

**Allocative Effects of International Environmental
Institutions
- The Convention on Biological Diversity -**

- ONLY DRAFT – PLEASE DON'T QUOTE WITHOUT PERMISSION -

Sliman Abu Amara

Institute for Environmental Studies
Vrije Universiteit Amsterdam
De Boelelaan 1087
1081 HV, Amsterdam
The Netherlands

Sliman.abu.amara@ivm.falw.vu.nl
www.vu.nl/ivm

Abstract

The Convention on Biological Diversity (CBD) signed in 1992 establishes three objectives: conservation of biodiversity, its sustainable use, and the equitable sharing of benefits derived from the utilization of genetic resources. Based on the sovereign rights of states, the CBD recognizes the right of states to regulate the access to their genetic resources and benefit sharing (ABS). ABS is viewed as the means to allocate benefits to both countries rich in biodiversity (provider countries) and their indigenous and local communities. This allocation is, *inter alia*, perceived as the compensation for the use of genetic resources and traditional knowledge; hence as the allocation instrument to balance the shift in property rights. This study argues that fairness in ABS governance requires that parties to an ABS arrangement should have a fair procedure in creating the conditions of the arrangement. This study also argues that equity implies that parties to an ABS arrangement are equitable in the negotiations power. In this context, equity means, *inter alia*, that parties recognize the existing claims on property rights in a reciprocal way.. However, experiences in the design of national and regional ABS legislations show that provider countries face difficulties in their national regulatory efforts. The current implementation efforts can be categorized as non-regulation, catching-up regulation, and over-regulation. Furthermore, it is also suggested that the problems provider countries face at the national level have rather an international character that requires changes in the international policy. The aim of this paper is to determine under what institutional conditions can the CBD be implemented to enable fair and equitable allocation of benefits? In this context, the paper focus on the relationship between property rights on genetic resources and fairness and equity in governance of ABS.

1. Introduction

In recent decades the world has experienced a fast technological development in biotechnology. New, cost effective and efficient methods have been developed for industry and scientists to research genetic materials and associated traditional knowledge in order to develop and discover new products; including medicine, cosmetics and agriculture. Genetic resources refer to the variation of genes within species. In the context of this study, traditional knowledge refers to the knowledge, innovations and practices of indigenous and local communities around the world (Article 1 CBD). It has become clear in recent years that the market for natural products derived from genetic resources has been steadily expanding, particularly in industrialized countries (Rosendal 2006: 267). However, the steady advance of biotechnological innovation raises many difficult questions of different natures. To a large extent, biotechnological innovations involve access to genetic resources and associated traditional knowledge.

From a historical perspective, genetic resources have been accessed worldwide freely and without any significant restrictions (Shiva *et.al* 2002: 6; Rosendal 2006: 267). However, with the growing demand for fairness and equity in the allocation of benefits arising out of the use of genetic resources and associated traditional knowledge, governance of access to genetic resources gains a new dimension (see Nijar & Ling 1994: 283). Fairness and equity are not new issues in global environmental governance. Nevertheless, in the governance of access to genetic resources, fairness and equity occupy a central role and possess some complex challenges because they touch upon the questions, *inter alia*, who owns genetic resources and/or associated traditional knowledge? Are these resources, public, private, collective property? According to Reid (1993:32), “there is no more fundamental and divisive issue related to biodiversity than the question who owns biodiversity”. In the context of this study the term ‘property’ refers to ‘a thing or collection of things that one owns’ (Phillip 1986).

Many international instruments have been adopted to regulate the access to genetic resources, fair and equitable benefit sharing and the related property rights. These include the Convention on Biological Diversity (CBD)¹ (including the Bonn Guidelines on Access to Genetic Resources and The Fair and Equitable Benefit Sharing), the Agreement on the Trade-Related Aspects of Intellectual Property Rights (TRIPs), the International Treaty on Plant Genetic Resources for Food And Agriculture (ITPGRFA) of the UN special Agency for Food and Agriculture (FAO), and The International Union for the Protection of New Varieties of Plants (UPOV). UPOV has been established by the International Convention for the Protection of New Varieties of Plants. The Convention was adopted in Paris in 1961 and it was revised in 1972, 1978 and 1991. Each of these instruments includes different provisions on rights related to genetic resources and associated traditional knowledge. This study deals with genetic resources not dealt with in the ITPGRFA.

Different research has been conducted on the relationship between the CBD and the TRIPs agreement, including the institutional interaction between these instruments (see Rosendal 2006: 269). In the context of this study, institutional interaction refers to the notion that effective implementation of a specific agreement may have impacts on the implementation of

¹ The Convention on Biological Diversity, U.N. Doc. DPI/130/7, June 2 1992, reprinted in 31 *ILM* 818 (1992).

another (Young 1996: 6). This study aims to move the discussion ahead and deal with one of the central issues in ABS governance, namely property rights and their influence on fairness and equity in the allocation of benefits. Therefore, the focus here is on the different national and international efforts that aim to balance the uncompensated shift in property rights and achieve the fair and equitable benefit sharing arising out of the utilisation of their genetic resources and traditional knowledge. This study argues that fair and equitable benefit sharing will only be achieved if user countries accept their responsibilities and adopt user legislations that aim to achieve the distributive allocations of the CBD. Against this background, this study aims to determine what institutional conditions can balance differing property rights and thus enable the CBD to achieve the fair and equitable allocation of benefits.

This paper is outlined in the following way: the second section introduces the CBD and its provisions on access to genetic resources and fair and equitable benefit sharing. The third section includes a working definition of the concepts of fairness and equity in ABS governance. The fourth section discusses the question of ownership of genetic resources and traditional knowledge and it reflects on the problems arising between the competing property rights. The fifth section elaborates on the different instruments suggested to solve the conflicts between the property rights. The sixth section elaborates on issues of implementation in both user and provider countries and it includes examples from the EU and case studies conducted on ABS governance in Brazil, India and Tanzania. The seventh section includes the conclusions of this paper.

2. The Convention on Biological Diversity (CBD)

The CBD was negotiated under the auspices of the United Nations Environment Programme and adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992. It came into force on 29 December 1993. So far 189 countries have ratified it.² It has 42 articles, 2 annexes and one Protocol. The objectives of the CBD are: (i) the conservation of biodiversity, (ii) the sustainable use of its components, and (iii) the fair and equitable sharing arising out of the utilization of genetic resources (Article 1 the CBD). While the CBD is generally concerned with biological diversity, its third objective concerning fair and equitable benefit sharing wholly focuses on genetic resources. The Bonn Guidelines provide a comprehensive definition of the term “benefit sharing”, namely that it includes both monetary and non-monetary benefits and can be distributed according to different conditions agreed upon by the parties.

A general framework for the implementation of the objective of fair and equitable benefit sharing is provided in Article 15 of the CBD, which states:

“1. Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

2. Each Contracting Party shall endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention.

² See list of parties at the official website of the CBD, at: <http://www.biodiv.org/world/parties.asp> (*last visited* on 30-11-06).

....

7. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, and in accordance with Articles 16 and 19 and, where necessary, through the financial mechanism established by Articles 20 and 21 with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms.”

The core idea behind Article 15 is that access is based on the sovereignty of Parties over their genetic resources. Consequently, national legislation has been given a major role in regulating access to genetic resources. Access to genetic resources can be divided into four different categories: customary use and development; public scientific research; bioprospecting; and commercial research and development (Bystroem & Einarsson 1999: 17). Bioprospecting refers to the exploration of biodiversity for commercially valuable genetic resources and biochemicals. It includes a search for resources, and the collection of resources with an intention to commercialize the resources. It can also include the collection of traditional knowledge (Laird & Wynberg 2003: 40).

Although the CBD recognizes that providing access to genetic resources is a subject for national legislation, it demands that Parties not impose restrictions that run counter to its objectives (Article 15 (1) and (2)). This restriction implies that Parties cannot reserve the exploitation of their genetic resources for their citizens only (Bugge & Tvedt 2000: 175).

