *Ibid*, article 13.1.
[254] *Ibid*, article 13.3.
[255] Jonge, *supra* note 116, at pages 137.
[256] Convention on Biological Diversity, *supra* note 106, preamble, paragraph 20.
[257] Morgera and Tsioumani, *supra* note 130, at pages 150-151. Compare also Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 5.1 and 5.2.
[258] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 1.
[259] Busch, and Kern, *supra* note 243, page 49, Jonge, *supra* note 116, at pages 138 and Glowka and Normand, *supra* note 152, page 22.

lies in the fact that most of the research is conducted in and for the developed world.[260] Benefits arising from research conducted in the private sector may lead to improvements for farmers in developing countries as well, in the form of spillover effects. Moreover, the IPRs can block further research by preventing persons and entities from, freely, using already protected material.[261] In this sense, De Jonge argues that ABS is less about compensation, but aims at the "equitable distribution of the benefits of modern research and development."[262]

No doubt, there was no one single reason behind the decision to adopt an ABS regime in the CBD. However, prior to the adoption of the CBD the view put forward in the International Undertaking, that all plant genetic resources were a common heritage of mankind,[263] was the commonly accepted view.[264] The view that plant genetic resources were a common heritage of mankind had proven beneficial to the developed countries while providing little benefit to the developing world.[265] The plant genetic resources freely available under the doctrine of common heritage of mankind could be used to gain IPR. Material gained freely in the South was used to modify plants that then would gain protection through the international IPR regime, from the very people providing the raw material.[266] As Henry Vogel put it: "In the case of genetic resources, Northern industry [was] able to privatize the benefits of

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[260] Jonge, *supra* note 116, at pages 140 and FAO, *The State of Food and Agriculture 2003-2004: Agricultural Biotechnology: Meeting the Needs of the Poor?*, FAO, Rome, 2004, page 104.
[261] Pollock, Andre, "The Green Revolution Yields to the Bottom Line" in *The New York Times*, 15 May 2001, available at http://www.nytimes.com/2001/05/15/science/the-green-revolution-yields-to-the-bottom-line.html [accessed 2014-05-02].
[262] Jonge, *supra* note 116, at page 140.
[263] FAO Conference, Rome, Italy, November 5-23 1983, *International Undertaking on Plant Genetic Resources*, UN Doc. C/83/REP, article 1.
[264] The International Undertaking espouses the principle as a universally accepted principle in article 1.
[265] Kloppenburg, Jack, *First the seed: the political economy of plant biotechnology, 1492-2000*, Cambridge Univ. Press, Cambridge, 1988, page 167.
[266] Mgbeoji, Ikechi, "Beyond Rhetoric: State Sovereignty, Common Concern, and the Inapplicability of the Common Heritage Concept to Plant Genetic Resources." in *Leiden Journal of International Law*, vol. 16, pp 821-837, at page 827.

biotechnologies that derive from these resources, while socializing the costs of access."[267]

The expected increase in value of plant genetic resources due to the expansion of biotechnology can then explain the resolve of developing states to admonish the principle of common heritage of mankind with regards to plant genetic resources in favour of the principle of national sovereignty over natural resources.[268]

The initial move of IPRs from the World Intellectual Property Organization (WIPO) to the WTO was mainly due to two reasons: dissatisfaction with negotiations in WIPO and institutional features of WTO making it more favourable for developed states.[269] The institutional features include an effective dispute settlement, the stronger position of developed states in the WTO and the increased likelihood that developing states would accept stronger protection for IPRs offered as part of a greater, beneficial package.[270] The strong protection over IPRs offered in the TRIPs Agreement and the difficulty in amending existing agreements made developing states look elsewhere in an attempt to alter their obligations.[271] By linking IPRs with issues of human rights, in a move similar to the linking of IPRs and trade, developing states have attempted to alter their obligations under the TRIPs Agreement and other instruments in the field of intellectual property,[272] such as the inclusion of farmers' rights in the ITPGRFA.[273] In some areas the developments have not altered the obligations but rather set out additional duties more in line with the objectives of developing countries such as the recommendation in the Bonn Guidelines to "encourage the disclosure of the