Another important part of this article is the obligation of Parties to take the legislative and administrative steps needed to ensure, *inter alia*, technology transfer and the fair and equitable sharing with countries that provide access to their genetic resources. Clearly, this requirement is relevant to those countries that are using the genetic resources; namely most industrialised countries (Young 2004: 76). However, until the discussions on the Bonn Guidelines, these countries strongly resisted the idea that the genetic resources used within their territories are subject to the ABS laws of the countries of origin. The industrialised countries believed that all countries are both users *and* providers of genetic resources and thus do not have any specific responsibility. This position has since changed, as during the negotiations of the Bonn Guidelines industrialised countries accepted the concept of “user countries”, which implies that countries with highly developed biotechnological, pharmaceutical, and agricultural industrial sectors have different obligations than provider countries (Cunningham *et.al.* 2004: 2).

Prior informed consent

The major requirements Article 15 includes for the access to genetic resources are prior informed consent (PIC) and mutually agreed terms on benefit sharing. Accordingly, “access to genetic resources shall be subject to PIC of the contracting party providing such resources, unless otherwise determined by that party” (Article 15 paragraph 5). PIC is not defined in the CBD. According to Laird, “prior informed consent is the consent of a party to an activity that is given after receiving full disclosure regarding the reasons for the activity, the specific procedures the activity would entail, the potential risk involved, and the full implications that can realistically be foreseen” (Laird 2002: xxiv). An additional PIC requirement is provided in Article 8(j). According to this provision, State Parties, subject to national legislation, shall

respect and preserve traditional knowledge of indigenous and local communities, which encourages the equitable sharing of benefits. Some national access measures, such as those in Andean Pact and the Philippines, require the agreement of relevant groups, e.g. indigenous peoples, in order to access their areas. For example, the Philippines legislation stipulates that ‘benefit-sharing arrangements must ensure that benefits and results received must occur to the benefit of the Local Communities/indigenous Peoples Areas concerned’.³

For indigenous and local communities, PIC constitutes the fundamental mechanism for participation and self-determination within ABS governance (Firestone 2003: 176). Though Article 8(j) does not yet include the PIC, over the course of the development and interpretation of the Convention in the Conference of the Parties (COP) meetings it is increasingly considered as such. For instance, the COP 5 of the CBD has adopted General Principles clarifying that “access to traditional knowledge, innovations and practices of indigenous and local communities should be subject to prior informed consent or prior informed approval from the holders of such knowledge, innovations and practices.”⁴

Mutually agreed terms (MATs)

Another requirement for ABS is the so-called ‘mutually agreed terms’ (MATs). ‘Mutually agreed terms’ are bilateral (public-private or private-private) contracts between the users and providers of genetic resources. MATs can take the form of collection permits, memoranda of understanding, research agreements, and cooperative partnerships that aim to regulate access to genetic resources and benefit sharing obligations (Tully 2003: 91). Tvedt argues (2006: 192) that there are many serious gaps in the existing contractual approach that raise doubts about the effectiveness to fulfil the CBD objectives. These gaps often create difficulties for both users and providers to conclude an arrangement, as they are often face significant differences capacities. This is especially the case when we deal with a private corporation and a government from a developing country. As well as the required legal, political and technological capacities, these countries must also refer to an overall ABS legal framework in order to be able to negotiate the MATs (Rosendal 1995: 76). In the absence of such provisions, genetic materials flow continues free of charge and thus without benefit sharing. This often represents an obstacle to governments (particularly in the South), which lack the administrative capacities to both enact and enforce a legal framework (Rosendal 1995: 76). In this context, Nijar and Ling state (1994: 283) that experiences show companies are better able to impose their terms because the concept of MATs favour them to achieve their interests with little consideration of equitable practices.

Therefore, as many countries had difficulties enacting national ABS legislation, in 2002 the COP adopted the voluntary Bonn Guidelines for the Fair and Equitable Benefit Sharing.⁵ The guidelines have been of assistance to governments and other stakeholders when establishing

³ See Organisation for Economic Co-operation and Development (OECD) (1997). *Issues in the sharing of benefits arising out of the utilisation of genetic resource*, OCDE/GD(97) 193, Paris. P. 10.

⁴ UNEP/CBD/COP/V/23.

⁵ UNEP/CBD/COP/IV/24.

legislative, administrative or policy measures on access and benefit sharing and/or when negotiating bilateral arrangements for access and benefit sharing.⁶

The Bonn Guidelines focus mostly on the access side of the obligation and not on the benefit sharing side of ABS. For instance, the guidelines clearly repeat the obligation of provider countries “to endeavour to create conditions to facilitate access to genetic resources for environmentally sound uses by the Contracting Parties and not to impose restrictions that run counter to the objectives of this Convention”. However, no clear obligation of user countries has been included in the Bonn Guidelines. In reference to the access to genetic resources, the Bonn Guidelines talks of “users” but not “user countries”. In this context, the term “users” refers to private or non-state users and therefore does not specify any obligations on the user countries concerning the use of genetic resources sourced from provider countries. Accordingly, the Bonn Guidelines places the burden of acquiring a PIC on mutually agreed terms onto commercial users and not on states. This implies that the compliance with the Bonn Guidelines and the CBD measures on ABS are directly transferred to private actors and not onto the governments who adopted it. Therefore, provider countries argue, the Bonn Guidelines are not balanced, as they focused more on access issues and less on achieving fair and equitable benefit sharing. User countries (joined by the companies and research institutes) argue that benefit sharing must be subject to terms agreed bilaterally on an ad-hoc basis between the users and providers of genetic resources (see Tully 2003: 92).

Another important aspect of the Guidelines is that they only include measures relevant to the legal access to genetic resources and do not provide any comprehensive solutions for the illegal access, such as penalties or remedies. The access is illegal when the genetic resources and/or associated traditional knowledge have been used without the PIC of the country of origin; a phenomenon often referred to as “biopiracy”, especially when the access results in a patent. ‘Piracy’ refers originally to the act of robbery conducted on the high seas (Britannia online). The term ‘biopiracy’ was invented by the North America based NGO called Rural Advancement Foundation International (RAFI) as a response to a book published by Reid *et.al* in 1993. A study conducted at RAFI referred to the argument among northern companies of loss of royalties through the piracy of their patents in the south, and compared it with the south’s larger loss through the biopiracy of genetic materials and knowledge conducted by northern companies without any compensation (RAFI 1994; Svarstad & Dhillon 2000: 24).

Accordingly, biopiracy is defined as the receiving of IPRs on genetic resources and/or traditional knowledge without their prior consent or benefit sharing (Khor 2002: 11). However, the variety of definitions indicates that this term is not very clear yet. Therefore, this study rather uses the notion, of uncompensated shift in property rights or uncompensated use of genetic resources and/or associated genetic resources. Examples are: vinblastine (rosy periwinkle [*Catharanthus roseus*]; Hodgkin’s disease), vincristine (rosy periwinkle; leukaemia), tubocurarine (*Chondodendron tomentosum*; muscle relaxant), quinine (*Cinchona ledgeriana*; anti-malarial), pilocarpine (*Pilocarpus cearensis*; glaucoma), morphine (opium poppy [*Papaver somniferum*]; analgesic), and taxol (Pacific yew [*Taxus brevifolia*]; ovarian cancer) (Gepts 2004: 1298). A well-known example is the ca. 3000 antibiotics (e.g. penicillin) (WRI 1992: 4).

⁶ Section I the Bonn Guidelines on Fair and Equitable Benefit Sharing, UNEP/CBD/COP/VI/24.

Statistics show that there has been a substantial rise in the number of patents based on biological materials and related traditional knowledge (Mooney 2000:39-40). A great number of these patents are granted directly or indirectly to private companies that maintain their headquarters in industrialised countries (Khor 2002:20; Koopman 2003: 3-4). In most cases, the traditional knowledge involved originated from countries that often lack the means to challenge the patents at foreign patents offices or courts against well-equipped companies. Therefore, provider countries fear that current international law encourages the uncompensated shift in property rights. Nevertheless, despite doubts about the effectiveness of the Bonn Guidelines, many parties - especially user countries - started to call for their implementation, shifting the discussions from Article 15 to focusing on the Bonn Guidelines (Young 2004: 17).