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[267] Vogel, Henry, "The Convention on Biological Diversity and equitable benefit-sharing: an economic analysis" in Posey, Darrel Addison, (red.), *Cultural and spiritual values of biodiversity*, Intermediate Technology, London, 1999, page 530.
[268] Morgera, Buck, and Tsioumani, *supra* note 116, page 4.
[269] Helfer, Laurence R., "Regime Shifting: The TRIPs Agreement and New Dynamics of International Intellectual Property Lawmaking", *Yale Journal of International Law*, vol. 29, issue 1, 2004, pages 1-83, at pages 19-20.
[270] *Ibid*, at pages 21-22.
[271] *Ibid*, at pages 27.
[272] *Ibid*, at page 27.
[273] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 9.2.

country of origin of the genetic resources and […] traditional knowledge […] in applications for IPRs."[274]

The regime shifting described above can also be attributed to the view that the WTO is an "international institution perpetuating Western hegemony over the rest of the world."[275] The interests of the United States and the European Community essentially drove the Uruguay round of negotiations that would lead to the formation of the WTO.[276] Compromises promised in the negotiations in order to get developing countries to agree to the proposals were not carried out.[277] In the end, the developing countries could either agree to the entire package that is the WTO, or none of it.[278] However, making the WTO a single undertaking came at a price: decision-making.[279] The decision-making in the WTO was contested, but the outcome was that decisions are to be made by consensus, or, if that fails, a vote where each contracting party has one vote.[280]

Arguably, the impact of the WTO and its covered agreements affected developing countries to a greater extent than developed countries.[281] The concessions made by developing states include tariff cuts larger than that of developed states and inclusion of service and intellectual property into the

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[274] Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, *supra* note 144, paragraph 16(d)(ii) .
[275] Mutua and Anghie, *supra* note 6, at page 35.
[276] Joseph, Sarah, *Blame It On The WTO?: A Human Rights Critique*, Oxford: Oxford University Press, 2011, page 185, Preeg, Ernest H. "The Uruguay Round Negotiations And The Creation Of The WTO" in Narlikar, Amrita, Daunton, M. J. & Stern, Robert M., *The Oxford handbook on the World Trade Organization* Oxford University Press, New York, 2012, page 123, and Drahos, Peter, "When The Weak Bargain With The Strong: Negotiations In The World Trade Organization." *International Negotiation*, vol. 8, issue 1, 2003, pages 79-109 at page 90.
[277] Preeg, *supra* note 276, page 130.
[278] Shadlen, Kenneth C., "Resources, rules and international political economy: the politics of development in the WTO" in Joseph, Sarah, Kinley, David & Waincymer, Jeffrey (eds.), *The World Trade Organization and human rights: interdisciplinary perspectives*, Edward Elgar, Cheltenham, 2009, page 109 and Preeg, *supra* note 276, page 132.
[279] Preeg, *supra* note 276, page 132.
[280] WTO Agreement: Marrakesh Agreement Establishing the World Trade Organization, April 15 1994, 1867 U.N.T.S. 154, 33 I.L.M. 1144 (1994), article IX.
[281] Finger, Michael J. and Schuler, Philip, "Implementation of Uruguay Round Commitments: the Development Challenge" (World Bank policy research working paper no. 2215, September 1999), page 6.

WTO.[282] Developed states, however, also had to make concessions. Two areas of importance to developing countries, where they have an advantage over developed countries, were included under the WTO: agriculture and textile.[283] These agreements would however do little to stop continued protectionism from developed countries. Tariffs in developed countries target goods and products of relevance to developing countries.[284] The UNDP found that tariffs on goods from low-income developing countries to high-income countries were three to four times as high as tariffs on goods between high-income countries.[285] Along the same vein, it found that "developing countries account for less than one-third of developed country imports but for two-thirds of tariff revenues collected."[286] Similarly, tariffs in developed countries are not conducive to development; often tariffs for a raw product are lower than for a processed product.[287]

It has been said that "there are makers, breakers and takers of international institutions: developed countries are the makers, developing countries are the takers".[288] This echoes the opinion, expressed earlier in the introduction, that in international law making, the third world are recipients, not participants.[289] However, for the weaker powers, *i.e.* the developing countries, having rules and institutions in place that give some predictability may seem worth the disadvantageous agreements to be endured as the price for institutions.[290] With no rules there is no predictability and the developing world is still likely to face unfavourable conditions.[291]

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[282] Joseph, *supra* note 276, page 149.
[283] Agreement on Agriculture and Agreement on Textile and Clothing, April 15 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1869 U.N.T.S. 299; 33 I.L.M. 1197 (1994).
[284] Joseph, *supra* note 276, page 158.
[285] United Nations Development Programme (UNDP), Human Development Report 2005: International Cooperation at a Crossroads: Aid, Trade and Security in an Unequal World, UNDP, New York, 2005, page 127.
[286] *Ibid*, page 127.
[287] Joseph, *supra* note 276, page 187.
[288] Shadlen, *supra* note 278, page 114-115.
[289] Nyerere, *supra* note 5, at page 10.
[290] Shadlen, *supra* note 278, page 115.
[291] *Ibid*, page 115.

The situation of the CBD is similar to that of the WTO. Concerning the obligation to conserve biodiversity, it is clear that states with more biodiversity face a larger, and more costly, challenge than that of states with less biodiversity.[292] Of the 17 most biologically diverse countries, only two belong to the group of developed countries.[293] The burden of conserving biodiversity is then larger on the developing world. One of the motivations behind the ABS regime set out in the CBD was to counteract the uneven burden of conservation. However, whereas the CBD sets out extensive obligations regarding conservation, the articles on access and benefit-sharing leave room for discretion for states.[294] The lack of implementation of the ABS regime led to the adoption of the Bonn Guidelines as well as the Nagoya Protocol that is aimed at operationalizing the third objective of the CBD: benefit-sharing. However, it only took the CBD 18 months to enter into force and 194 states have now acquiesced to the CBD.[295] Only 34 states have acquiesced to the Nagoya Protocol since its adoption in 2010; mainly developing countries.[296] It has been argued that the Nagoya Protocol suffers from similar problems as the CBD does in relation to the North-South divide. The interests of the developed countries once again prevailed as can be seen in the detailed rules on access (as was an interest of the developed countries) and the vague rules regarding compliance.[297]

The effective operation of the ABS regime envisioned in the CBD in a state may not rely on the adoption of the Nagoya Protocol, but perhaps the low interest in becoming bound by the norms contained in the Nagoya Protocol is an indication of state compliance with the ABS regime.

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[292] Glowka *et al*, *supra* note 110, page 1.
[293] See text in note 109.
[294] Glowka *et al*, *supra* note 110, pages 3 and 5.
[295] Glowka *et al*, *supra* note 110, page ix.
[296] Number according to http://www.cbd.int/abs/nagoya-protocol/signatories/default.shtml [accessed 2014-05-07]. Notable developed countries among those 34 are Norway (ratification on 1 October 2013) and Denmark (approval on 1 May 2014).
[297] Nijar, *supra* note 136, at page 27. Compare also Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, articles 6 and 15-17 .

The effects of ABS on farmers

In relation to intellectual property protection and the right to food it is important to note that the main concerns relate to access to the means of producing food,[298] a decrease in the agricultural biodiversity,[299] and the privatization of agricultural research.[300] It is unlikely that IPRs will directly deprive a person of the means of producing food.[301] IPRs on plant varieties can only restrict certain usages of that plant variety. Farmers may still use non-protected plant varieties as they see fit. Indirect effects on the access to the means of producing food of IPRs on plant varieties include a lack of non-protected seeds available at seed companies, and increased prices for seeds.[302]

With regard to the potential decrease in agricultural biodiversity, the ITPGRFA identifies the interdependency of all states on the agricultural diversity as a means of solving agricultural problems in the past and in the future.[303] The prohibition on the exchange of seeds, found in the UPOV Convention, forces farmers to reuse only seeds they have harvested on their own land or to buy new seeds.[304] This could have negative effects on agricultural biodiversity, particularly if the plant variety is hybrid, [305] due to the loss of hybrid vigour.[306] Moreover, the strength of the protected varieties outcompetes traditional varieties; in France 600 protected plant varieties

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[298] UN Special Rapporteur on the Right to Food, Report to the UN Commission on Human Rights, *supra* note 30, para 73.
[299] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, preamble, paragraphs 3, 4 and 6.
[300] Haugen, *supra* note 18, page 408.
[301] Haugen, *supra* note 18, page 417.
[302] Haugen, *supra* note 18, page 410.
[303] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, preamble, paragraph 3 and Moore and Tymowski, *supra* note 193, pages 4-6.
[304] See above under chapter 3.2.1.
[305] Hybrids gain benefits due to so called heterosis or hybrid vigour which is a "phenomenon that describes the survival and performance superiority of a hybrid offspring over the average of both its genetically distinct parents." Baranwal, Vinay Kumar, et al. "Heterosis: Emerging Ideas About Hybrid Vigour." In *Journal Of Experimental Botany*, vol. 63, issue 18, 2012, pages 6309-6314, at page 6309.
[306] Pingali, P.L. and Traxler, G., "Changing locus of agricultural research: will the poor benefit from biotechnology and privatization trends?", *Food Policy*, vol. 27, issue 3, June 2002, pages 223-238, at page 234.