3. Fairness and equity in allocations of benefits

For decades, genetic resources have been perceived as ‘common heritage’, freely accessible to everyone without the need to acquire the authorisation of any country and without any benefit sharing for their utilisation (Shiva *et.al.* 2002: 6). Countries rich in biodiversity were contributing their seeds and other genetic materials on a voluntary basis to international seed banks and researchers were granted nearly free access to both *in-situ* and *ex-situ* collections. Scientists were able to collect samples worldwide without being required to apply for any specific permission (see Rosendal 2006: 276). The debates over the governance of ABS sparked when the CBD included the reference to the sovereign rights of countries over the biological resources within their borders and subjected the access subject to fair and equitable benefit sharing (Article 2 the CBD).

The inclusion of the third objective – fair and equitable benefit sharing – in the CBD is attributed to different reasons. The reasons can be summarised, *inter alia*, into four different categories: (i) to compensate the providers for the use of their genetic resources; (ii) to fund the CBD objectives of conservation and sustainable use of biodiversity; (iii) as an incentive measure for countries to provide access to their genetic resources; (iv) as an incentive measure for indigenous and local communities to conserve and sustainably use the genetic resources. In the negotiations of the CBD, central to developing countries was the compensation for the use of their genetic resources and traditional knowledge (Rosendal 2006: 267). Their demands were based on the contributions their countries made to new products developed by multinationals, products that were based on the genetic resources and traditional knowledge originated from their territories.

Developing countries were also concerned about the developments in patent legislations that were affected by the negotiations carried out at the WTO on the TRIPs Agreement,⁷ in particular the inclusion of plants and micro-organisms within the scope of patentability. With the planned inclusion of biotechnological products in the scope of patentability, these countries feared that products based on their genetic resources and associated traditional knowledge will become subject to private intellectual property rights without being compensated for the lost of property on their genetic resources. In addition, benefit sharing is

⁷ Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) reprinted in 33 *ILM* 1197, at 1208 (1994).

also viewed as an economic incentive for both the governments and the communities living in areas rich in biodiversity to conservation and sustainable use their genetic resources (e.g. Indians in the Amazon) (Rosendal 2006: 81). In the light of that, the CBD is based on the idea that when countries have sovereign rights to their genetic resources, and conserve their biodiversity, they should benefit from its utilisation (Laird 2002: xxv; Yamin 1995: 537; Tully 2003: 90).⁸

Clearly, the reference to fairness and equity in the CBD constitutes an innovative element in a global environmental convention, marking a shift from previous wildlife agreements that primarily focused on the conservation of nature. The CBD with its objective of fair and equitable benefit sharing introduces an ethical element. However, it does not include a definition of ‘fair’ and ‘equitable’ benefit sharing. Therefore, the question raised here is: what constitutes equity and fairness in international law and relations? And what does it imply for benefit sharing? The following definitions of these concepts represent the starting point for this study toward understanding the concepts of fairness and equity in ABS governance.

3.1. Equity in ABS governance

In the Continental Shelf Case, the International Court of Justice (ICJ) referred to the concept of equity as being a “direct emanation of the idea of justice” and a “general principle directly applicable as law” that is to applied as part of international law with the aim “to balance up the various considerations which it regards as relevant in order to produce an equitable result.” (ICJ Rep. 1982: 18). Accordingly, equity has two main elements: procedural and substantive. These elements have been further interpreted and developed. Procedural equity requires that “the processes of representation, decision-making, and enforcement in an institution be clearly specified, nondiscretionary, and internally consistent (Woods 1999: 46). Substantive equity refers to how equitable the outcomes of an institution are.

Furthermore, equity can be further divided into inter-generational equity and intra-generational equity. According to the principle of inter-generational equity, the present generation has the obligation to use and develop its cultural and natural heritage in such a manner that it will be passed on to the next generation in no worse condition than it was received (Birnie and Boyle 2002: 89). Intra-generational equity addresses the issue of the eradication of poverty, by suggesting that redress of the imbalance of wealth in the world in the current generation is essential to sustainability (Birnie and Boyle 2002: 90). Inter-generational equity is explicitly referred to in Principle 3 of the Rio Declaration. Intra-generational equity is not explicitly referred to; however, Principle 5 calls for co-operation in the eradication of poverty and the special needs of developing countries are outlined in Principle 6. However, these concepts of equity are strongly related to the notion of sustainable development and can be regarded as too general to be applied to the specific character of the concept of benefit sharing in the CBD.

According to Laird (2002: xxix), “‘equity’ - a dynamic, culturally framed concept - is clearly difficult to approximate in practice’, as there are large disparities between the users and providers of genetic resources that make equity very problematic. The disparities between users and providers range from legal and economic powers to cultural and social aspects (Laird 2002: xxix). Therefore, it seems that MATs constitute the means to enable parties to

⁸ Article 3 and 15.1 the CBD.

identify their interests and to express what they consider to be ‘fair and equitable’ benefit sharing. However, the content of a MAT often depends on the purpose and the nature of the access itself, and thus fairness and equity might be undermined by consent and MATs (Tully 2003: 90). Therefore, the MATs and the free PIC constitute the basic elements for an equitable partnership as they touch upon equity in the drafting of such an arrangement (formal equity). However, the success of the arrangements cannot be formally assessed only on the content of the MATs itself, it must also be based on the compliance with the arrangement and to what extent this agreement would achieve the objective benefit sharing (substantive equity).

Looking at the CBD and the reasons for the inclusion of the third objective leads us to the points made by Bystroem and Einarsson (1999:17), namely, ‘the word sharing itself carries so strong connotations of altruism or generosity that the expression ‘benefit-sharing’ could only be properly used about mechanisms of benefit distribution designed with the express of correcting existing inequalities’. In this context, equity can also be interpreted as parties must be equal in their negotiations power to have an equal outcome in their ABS arrangement. This study argues that in this context, equity in the negotiations of an ABS arrangement would require, *inter alia*, that although parties might have different rights and different responsibilities, all must be equal in creating the condition to enter into an arrangement that aims to correct existing inequalities. As this study explains later on, a major inequality in ABS governance is the different legal protection provided for the different competing property rights. In other words, for an arrangement to be equitable it must recognise the relevant property rights. For instance, when a company aims to enter an arrangement with a specific indigenous or local community, the mutual recognition of existing property rights of the community and the users involved constitutes a prerequisite for an equitable ABS arrangement. A lack of this recognition is unlikely to result in an arrangement that both parties feel equitable about.

3.2. Fairness in ABS governance

Another complex issue is the notion of fairness. There are many definitions for this concept; however, this study adopts Rawls’s understanding of fairness. According to Rawls’s well-known distinction between the concept of justice and conception of justice, the concept of justice is “specified by the role which these different sets of principles, these different conceptions, have in common”. The conception of justice refers to ‘a characteristic set of principles for assigning basic rights and duties and for determining what they take to be the proper distribution of the benefits and burdens of social cooperation.” (Rawls 1971: 5). Rawls also states that despite large disagreement about what justice is, people “still agree that institutions are just when no arbitrary distinctions are made between persons in the assigning of basic rights and duties and when the rules determine a proper balance between competing claims to the advantages of social life”(Rawls 1971: 5).

Following Rawls’s interpretation, this study understands the concept of fairness in relation to a moral thought of reciprocity that specifies obligations of compliance for participants in social cooperation (Rawls 2001: 6). This is the case when the terms of cooperation are designed in such a way that no participating party feels taken advantage of or required to give into claims that they do not perceive as legitimate (Rawls 1999: 208). Rawls (1999: 209) argues that once the participants acknowledge that the agreement satisfies the principle of

reciprocity and so accepts its rules as just or fair, then there is no reason that they will go against it. The importance of mutual advantage is therefore central to the concept of fairness.

Accordingly, the concept of fairness generates rights and obligations for participants in a cooperative practice. The rights include the entitlement of the cooperating parties to a practice that fulfils both the principle of reciprocity and also the expectation of compliance from other participants in and beneficiaries of the practice. The principle of reciprocity refers here to the responsiveness of parties to each other's concessions. To explain these elements, Rawls says (1971: 96): "the main idea is that when a number of persons engage in a mutually advantageous cooperative venture according to rules, and thus restrict their liberty in ways necessary to yield advantages for all, those who have submitted to these restrictions have a right to a similar acquiescence on the part of those who have benefited from their submission. We are not to gain from the cooperative labour of others without doing our fair share."