represent 99% of all plant varieties grown, 1% of all plant varieties grown in France are not protected by IPRs.[307]

There are several issues related to the privatization of research. Having private entities conduct most of the research means that inventions and knowledge will accumulate outside of the public domain and that it will target economically viable crops at the expense of less economically viable crops.[308] This could create neglected crops that will be similar to the more well-known "neglected diseases" in that the projected revenue is not large enough to warrant the projected costs of research and development.[309] It should also be noted that the interest in creating hybrid plant varieties that lose their hybrid vigour means that there will be a lack in research on plant varieties that does not lose their hybrid vigour.[310]

Moreover it is likely that private entities will conduct research on crop management in economically viable environments and ecological regions resulting in "high location specificity of agronomic and crop management knowledge and technologies" that does not apply across ecological boundaries.[311]

The result is that most of the private research will go into crops not suitable for developing countries and private crop management research will focus on the environment and ecological region of the developed countries. Primarily, the public sector has been left to care for the farmers of the developing world.[312]

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[307] Shiva, Vandana, "GM seed patents pose dire threat to food -- and democracy", *CCPA Monitor*, vol. 19, issue 1, May 2012, pages 36-37, at page 36.
[308] Mechlem and Raney, *supra* note 3, page 145.
[309] Mechlem and Raney, *supra* note 3, page 145. For more on "neglected diseases" see Moran, Mary, et al. "Neglected Disease Research And Development: How Much Are We Really Spending?.", *Public Library of Science Medicine*, vol 6, issue 2, pages 0137-0146, and Trouiller, Patrice, Olliaro, Piero, Torreele, Els, Orbinski, James, Laing, Richard, and Ford, Nathan, "Drug Development For Neglected Diseases: A Deficient Market And A Public-Health Policy Failure.", *Lancet* vol. 359, issue 9324, 2002, pages 2188-2194.
[310] Pingali and Traxler, *supra* note 306, at page 234.
[311] *Ibid*, at page 235.
[312] FAO, *supra* note 260, page 105 Mechlem and Raney, *supra* note 3, page 145.

The Nagoya Protocol recognizes that ABS is not an end goal in itself, but rather ABS is a measure that can help achieving the goal of conservation and sustainable use of biological diversity.[313] ABS then, when viewed together with the undue burden upon the biodiversity rich developing states to conserve their biodiversity,[314] becomes an important tool in the struggle to preserve biological diversity. However, whereas the CBD, and the Nagoya Protocol in extension, view biological diversity as something with intrinsic value, as well as instrumental and inherent value,[315] the ITPGRFA view biological diversity as instrumentally valuable in its potential to safeguard food security and sustainable agriculture.[316]

Given the differing views on the type of value of biodiversity it is not surprising that the ITPGRFA includes an article on farmers' rights, whereas neither the CBD nor the Nagoya Protocol does. It also explains why the CBD and the Nagoya Protocol envisions bilateral benefit-sharing, leaving any further benefit-sharing to the persons who have created the existing biological diversity in a state for that state to determine. The obligation to conserve the existing biological diversity in line with the CBD conveys obligations upon the states party to the Convention. Benefit-sharing in the CBD, as explained above, is used as an incentive for states to alleviate the burden of conserving biodiversity, it is not meant to alleviate the burdens of individuals.[317]

1.11 CBD and Nagoya Protocol

As was said above, the CBD envisions inter-state benefit-sharing, or at least benefit-sharing to the providing state by a party seeking access to genetic resources. However, benefits given to states may provide benefits to individuals as well, including farmers in the developing world. Many of the

[313] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 6.1, and Convention on Biological Diversity, *supra* note 106, articles 1.
[314] See Glowka *et al*, *supra* note 110, page 1.
[315] Convention on Biological Diversity, *supra* note 106, preamble, paragraph 1.
[316] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, preamble paragraphs 4 and 6, and article 1.
[317] Glowka *et al*, *supra* note 110, pages 1 and 3.

benefits listed in Appendix II to the Bonn Guidelines will not directly benefit farmers in developing countries; rather, the benefit-sharing may have indirect effects for farmers. Some of the benefits that may directly affect farmers include providing contributions to the local economy and providing food and livelihood security.[318] Indirect contributions include providing research directed towards food security, sharing research, and capacity building on various levels.[319] However, only local and indigenous groups will be able to affect, directly, the mutually agreed terms due to the requirement of their approval and only in regards to so called traditional knowledge.[320] Arguably, this introduces State-to-community benefit-sharing into the inter-state benefit-sharing regime the CBD otherwise embodies.[321] Other farmers will essentially depend on the goodwill of the parties to the mutually agreed terms or the providing state.[322]

The Nagoya Protocol not yet amassed enough support for to enter into effect. Any assessment regarding its effectiveness and application will therefore be theoretical.