When applying Rawls's definition of fairness to the governance of ABS, parties who engage in an arrangement for ABS according to Article 15 of the CBD are entitled to a practice that fulfils the principle of reciprocity and they should have the expectation of compliance toward each another. More importantly, parties should not be feeling taken advantage of and forced to accept claims they do not perceive as legitimate. Main claims to be discussed in this framework are, *inter alia*, the claims on property rights, and the claims on fair and equitable benefit sharing.

Examining the definition of fairness and equity is not easy and requires different methods. First of all, it requires the analysis of the understanding of the parties participating in the ABS arrangement on what they consider is a legitimate claim, and to clarify the situations in which parties feel taken advantage of. These questions require large empirical research and would significantly extend the framework of this paper. Nevertheless, an analysis of national implementation efforts and the compliance with the ABS related agreements may give an indication of whether existing international and national efforts foster fairness and equity in the governance of ABS. As these arrangements centre on ABS, both access and benefit sharing depend on one central issue, who are the owners of the genetic resources and traditional knowledge accessed and how is their ownership dealt with at both the international and national level? And more importantly, how are these property rights dealt with in both user countries and provider countries?

4. Property rights in governance of ABS

Who owns genetic resources and associated genetic resources? On the relevance of ownership and governance of ABS, Ulrich (2006: 202) states, "...patents are the most important 'counterparts' as they allow for the protection of inventions based on the discovery, isolation, modification or application of genetic resources". The access to genetic resources and the involvement of the industry have sparked heated debates in both user and provider countries and it seems that discussions are becoming more polarized. Considering the claims and rights raised in relation to the fair and equitable allocation of benefit and access to genetic resources, we can identify the following concepts: sovereignty of states, intellectual property rights and ownership/custody rights of indigenous and local communities.

4.1. Sovereignty over natural resources and states

The issue of sovereignty is a subject of international law and it deals with the relationship between states. Sovereignty is understood as the exclusive right to exercise supreme political (e.g. legislative, judicial, and/or executive) authority over a geographic region, group of people, or oneself. A state sovereignty over its territory is absolute and complete. However there are some limitations to this principle (Dixon 2000: 145). That states have sovereignty over their genetic resources means that they have jurisdiction over it (Bugge & Tvedt 2002: 173).

In its positivistic understanding, public international law recognises a state's sovereign right to manage its own resources as it chooses and to conduct activities within its own territory even if it causes harm to their own environment. However, this right is limited by the responsibility not to cause significant harm to the environment of other states, or outside their jurisdiction (Sand 2003: 235). Principle 21 of the Stockholm Convention outlined this concept in 1972⁹ and it remains the cornerstone of international environmental law to this day (Sand 2003: 236).

Principle 2 of the Rio Declaration only modified the concept slightly by including in the concept of sovereignty the right of states to pursue their own 'developmental' policies, as well as environmental ones.¹⁰ The International Court of Justice's (ICJ) 1996 Advisory Opinion on The Legality of the *Threat of Nuclear Weapons* confirmed that Principle 21 reflects customary law (Sand 2003: 236). Article 2 of the CBD also repeats this principle. Article 3 of the Convention on Biological Diversity (CBD) states that:

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

This provision has been causing a lot of confusion already in the negotiation phase. Among scholars, this provision is considered either as recognition or as reaffirmation of sovereignty of states over biodiversity existing within their national borders (Boyle 1996: 36). The national sovereignty recognised or reaffirmed in the CBD takes different forms at the national and international level. Legally seen, if the CBD sovereignty provisions would be interpreted as recognition of national sovereignty of genetic resources, this would imply that states only after the CBD gained sovereignty on genetic resources. On the other hand, reaffirmation would imply that states already had sovereignty on genetic resources. It is argued that before the CBD the legal status as to sovereignty over genetic resources was unclear and the CBD ended this obscurity by recognising the sovereignty of states on the genetic resources existing within their national jurisdiction (Bugge & Tvedt 2000: 171). Different scholars argue that genetic resources before the CBD were 'common heritage to

⁹ Declaration of the United Nations Conference on the Human Environment (Stockholm) 1972. UN Doc. A/CONF/48/14/REV.1.

¹⁰ Declaration of the UN Conference on Environment and Development 1992. UN Doc. A/CONF.151/26/Rev.1, *Report of the UNCED*, vol.1 (New York).

mankind', as biodiversity belonged to no one and could be exchanged freely worldwide (Downes 1996: 205). This concept implies that resources cannot be appropriated by the exclusive sovereignty of states but must be conserved and exploited to the benefit of all without discrimination (Birnie & Boyle 2002: 143). Other scholars are of the opinion that biodiversity is equal to any other natural resource and thus subject to national sovereignty.

The discussion on state sovereignty has become to a large extent a North-South issue, as developing countries underline their sovereignty and industrialised countries aim to achieve the free access for their companies and citizens to genetic resources (Bugge & Tvedt 2000: 169-170; McGraw 2002: 32). Yet, this assumption is based on the notion that countries did not have sovereignty over their genetic resources prior to the CBD and more importantly, it excludes sovereignty rights over genetic resources exchanged before the entry into force of the CBD from the sovereignty of states.

As a rule, international law treaties do not include retroactive measures, which would apply to cases prior to the new law making. According to Article 28 of the Vienna Treaty on the Law of Treaties (1969) " Unless a different intention appears from the treaty or is otherwise established, its provisions do not bind a party in relation to any act or fact which took place or any situation which ceased to exist before the date of the entry into force of the treaty with respect to that party."Accordingly, the CBD cannot apply its rules retroactively on genetic resources already accessed or exchanged prior to the entry into force of the CBD. However, the scope of the CBD cannot be used as an argument to explain the sovereignty rights of Parties on their genetic resources (Article 4). This measure cannot be interpreted as exclusion of sovereignty of states on genetic resources prior to the CBD, as the CBD only excludes already accessed, exchanged or contributed genetic resources from the scope of the CBD ABS rules, without any reference to sovereignty rights. Consequently, this study argues, countries that provided access to their genetic resources prior the CBD have merely waived their sovereignty on specific genetic resources. However, this certainly does not imply that they completely waived their sovereignty rights on their entire genetic resources existing within their national jurisdiction.

Nevertheless, we must distinguish between the concept of sovereignty mentioned in Article 3 of the CBD and Article 15, which states that access is subject to sovereignty but yet limits the sovereignty rights. Where Article 3 is to be interpreted as reaffirmation of an already existing sovereignty on genetic resources, Article 15 is to be understood as confirmation that any access activity in a country must be subject to the national legislation, as access to any country touches the sovereignty of country. Therefore, Article 15 simply repeats the existing rules of international law that foreign access to a country is subject to the legislation of that country. These rules exist in many other different international law agreements, for example the Vienna Convention on Diplomatic Relations (1961) and other international rules on aviations and navigation.

Accordingly, this study argues that although the CBD excludes from its scope genetic resources exchanged prior to its entry into force, this provision has been included in order not complicate the legal status of many of the genetic resources exchanged worldwide for millennia, but does not touch upon sovereignty rights existing prior the entry into force of the CBD. States have had always sovereignty rights over their genetic resources regardless of the reaffirmation of these rights in any relevant international agreement.

Self-execution of sovereignty rights

Despite the provisions on sovereignty of states over their genetic resources, an additional question to be raised here is what is the legal nature of these provisions. The CBD bases the access to genetic resources on the concept of sovereignty, yet it is not clear whether this sovereignty concept is self-executing or how Parties can enforce such sovereignty outside their national jurisdiction. According to Article 15 (1) of the CBD, access to genetic resources is subject to national legislation of the respective countries. Consequently, any body/person or a foreign state that is willing to access genetic resources of another respective State Party must obey the national legislations of the provider countries. The CBD foresaw here the ideal case, where access applicants will obey the rules and will make their activities subject to national legislations of the provider countries. However, in case of violation or bypassing of the national legislations, the CBD lacks any mechanism to enforce its rules, as the access to genetic resources has been left for countries to regulate at the national level. The lack of compliance and enforcement mechanism for Article 15 decreases the legal weight of the principle of state sovereignty, as it does not provide it with any teeth function in practice.