Many of the non-monetary benefits envisioned in the Bonn Guidelines and the Nagoya Protocol regard transfer of technology. However, there are inherent problems with the transfer of technology, as has been described above in relation to the developed world as the locus of research and knowledge. The transfer of technology, be it know-how or seeds, is many times dependent on factors such a location, environment and regional climate, but also capital and infrastructure, and may therefore not be useful to all recipients.[323] Furthermore, as the Conference of the Parties to the CBD

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[318] Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization, *supra* note 144, Appendix II, paragraph 2(l) and (o).
[319] *Ibid*, Appendix II, paragraph 2(a), (g), (h), (i) and (m).
[320] Convention on Biological Diversity, *supra* note 106, article 8(j).
[321] Morgera, Buck, and Tsioumani, *supra* note 116, page 4.
[322] Note that the Bonn Guidelines in paragraph 48 advocates the sharing of benefits to all those that have contributed to
[323] Pingali and Traxler, *supra* note 306, at page 235 and FAO, *supra* note 260, page 104.

emphasized,[324] IPRs must be supportive of the objectives of the Convention and not run counter to them.[325] It has been argued that an adoption of intellectual property protection standard similar to that of the TRIPs Agreement would increase the willingness to transfer protected technology.[326] However, it may not always be in the best interest of developing countries to acquiesce to and adopt the standards set out in the TRIPs Agreement.

Article 19 of the CBD obligates all parties to take measures to ensure the "effective participation" in biotechnological research of the state providing the genetic resources.[327] This could combat the problems that come from having research and knowledge accumulate in the developed world. An "effective participation" on behalf of the states providing genetic resources could encourage research using the provided genetic material on crops more suitable to the area in which the genetic material stems from. Moreover, research could target agronomic and crop management techniques more befitting the local environment and ecosystem. However, while research and development may lead to innovations that will benefit farmers it is important to remember that many farmers are among the most poor in the world. There must be conscious efforts made so that farmers can actually benefit from the innovations; placing new inventions or developed knowledge into the public domain is not, in itself, enough.

It is uncertain to what extent farmers can benefit from monetary benefits. Similar to non-monetary benefits, it is likely that the state rather than individual farmers will accrue the benefits gathered through mutually agreed terms. It will then be for the state to disperse the accumulated benefits if farmers are to benefit from them. As such, the CBD and the Nagoya Protocol

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[324] Conference of Parties to the Convention on Biological Diversity, *Review of National, Regional and Sectoral Measures and Guidelines for Implementation of Article 15*, UNEP/CBD/COP/4/23, 19 Feb. 1998, para 16.
[325] Convention on Biological Diversity, *supra* note 106, article 16(5). See also Convention on Biological Diversity, *supra* note 106, article 16(2).
[326] see Lawson and Downing, *supra* note 8, at page 225.
[327] Convention on Biological Diversity, *supra* note 106, article 19(1). See also Convention on Biological Diversity, *supra* note 106, article 15(6).

will likely have little direct effect for farmers; there is a need for the state to further share the benefits accrued. Indirect effects for famers may include monetary gains that, were it not for the ABS regime, would not exist. However, the monetary benefits shared with provider countries may be invested into research and development benefitting the farmers of that state. It is not necessary that monetary benefits to a state are transferred to farmers in the form of monetary benefits.

It must be noted that the Bonn Guidelines does not provide a complete list of available ways to share benefits. Similarly, the Nagoya Protocol copies, *verbatim*, the list of benefits provided in Appendix II to the Bonn Guidelines and expressly states that benefits are not limited to the listed ones.[328] However, whereas the Nagoya Protocol operationalizes the ABS regime set out in the CBD, it still suffers similar problems in that ABS is still a bilateral issue between the provider and user of genetic resources.[329] Moreover, the Nagoya Protocol enforces the view that only local or indigenous communities can directly affect and benefit from benefit-sharing.[330]

Evaluating the effectiveness and the justice of international law from a third world approach means that one must look at the effects of the legislation upon the people of the states that are party to the instruments. Anghie and Chimni point out that "Third World states often act in ways that are against the interests of their people."[331] Thus, benefit-sharing where the people are tasked to conserve biodiversity without actually benefitting from the use of the conserved biodiversity cannot be just. It is therefore imperative that the benefit-sharing that states accrue are further shared with the people of that state.