Therefore, the CBD provisions on state sovereignty could be regarded as ‘soft hard law’ instruments. Soft hard law refers to normative principles and statements that can be enshrined into multilateral agreements, yet in view of the resultant ineffectiveness and regardless of their status, they rank as non-legal norms (Desai 2003: 117). Desai (2003: 117) states that legal hardness equals legally binding character of a provision. The inclusion of such obligations is mostly attributed to different reasons, *inter alia*, the text often represents a compromise or intended ambiguity to achieve elusive consensus (Desai 2003:117). This is very likely the case in the CBD negotiations, as it aimed to bridge fundamental disparities between the positions of the North and the South. For instance, it is argued that many user countries prefer to accept the notion of national sovereignty on biodiversity rather than recognising it as common concern to the entire community, but yet they aim to ensure the access to genetic resources (Burhenne-Guilmin & Casey-Lefkowitz 1992: 48). However, as the access provisions of Article 15 are also subjected to the national legislations of the provider countries, they cannot fully considered as hard law instruments, as their legal nature, scope and elements will be determined at the national level. This leads to the conclusions that both the CBD provisions on access to genetic resources and sovereignty are soft hard law instruments. Desai (2003: 118) argues that another reason for such trends of including soft hard law instrument is the recent international practice of designing framework agreements, where negotiating states explicitly do not intend to enter into hard commitments because the agreement might be further developed in protocols and decisions. The CBD is a framework agreement that develops and negotiates different aspects, including an international regime on access and benefit sharing.

Having made this determination, it must be highlighted that even if the CBD enshrines the sovereignty rights of states over their genetic resources in a form of soft hard law, this does not alter the fact that states have sovereignty over their genetic resources, yet it affects only the materialisation of this principle within the framework of the CBD. The voluntary nature of the Bonn Guidelines and its weak implementation in user countries prevent any discussions about enforcement and compliance.

Sovereignty versus ownership

The manner in which Articles 3 and 15 are written suggests that the State is also the owner of the genetic resources existing within its national jurisdiction (Aguilar 2001: 247). The issue of ownership is important, since it is likely that the owner of the genetic materials has the rights to claim sharing the benefit arising out of the utilisation of his/her genetic resources and relevant associated traditional knowledge, as foreseen by Article 15. However, sovereignty does not imply ownership *per se*. The owner of resources has the right to use his property within the limits of state legislation. Therefore, the question of ownership at the national level is to be determined by the state. Biodiversity or genetic resources constitute a physical thing or a part of a physical thing. Any physical thing in any legal system has an owner. The owner is likely to be an individual, a group of individuals, a legal entity or the state itself (Leidwein 2006: 254). Yet, it can also be not subject to any ownership so-called “*res nullis*” (Brugge & Tvedt 2002: 173). Already in the negotiations of the CBD there was much confusion about the two concepts (Burhenne-Guilmin & Casey-Lefkowitz 1992: 48). The owner of resources has the right to use his/her property within the limits the state laid down within its legislation (Leidwein 2006: 253).

Accordingly, ownership is to be determined at the national level by the state. In this case, ownership at the national level might be in the hand of the state itself, a group of people or a private person or body or even not subject to any ownership so-called “*res nullis*” (Brugge & Tvedt 2002: 173). For instance, Costa Rica’s Law of Biodiversity states implicitly that the State exercises full and exclusive sovereignty over the various elements of biodiversity, including biochemical and genetic properties of wild and domesticated species that exist in the public domain.¹¹ Therefore, genetic resources do not automatically belong to those who hold property rights in the land. It is a matter of national legislation.

Further, different legal scholars distinguish between the ownership on the plant and the ownership of the plant’s physical nature. For instance, the owner of the land might own biodiversity on private land, but the genetic material of the plants may be regarded as public or private property. Since the CBD does not make this distinction, the issue depends on the relevant national legislation.

4.2. Intellectual Property Rights (IPRs)

4.2.1. Reasons and background

According to WIPO (World Intellectual Property Organisation), intellectual property refers to ‘creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce.’ (www.wipo.org). IPRs grant the creator a negative exclusive right over the use of his/her creation for a certain period of time. One of the objectives of the TRIPs Agreement is to protect the results of investment in the development of new technology, and thus provide the incentive and means to finance research and development (R&D) activities (See Drahos: 1996). IPRs are customarily divided into two major groups: copyright and rights related to copyrights,¹² and industrial property rights.¹³ The scope of

¹¹ Article 2 and 6 of the Costa Rican Law of Biodiversity.

¹² Copyrights are the rights of authors of literary and artistic works are protected by copyright, for a minimum period of 50 years after the death of the author.

industrial property rights includes different types of protection: for instance, the protection of trademarks and other distinctive signs and geographical indication. Another type is the protection to stimulate innovation, design and the creation of technology. Inventions (protected by patents), industrial designs and trade secrets fall in this category. Patents granted on inventions have to stand the test of novelty, inventiveness, and industrial applicability. The protection is usually given for a finite term, for instance twenty years in the case of patents.¹⁴

Nowadays industry and/or associated partners are ever more involved in the commercial access to genetic resources. They search for new products, such as drugs, seeds and cosmetics, by means of 'bioprospecting' (Castree 2003: 36). Bioprospecting includes a wide range of commercial activities including the pharmaceutical, biotechnology, seed, crop protection, horticulture, botanical medicine, cosmetic and personal care and food and beverage sectors and is also defined as the exploration of biodiversity for commercially valuable genetic resources and biochemicals (Laird, S.A. & Wynberg 2003: 40). The results of such research are often protected in form of a patent or similar ways. Yet, excluding the cosmetic and the botanical medicine industry, which apply trademarks, in most cases industry, use patents or other form of intellectual property rights (Drahos 1996).

The world's top pharmaceutical companies – including Bayer, Merck & Co., Glaxo Wellcome, Novartis, Bristol-Myers Squibb, and Pfizer – have natural products discovery programmes. They are either directly involved in the collection and screening of genetic resources or obtain these materials from intermediaries (King 2000: 81-82;). These intermediaries could be another private company, a research institute, or a botanical garden. While most large companies obtain the genetic resources from intermediaries, small companies tend to collect and screen genetic resources by themselves (Laird 2002: 90).

Concerning patents on genetic resources, those are owned either by the industry or by the academia. They cover a combination of pure compounds, standardised extracts, formulation or mixture combined of different plants. Increasingly, these patents are founded on well-known medicinal plants and are traded by companies worldwide, in particular in the home countries, namely Europe, Japan and the United States (King 2000: 80; Laird 2002: 90). The cosmetic industry tends to apply trademarks and not patents. Many patents have been recently obtained on products derived from genetic resources, traditional knowledge or the combination of both. The most well known cases include the Turmeric, basmati, and Yellowstone Park.

4.2.2. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs)

The TRIPs Agreement is an international treaty administered by the WTO that sets down minimum standards for most forms of intellectual property (IP) regulation within all member countries of the WTO. It was negotiated at the end of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) treaty in 1994. Currently, 154 members ratify it. It has 7 parts and includes 73 articles.

¹³ Industrial property includes inventions (patents), trademarks, industrial designs, and geographic indications of source.

¹⁴ Article 63(2) of the Convention on the Grant of European Patents, 1973, 1065 U.N.T.S. 199.

The TRIPs Agreement is the key international regime promoting the harmonisation of national IPRs regimes in all fields of technologies, including biotechnology.¹⁵ Biotechnology refers to ‘any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for a specific use’. The TRIPs Agreement covers four types of IPRs: patents, geographical indications, undisclosed information (trade secrets), and trademarks. The TRIPs Agreement is based on the notion that inventors are given the right to derive monopoly profits from their inventions. This implies. That only the inventors themselves are allowed to exploit their inventions during a certain period of time. Patents are granted for processes and products as long as the criteria of ‘novelty’ (the invention has to be something new and not previously existing), ‘usefulness’ (the invention has to be capable of industrial application) and ‘non-obviousness’ (there needs to be an inventive step, an improvement that would not be obvious to a person skilled in the field). It should not disturb public order or morality.¹⁶

The obligations under the TRIPs Agreement apply equally to all members of the WTO. Currently, joining the WTO automatically includes accession to the TRIPs Agreement. However, developing countries are allowed extra time to implement the necessary changes to their national laws in two tiers of transition according to their level of development. The transition period for developing countries expired in 2005. The transition period for least developed countries was extended to 2016, and could be extended beyond that.

According to Article 7 of the TRIPs Agreement, the main objective is:

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

Clearly, it can be argued that the TRIPs Agreement aims to strengthen and to expand the IPR concept at the international level. Scholars argue that this implies that the agreement aims to bring all member states to same level of protection of intellectual property that was previously existing only in industrialised countries (Preamble of the TRIPs Agreement, see also Rosendal 2006: 84). With the inclusion of the TRIPs Agreement in the WTO, intellectual property rights have been given a more effective and stringent dispute resolution mechanism.

According to Article 27.1, all technological fields are included in the scope of patentability, hence the inclusion of biotechnology. Laws on IPRs vary in nature and scope from country to country. An IPR protected in one country may not be recognised in another country. Article 27(2) of the TRIPs Agreement states that ‘Members may exclude from patentability

¹⁵ Convention on Biological Diversity, 1992.

¹⁶ Article 27 paragraphs 2 and 3 TRIPs. Furthermore, durations of patents should be at least 20 years. If a patent owner abuses his rights, for example, through, the adoption of anti-competitive practices, member-states are allowed to issue compulsory licenses. A compulsory license is a license to use a patent, copyright, or other exclusive right that a government forces the holder to grant to others. Compulsory licenses can be issued also in cases of emergency and extreme urgency, public non-commercial use etc.

inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect ordre public or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law'.¹⁷ Furthermore, members are allowed to exclude diagnostic, therapeutic and surgical methods; plants and animals, as well as the biological processes necessary for the creation of plants and animals. However, countries have to provide for the protection of plant varieties either through patents or by a special system, the so-called '*sui generis* system'.¹⁸

The TRIPs Agreement permits the exclusion of plant and animal inventions (other than micro-organisms) from patentability (Article 27.3). However, opinions are divided on whether this exclusion constitutes a sufficient protection of biological resources and traditional knowledge (Mgbeoji 2005:45). The formulation used in Article 27.3 'member states may also exclude:' does not indicate that this provision is a binding hard law, as it leaves the issues for the discretion of the states. Therefore, it can be argued the TRIPs Agreement includes the patentability of products that are based on genetic resources and/or associated traditional knowledge.

Beside the standards of the TRIPs Agreement, the harmonisation of national IPR regimes is pushed forward on a bilateral level between many industrialised countries and developing countries, the so-called TRIPs plus agreements. These agreements usually include higher requirements for patent standards (Rosendal 2006: 90). These higher standards are already applied in many industrialised countries, and through the TRIPs-plus agreements they are extended to other regions in the world (Endeshaw 2005: 212). The TRIPs-plus standards are often included in bilateral free trade or investment treaties. Accordingly, any violation of a patent would constitute a violation of bilateral obligations that would be brought to the dispute settlement institutions agreed upon by the parties (see Tienhaara 2006: 74).

4.3. Property rights of indigenous and local communities

The role of indigenous and local communities in ABS governance is very central. It goes beyond the fact that their geographical locations are often located beside areas with high biodiversity, since they are also generally holders of traditional knowledge associated with genetic resources. It is estimated that 85% of all known plant species are located within areas familiar to traditional communities and indigenous peoples (Aguilar 2001: 241). The traditional knowledge they developed on medicine and agriculture is considered very important for human development. Their knowledge includes resource management systems and practices of resource use in many farming cultures, thus helping, *inter alia*, to prevent the extensive loss of biodiversity. Their knowledge also includes familiarity with the use of genetic resources for medicine, food and other goods, including spiritual and cultural

¹⁷ Article 27.2 TRIPs states: '...Further members may exclude from patentability: (a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals; (b) plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.

¹⁸ *Sui generis* refers to rights that are designed to be unique for a specific purpose and are not covered by existing legal systems.

elements. As a result, this knowledge is valuable for the existence of communities both economically and culturally (Zhang 2004: 3). The economic relevance does not limit itself to these communities, but also for both foreign and domestic scientists, governments, and commercial firms (Downes 2000: 254). Industry and other related scientific bodies and researchers are interested in traditional knowledge as a starting point of bioprospecting for the purpose of discovering or development of new product or new uses of the traditional knowledge (Downes 2000: 255).

There is wide agreement that indigenous and local communities live in a complex legal situation with the respect to property, ownership and use of or access to resources (Aguilar 2001: 246). The rights of these communities have received a large attention in international human rights discourse in the past 10 to 15 years (MacKay 1998: 3). Among these instruments, Article 8(j) includes the most important provisions in the CBD on the rights of indigenous and local communities. Yet, this provision does not include any measures neither on their property rights on genetic resources nor on their rights on their traditional knowledge. Article 8(j) merely says, that the rights of these groups are subject to national legislation.

Although the COP has recognised that access to genetic resources is related to the concern of Article 8(j), it is not clear what such relations mean in practice as this issue depends wholly on national legislations. Depending on the national legislation, some communities do not have property titles, other have only rights to possess, and there are also some who are not aware of complex issues of legal rights and are losing lands after a long period of possession. In some countries the recognition of their property rights over land does not include ownership of natural resources, such as soil or oil (Aguilar 2001: 246).

Furthermore, the CBD encourages State Parties to equitably share the benefits arising from the use of traditional knowledge with the holders of genetic resources. The call for the fair benefit sharing with indigenous and local communities can be regarded as an implicit but general recognition of the rights of these groups, yet even this merely general recognition is subjected to national legislation.

In any event, it might be extremely difficult to establish an international customary law on the property rights of indigenous and local communities, as there are many persistent objectors of such rules, for example, Argentina, Brazil, and Canada. These countries believe that the issue of property rights of these communities must be subject to national legislation (Rosendal 2006: 275). Thus, there is no recommendation or obligation in international law regarding the ownership rights of traditional knowledge (Leidwein 2006: 253). Therefore only an analysis of national legislation on the rights of indigenous and local communities would provide answers to this question (see also Firestone 2003: 175).

Rights of indigenous and local communities on genetic resources and traditional knowledge can be considered to be collective intellectual property rights, as any individual rights cannot be claimed or held by a group. In the context of indigenous and local communities, collective rights in general are described as ‘an inherent and essential element of indigenous right’ (UNWGIP 1988, para. 68).¹⁹ Sanders defines collectivities as: ‘groups that have goals

¹⁹ UNWGIP (1996). *Aboriginal and Torres Strait Islander Commission: a definition of ‘indigenous people’?* UN DOC.E/CN.4/Sub.2/AC.4/2/Add.1.

that transcend the ending of discrimination against their members...for their members are joined together not simply by external discrimination but by an internal cohesiveness. Collectivities seek to protect and develop their own particular characteristics' (Sanders 1991: 369). In this context, MacKay states (1998: 5) that collective rights of indigenous peoples are about the end of the impacts and results of the colonial intervention in their life, and moving toward their right to maintain their distinct socio-cultural organisation, free from any external and undesired interference. Costa Rican law established a kind of community right. This law states that an inventory of existent traditional knowledge will be conducted for each community, and that it will be protected. Similarly is the Colombian initiative, which includes a type of collective multigenerational rights to be detailed in the future (Varella 2003: 12).

It is also argued that the heritage of indigenous and local communities also includes intellectual property. This property includes the information, practices, beliefs and philosophy that are unique to each indigenous group (Bengwayan 2003: 6). In this context, Mgbeoji argues (2005: 38) that there are many long-standing sophisticated regimes of ownership and control of inventions and innovations among indigenous and local communities. These regimes were usually holistic and based on the notion that although ownership is recognised, it does not imply that others are necessarily excluded from its use.

4.4. The clash of property rights: Analysis

The TRIPs Agreement and the CBD are two different agreements with different spirits and objectives. Whereas the CBD aims to protect biodiversity and fosters the rights of states and indigenous and local communities, the TRIPs Agreement requires the privatisation of life all the way through enforcing patents on life (Shiva 2005: 100). The concept of fair and equitable benefit sharing is among the strongest links between both agreements, as it aims to balance the uncompensated privatisation of genetic resources and associated traditional knowledge. As Mgbeoji argues (2005: 38), 'ownership of property is thus fundamentally about notions of societal cohesion and distributive justice'.