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[328] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilisation to the Convention on Biological Diversity, *supra* note 151, article 6.1, and Convention on Biological Diversity, *supra* note 106, article 5(4).
[329] *Ibid*, article 5(1).
[330] *Ibid*, article 6.1, and Convention on Biological Diversity, *supra* note 106, article 5(2) and (5).
[331] Anghie, Antony, and B. S. Chimni. "Third World Approaches To International Law And Individual Responsibility In Internal Conflict", in *Studies In Transnational Legal Policy*, vol. 36, 2004, pages 185-210, at page 186.

1.12 ITPGRFA

The benefit-sharing envisioned in the ITPGRFA is different from that of the CBD or the Nagoya Protocol. A bilateral agreement between the provider of PGRFA covered by the Multilateral System of ABS and the user of such genetic resources must be in place, but the SMTA adopted by the Governing Body for the ITPGRFA reduces the need for negotiations. The SMTA also provides for when benefits by the user party to the SMTA shall be shared.[332] In accordance with the SMTA, use of PGRFA covered by the Multilateral System may require compensation. Compensation shall be paid when the recipient commercializes a "product that is a PGRFA" that makes use of material transferred pursuant to the SMTA and restricts further research and breeding on the product.[333] When the above requirements are fulfilled, but the product is available, without restriction, for further research and breeding, then the SMTA encourages recipients to make voluntary payments.[334] According to the SMTA a product is "available without restriction" when there is no "legal or contractual obligations, or technological restrictions" preventing the product from being used in the manner specified in the ITPGRFA.[335] The negotiation history of the ITPGRFA provides that a product protected in a manner that would present "practical, legal or physical" restrictions to the availability of the product would require mandatory payments if the other requirements are also fulfilled.[336] Acquiring protection of a level equal to that prescribed by the UPOV Convention would not require mandatory payments.[337] Patent protection may in some cases prompt mandatory compensation.[338]

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[332] See Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 228, article 6.7, 6.8 and 6.11.
[333] *Ibid*, article 6.7. See also International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 13.2(d)(ii)
[334] Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 228, article 6.8.
[335] *Ibid*, article 2.
[336] Moore and Tymowski, *supra* note 193, page 111.
[337] Moore and Tymowski, *supra* note 193, page 111.
[338] Moore and Tymowski, *supra* note 193, page 111.

The payments mandated in the SMTA shall be 0.77 per cent of the gross income resulting from the commercialization,[339] and shall be paid to the Benefit-sharing Fund established by the Governing Body for the ITPGRFA.[340] It should be noted that as of 2012 the SMTA had yet to generate any income to the Benefit-sharing Fund,[341] and the projects which the Fund carried out in 2010-2011 was financed by donations from four parties to the ITPGRFA.[342]

The projects that the fund invests in are closely related to farmers. Funded projects must relate to one or more challenge identified as safeguarding biodiversity, food security, and climate change. Priority is given to projects related to "information exchange, technology transfer and capacity development", "on-farm management and conservation of crop diversity", and "sustainable use of crop diversity".[343] However, there are several problems facing the Benefit-sharing Fund. These problems affect the amount of monetary benefits it can accrue and invest. Projected payments to the Benefit-sharing fund range from US$10 million to US$39 million annually in the year 2030.[344] The problems are not insurmountable and include acquiring new members to the ITPGRFA with large gene-banks, avoidance by institution of using genetic resources covered by the Multilateral System, a lack of research into crops included in Annex 1 to the ITPGRFA.[345] It will still be some time before the Benefit-sharing Fund, reliably, can invest monetary benefits accrued into projects affecting farmers.