Normally, the grant of patents constitutes a vertical shift from public hand to private hand. But it can also occur as a shift horizontally from private hand to another private hand. This is the case when the genetic resources are privately owned. As explained above, the notion of fair and equitable benefit sharing was, *inter alia*, developed to balance the shift in property rights from public to private hand. The CBD rules on ABS are therefore to regulate this shift in rights. In this context, it can be seen that a large number of pending patent applications and patents granted often do not meet the novelty and inventive step criteria or, when they do meet patentability requirements, they (directly or indirectly) incorporate genetic resources and traditional knowledge without being required to provide information on whether they have been obtained illegally, irregularly or questionably.

IPRs, such as patents are private rights as opposed to public rights. When researchers or companies patent their products this might often implies that one day the holders of traditional knowledge are to be prohibited from using their own knowledge and associated genetic resource without being compensated for the loss of property rights. The main reasons are that in contrary to patent holders, indigenous and local communities mostly lack the needed internationally recognised documentation to prove and defend their ownership (Ostergard *et.al.* 2001: 650). Therefore provider countries and indigenous and local

communities fear that in the course of this development they are losing control of their lingering knowledge to outsiders obtaining property on it and earning its benefits (Downes 2000: 256). In this context, Shiva (2005: 100) argues ‘under the new free trade arrangements of the WTO, the privatisation of life and the reduction of living diversity and its parts and processes to tradable commodities have been made legal obligations.’

Reasons for the weak protection of genetic resources and traditional knowledge include the formulations of the TRIPs Agreement, which leave a large space for countries to decide at national level to exclude or to include the patentability of life forms. Since traditional knowledge is often connected to life forms, the patentability of life forms affects the protection of traditional knowledge. Most industrialised countries, in particular the United States, have ignored this clause in the implementation. Developing countries, which needed it much more, were not able to give this provision any solid legal enforceable content, since even if they exclude the patentability of life forms in their national patent laws, this will not stop foreign patent offices from granting patent protection in line with the scope of patentability applied in their home countries. Since a large part of a patent originates from an industrialised country, the aim of this provision would have been better achieved if developed countries had made use of it too.

As countries can only determine the scope of patentability within their national jurisdiction, they have limited-to-no influence on patent laws of other countries. Therefore, we can conclude here that the differences in approach in national patent legislations concerning the scope of the patentability are considered the main challenges to track the uncompensated shift in property rights. In other words, once patent applicants discover the wider scope in another industrialised country, they would submit their applications at the patent office with the widest scope of patentability. Accordingly, the divergence in approaches in the scope of patentability makes biopiracy an international problem. Whatever a country will attempt to conduct within its boundaries, the success of national efforts will be hardly effective, since it cannot challenge the patent at its national courts, hence any effort will not have impacts on the patent behind national jurisdiction (Tvedt 2006).

Therefore, it can by all means be argued, that would the concept of fair and equitable benefit sharing have been included in the TRIPs Agreement and not in the CBD, we would have spare a great deal of the conflicts existing today in governance of ABS. Currently, we deal with three competing property rights that lack any significant mechanism to be balanced or resolved. A further complication of the relationship is caused by the legal treatment of the ownership rights when the different property rights have been given different legal status at the international level and have been provided with different enforcement and compliance mechanism.

These arguments lead us to the conclusion that the approach of the TRIPs Agreement toward genetic resources and associated traditional knowledge is undermining national sovereignty. Therefore, if user countries do not implement their obligations arising from Article 15.7 and engage in the development of new instruments to solve the issue of the uncompensated shift of property rights over genetic resources and associated resources.

5.5. Finding a way out of the clash

In order to solve these conflicts, both provider and user countries have proposed different instruments. The following discusses the concepts of '*sui generis*' regime, traditional knowledge database, and the concept of 'disclosure of origin'.

5.5.1. The '*sui generis*' Regime

In the legal context, *sui generis* is a Latin phrase that means 'on its own' or 'unique'. Article 27(3)(b) TRIPS states that 'members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof', but it does not define what that means, nor does it include traditional knowledge in its scope. The TRIPS Agreement, does not state what is the standard, or the process required in ascertaining the 'effectiveness' of any *sui generis* system. But since the TRIPS Agreement only sets minimum standards for countries' national legislation, there is no obstacle for countries wishing to provide higher or different forms of protection on the condition that the protection does not contravene the provisions of the TRIPS Agreement. Principally this implies that countries are allowed to integrate obligations resulting from the CBD in the *sui generis* regime. Yet, since *sui generis* are developed according to the needs of a country or region, they differ from country to country and therefore they would only have an impact patents granted at the national level in these countries (Bodeker 2003: 790). In other words, the success of any *sui generis* regime in the protection traditional knowledge depends on the scope of patentability adopted in other countries. Once a patent is granted on traditional knowledge in one country, it can be only challenged in the country where it has been granted regardless of the existing of a *sui generis* regime in the country of origin of the traditional knowledge.

5.5.2. Traditional Knowledge Data Base

As response to inclusion of parts of the public domain in the scope of the patentability, many developing countries engage in the creation of the databases to collect traditional knowledge existing within their boundaries. Though these databases have no legal implications, it would enable national authorities to identify biopiracy cases more easily.

On the other hand, it is argued that these databases encourage biopiracy, since the collection of traditional knowledge makes the access easier and faster for those interested in biopiracy. A very unique example of a database is provided by India. In order to maximise national efforts to protect traditional knowledge, India engaged in the creation of the so-called Traditional Knowledge Digital Library (TKDL). TKDL is database that includes all collected oral and written traditional knowledge in India, in particular for Ayurvedic medicinal knowledge.²⁰ Once developed, this database will assist Indian and foreign patent officers to track biopiracy. However, the TKDL would only be able to stop the biopiracy of Indian traditional knowledge if foreign patent offices would integrate the information provided by TKDL in their databases and would reject any patents applications that includes Indian traditional knowledge. The TKDL might also enable India to challenge some patents at national institutions in other countries. The database would enable oral traditional knowledge to be collected and registered, taken out of the public domain, and hence not being

²⁰ Links to the Indian database is available on WIPO's website. (www.wipo.org visited last 04-09-06).

patentable. Yet, it is doubtful whether other developing countries would have the capacities to follow India. It is also doubtful whether the Indian approach is a suitable option for other developing countries. Many developing countries lack either the capacities to create such a database, and/or often face strong historical oppositions from the holders of traditional or indigenous knowledge at the national level, such as in Brazil and other Latin American countries.

5.5.3. Disclosure of Origin

It has been suggested that patent applicants, when filing applications concerned with genetic resources and/or traditional knowledge, should disclose the origin of these resources and provide evidence of prior informed consent that such resources have been accessed in accordance with the provisions of the CBD. This concept is suggested because only those involved in the R&D of the invention would be able to identify which components have been used in the development of the product (see Koopman 2003: 7). The inclusion of this requirement in the patent conditions would imply that any patent developed from genetic resources and associated traditional knowledge has to identify the origin of the resources used, show the PIC of the owners and provide evidence for the benefit sharing arrangement concluded on MATs. Therefore, a binding rule on disclosure of origin would imply that a patent application that does not include this information must be rejected and if the patent is granted with the violation of the provision on disclosure of origin, it can be annulled.

Theoretically, a hard law on disclosure of origin constitutes the ideal concept to track on the uncompensated shift of property rights at the national level. Many developing countries, such as Brazil and India, have included the obligation of disclosure of origin of traditional knowledge as an additional national binding requirement for any product that is based on genetic resources and/or traditional knowledge. However, since a national disclosure of origin requirement would affect only patent application filled at the national patent offices, it is unlikely to be able to track biopiracy in other countries.

It is also argued that a national disclosure of origin requirement would raise the bureaucracy for patent applications, and hence encourage national applicants to fill their patent application in other countries and hence undermine national efforts to stop biopiracy. Therefore, most developing countries call for the inclusion of concept of binding disclosure of origin in the TRIPs Agreement, thus at the international level. These countries, headed by India and Brazil, and partly supported by the European Union, submitted a proposal urging the WTO TRIPs Council to recommend that the WTO's Trade Negotiation Committee should take a decision to initiate negotiations to amend the TRIPs Agreement in light of the objectives of the CBD.²¹ Once the concept of disclosure of origin is scaled from the national to the international level in form of hard law, it is likely to create some of the conditions needed for the halt of the uncompensated shift in property rights.