Moreover, the parties to the ITPGRFA undertake to share non-monetary benefits arising out of the utilization of PGRFA covered by the Multilateral

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[339] Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 228, article 2 and Annex 2, paragraph 1.
[340] *Ibid*, Annex 2, paragraph 4.
[341] FAO, *Identifying Benefit Flows: Studies on the Potential Monetary and Non-Monetary Benefits Arising from the International Treaty on Plant Genetic Resources for Food and Agriculture*, FAO, Rome, 2013, page xxix.
[342] FAO, *Report on the First Round of the Project Cycle of the Benefit-sharing Fund*, FAO, Rome, 2013, page 10.
[343] *Ibid*, page 12.
[344] FAO, *supra* note 341, page xxiii.
[345] FAO, *supra* note 341, page xxiii-xxv

System through the exchange of information, transfer of technology and capacity building.[346] The Global Information System envisioned in article 17 of the ITPGRFA and using international organization (including the CGIAR Centres) to strengthen regional networks and increase national capacities, especially in developing countries.[347] Similar problems as has been described above regarding the transfer of technology may arise here as well.

The ITPGRFA also considers the facilitated access to PGRFA to be a benefit, in and of itself.[348] The SMTA provides a multilateral option that removes the need to negotiate for prior informed consent and mutually agreed terms. It is thus likely to decrease costs for entities seeking PGRFA.[349] The agreements entered into between the CGIAR International Agricultural Research Centres and the Governing Body for the ITPGRFA provide for facilitated access to the *ex-situ* holdings of CGIAR, which include varieties improved by the Research Centres.[350]

[346] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 13.2.
[347] *Ibid*, article 17, and FAO, *Identifying Benefit Flows: Studies on the Potential Monetary and Non-Monetary Benefits Arising from the International Treaty on Plant Genetic Resources for Food and Agriculture*, FAO, Rome, 2013, page 26.
[348] International Treaty on Plant Genetic Resources for Food and Agriculture, *supra* note 191, article 13.1.
[349] FAO, *supra* note 341, page 23.
[350] FAO, *supra* note 341, page xxvii.

Conclusion

This thesis set out to answer the questions of whether or not farmers are likely to see and benefits from the ABS regimes and in what form those benefits would be.

It has been nearly 20 years since the adoption of the ABS regime envisioned in the CBD. In that time, Guidelines for the fair and equitable sharing of benefits in accordance with the CBD and two new international instruments regarding ABS has been adopted. Similarly, the intellectual property regime has evolved and the most important instrument on intellectual property is currently under the administration of the WTO in the shape of the TRIPs Agreement. However, whereas the effectiveness of the WTO system, due in large part to the Dispute Settlement Understanding, is recognized,[351] the ABS regime has been a work in progress. The adoption of the Bonn Guidelines and the start of the negotiations that would lead to the adoption of the Nagoya Protocol highlight the difficulties in creating an effective ABS regime. Similarly, the ITPGRFA, which has more than 130 contracting parties, has yet to generate any payments for its benefit-sharing fund, albeit they have the system in place.

The instruments discussed that are relevant for ABS are all centred around sovereign states. The natural resources utilized belong to sovereign states, and so do the right to a share of the benefits from the utilization of those natural resources and the obligation to conserve biological diversity. The vague obligations regarding benefit-sharing suggests that developing countries did not get all they wanted in return for the obligations to conserve biological diversity and provide access to their genetic resources. However, it is important to also look at the persons in these developing countries and how they are affected. Part of TWAIL theory is that developing states does not

[351] Evans, David, and Shaffer, Gregory C., "Introduction" in Shaffer, Gregory C. & Meléndez-Ortiz, Ricardo (eds.), *Dispute settlement at the WTO: the developing country experience*, Cambridge University Press, Cambridge, 2010, page 1. See also

always act in the best interest of their population. Thus, even if developing countries, as sovereign entities, achieved what they wanted in the negotiations, the results for the population would be the true determining factor as for whether or not the instruments perpetuate the subordination of developing countries in the eyes of TWAIL scholars.

Moreover, the motivations behind ABS, as examined in chapter 5 of this thesis, highlight the issue. Only one of the motivations concern individuals or groups of individuals. The other motivations highlight the importance of ABS for the state. As a way for the state to receive fair compensation for the utilization of natural resources belonging to that state or as an incentive to conserve biodiversity. The one motivation that does concern individuals or groups of individuals is specifically concerned with local or indigenous groups, not farmers (or any other group for that matter).

Biodiversity plays an important role in the improvement of plant varieties and safeguarding food security as has been identified by the ITPGRFA, the CBD and the Nagoya Protocol. There must therefore be strong incentives to secure and conserve biodiversity. However, the utilization of the genetic resources on improving plant varieties is what will safeguard food security, not vast, unused biological diversity. There must also therefore be incentives to develop new plant varieties and improve existing ones.

Currently, international instruments offer clear obligations to conserve biodiversity, but few incentives to do so, particularly for developing countries. The prospects of the gene revolution are, primarily, advanced in the developed world. Few developing countries can afford or know how to cultivate plant varieties on the scale that private entities in the developed world can and are doing. Moreover, there are strong incentives for private entities to create new plant varieties due to the protection given to them

through patents or the *sui generis* system that the TRIPs Agreement mandate states to have in place and the growth of the trade in seeds.[352]

Farmers are the ones who safeguard food security and in many places conserve biodiversity. However, they cannot expect to gain much from the international instruments. Benefit-sharing in the CBD and the Nagoya Protocol are incentives for states to conserve biodiversity, not for the inhabitants of said state. The ITPGRFA pools together benefit-sharing through a multilateral system into a benefit-sharing fund based on the commercialization of accessed genetic resources, either voluntarily or mandated. So far it has not received any payments and its prospects are looking meagre. The Governing Body for the ITPGRFA introduced a fund-raising target to be achieved by 2014.[353] The target lies at US$ 116 million but estimates suggest that it will take 38 years to reach that goal if the ITPGRFA does not gain more members.[354] Even under very favourable conditions, the yearly fund-raising goal of US$23 million likely will not be reached before the year 2028.[355]

Any monetary benefits that the instruments may accumulate seem unlikely to reach farmers directly. Non-monetary benefits may have a higher chance of affecting farmers. The transfer of technology as well as the capacity-building envisioned in the instruments may provide indirect long-term benefits to farmers through increased national research in and on areas and plant varieties neglected by private entities.

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[352] The International Seed Federation estimates the value of global field, vegetable and flower seed exports at above US$10 billion. For more see http://www.worldseed.org/cms/medias/file/ResourceCenter/SeedStatistics/SeedExports/Seed_Exports_2012.pdf [accessed 2014-05-16]. Regarding the growth in the trade of seeds see http://www.worldseed.org/cms/medias/file/ISF_GrowingInternationalSeedTrade_1970-2012.pdf [accessed 2014-05-16].

[353] Governing Body for the International Treaty on Plant Genetic Resources, *Implementation of the Funding Strategy of the Treaty*, Resolution 3/2009, in Third Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, IT/GB-3/09/Report, Appendix A.3

[354] FAO, *supra* note 341, page xxv.

[355] FAO, *supra* note 341, page xxv.

While ABS is an important part of the CBD it is not the most integral part judging from the emphasis and clarity awarded on one hand the provisions on conservation, and on the other hand and regarding the adoption of measures on benefit-sharing. Juxtaposing the promising, but vague, regulations regarding access and benefit-sharing that leave much discretion for states against the much more clear and detailed obligations regarding conservation of biodiversity show the true picture. ABS was a part of the grand bargain that is the CBD, an aspect that would increase the likelihood of adoption and ratifications by states.[356] Similarly, the Nagoya Protocol clarifies aspects of benefit-sharing, but the detailed provisions regulate access to genetic resources, not benefit-sharing. It should come as no surprise that benefit-sharing is unlikely to have very large, direct, effects on farmers in developing countries.

The ITPGRFA on the other hand offer clear and detailed provisions on benefit-sharing, and the SMTA adopted by the Governing Body makes the process of acquiring genetic resources more transparent and predictable. The ITPGRFA does suffer from its own problems though. The Multilateral System for benefit-sharing only covers certain species and genera making it easier to circumvent the otherwise obligatory payments to the Benefit-sharing fund.

It is thus fair to say that farmers are likely to see benefits shared, arising from the utilization of genetic resources. However, benefits for farmers seem to focus on the improved plant varieties likely to be developed from the preserved biodiversity and the facilitated access mandated by the instruments, as well as the protection a large base of genetic resources offer to prevent the effects of genetic erosion. In this regard it is important to note that the new plant varieties, likely, are able to gain protection under the international intellectual property regime.

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[356] For more aspects of the grand bargain see McGraw, Désirée M., "The CBD – Key Characteristics and Implications for Implementation" in *Review Of European Community & International Environmental Law,* vol. 11, issue 1, 2002, pages 17-28.

Further benefits may be given to farmers from states accruing benefits shared in accordance with the CBD or the Nagoya Protocol. However, the instruments only govern benefit-sharing on behalf of states. Any further sharing of the benefits with farmers would be voluntary and entirely dependent on the good will of that state.

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