5.5.4. Certificate of origin/source/legal provenance

One of the instruments proposed to solve the dilemma of uncompensated use of genetic resources is the certificate of origin/source/legal provenance. COP 7 decided to undertake further examination of an internationally recognised certificate of origin/source/legal

²¹ Submissions IP/C/W/449 and IP/C/W/443.

provenance of genetic resources and associated traditional knowledge as a part of the negotiation of an international regime on ABS (Cunningham *et.al.* 2004: 2). In governance of ABS, the establishment of such a certificate would provide evidence of PIC and other CBD obligations on ABS. Yet, as a certificate of source would only be able to track the place from which the genetic resources were obtained, this might be any collection or gene bank but not necessarily the country of origin and regardless of the legal title the provider. And more importantly, it will wholly depend on how countries will implement it. Would it be integrated in the patent legislations as requirement for any relevant patent application or constitute a new additional administrative procedure with any legal consequences? In other words, the success of this instrument depends on the strength of the teeth countries provide at the national level.

A legal provenance has different implication. Such a provenance would document evidence that the resources had been obtained from a legally entitled provider. Therefore, a legal provenance would likely depend on the legal circumstances in each country, hence on the national legislation on the ownership of the genetic resources and associated traditional knowledge (Cunningham *et.al* 2004: 3).

The main progress achieved yet in the negotiations is on the creation of mechanism to establish the legality of acquisition of genetic resources, such as a certificate of origin, source of legal provenance, and the institutional relationships with other forums, such as WIPO, where these issues, *inter alia*, are addressed too. The EU joined, *inter alia*, by the Group of Mega-Diverse countries, the African Group, Norway and Switzerland agreed to negotiate these aspects. COP 8 established an expert group to explore and elaborate possible options for the form, intent and functioning of an “internationally recognised certificate of origin/source/legal provenance”, and also analyse its practicality, feasibility, costs and benefits (Trade BioRes, 3 February 2006). This group consists of 25 experts reflecting the different regional groups. These experts are nominated by Parties and are joined by seven observers. The group will also deal with the issue, *inter alia*, how such a certificate could be used in patent applications (Trade BioRes, 3 April 2006). The inclusion of this part in the mandate of the expert group is attributed to the request of user countries; that such certificates should be prerequisites for the granting of patents in national IPRs law and should be a means to disclose the origin of the resources and the existence of PIC to ABS arrangements. However, user countries resisted any demands to include provisions on disclosure of origin in patent applications, yet agreed to search for a solution outside the patent law (Trade BioRes, 3 February 2006). Only some European countries, such Belgium, Denmark and Norway aim to incorporate disclosure of origin of genetic resources in the national legislations on access to genetic resources. Yet, currently no significant country is willing to integrate this provision into its patent legislation. Norway is the only country that has such measure in its patent law, however it is argued, that since Norway does not have a significant biotechnology sector, the impacts and promises of these provision are limited (Rosendal 2006: 274).

6. The problem of implementation

Implementation of ABS policies and laws has been relatively poor worldwide. As of 6 October 2006 only 53 countries assigned a national focal point and 23 countries assigned a

competent national focal point for ABS.²² These countries are at different levels of implementation of ABS and have adopted diverse approaches to regulating ABS. Currently we can divide the national approaches into four different categories: non-regulations, over-regulations, catching-up-regulations, and under-regulations. These approaches often reflect the specific national administrative structures, priorities, and cultural and social specificities of each of the countries (Normand 2004: 1).

A central problem in the implementation is the differences in legislations between user countries and provider countries. Broadly stated, the difference lies centrally in the fact that the two regimes, the CBD and the TRIPs agreement, promote different objectives and follow different spirits concerning the balance of the shifts in property rights (Rosendal 2006: 267). However, more importantly is that even if countries would implement both agreements, it is unlikely that the shift in property rights can be compensated without a substantial change in the policy of user countries. The reasons include that user countries and provider countries have not yet agreed on the nature of the relationship between both agreements and, more importantly, how to harmonise both agreements at either the national and international level. Differences in interpretation often imply different implementations and might affect the performance of the other agreements. In the following examples, different forms of national implementation are described to emphasise the discrepancies between user countries and provider countries and their impacts on the achievement of the objective of fair and equitable benefit sharing:

6.1. Implementation in provider countries

As 189 States ratify the CBD, and only 23 countries have a competent national focal point for ABS, the level of implementation is relatively poor. In the lack of national legislations on ABS, these countries have no framework to refer to when entering any ABS arrangement. A framework that would create the legal requirement to protect and govern the shift in property rights and therewith create the institutions needed to achieve benefit sharing. The national efforts of provider countries can be divided into three different categories: no-regulations, catching up-regulations and over-regulations. The following introduces the different national legislations and policies on ABS:

6.1.1. No-regulations: Tanzania

In the context of this study, the term ‘non-regulations’ refers to a legal situation where there is a lack of legislation to govern a specific issue. Tanzania is a biodiversity rich country. As of October 2006, Tanzania did not implement either the CBD provisions on ABS nor the Bonn Guidelines. Currently there is no single regulation in Tanzania that governs the use, export of genetic resources and traditional knowledge (Mhame 2004: 18). Furthermore, as of 2005, Tanzania also did not implement the African Union Model on Access and Benefit Sharing. However, Tanzania implemented the TRIPs Agreement in its Patent Act (2002) and has a strong TRIPs-Plus Agreement with the EU, signed within the framework of the ACP

²² See CBD official Document at <http://www.biodiv.org/doc/lists/nfp-abs-cna.pdf> (*last visit 22-11-2006*)

Contonou Agreement.²³ This agreement requires Tanzania to allow and respect patents in biotechnology.

Concerning ABS, the only procedure required from a person willing to access Tanzania's genetic resources and/or its traditional knowledge, is the permission of the Tanzania Commission for Science and Technology (COSTECH), which is a governmental organisation with the responsibility of coordinating and promoting research and technology development activities in Tanzania (www.costech.or.tz). The permission given by COSTECH might equal the PIC of the country required by the CBD, yet it is easily provided and has very little insignificant requirements or any substantive limitations. Several interviews conducted in 2005 within the framework of a study of ABS governance in Tanzania indicated that Tanzania uses material transfer agreements (MTAs) to regulate the transfer of genetic resources from Tanzania to other countries, however, non of the MTAs included any benefit sharing arrangements or references to potential property rights involved.

Furthermore, Tanzania enacted the Traditional and Alternative Medicine Act in 2002, which includes the establishment of registrars and a Council. This Act aims among others, to regulate the traditional or alternative health profession as such; to promote the protection and enforcement of traditional and alternative health care; to protect the society from abuse of traditional and alternative health practitioner and research on human beings; to control the establishment of information and all advertisement pertaining traditional and alternative medicines; and to provide for the protection of Tanzanian medicinal plants, and other natural resources of medicinal value, such as animals, minerals, aquatic and marine products including their parts thereof. However, this Act mostly deals with practice of profession of traditional healers rather than with the protection of their TK and its ownership. The Act also does not regulate or refer to any property or ownership rights of the traditional healers. Furthermore, Tanzania does not include any requirements on disclosure of origin of genetic resources and/or associated traditional knowledge in its patents or other legislations.

6.1.2. Catching-up regulations: India

The term “catching-up regulations” in the context of this study refers to regulations that implemented all relevant provisions in a specific issue and designed to make the rules performing at the national level but serving the national interests. India implemented both the CBD provisions on ABS, including the Bonn Guidelines, and the TRIPs Agreement.

The Indian Biodiversity Act (2003) is the key piece of legislations to govern ABS in India. One key characteristic of the Indian law is that it differentiates between obligation and rights of Indians and non-Indians when accessing genetic resources in India. These provisions have been inserted based on the idea that Indian biodiversity belongs to all Indians and therefore Indian companies must be promoted and have privileged access. We can refer to this approach as the “nationalisation approach”. In this context, it can be argued that India regards biodiversity existing in India as collectively owned by all Indian citizens, individuals and companies.

²³ Partnership Agreement between the African, Caribbean and Pacific States and the European Community and its Member States, CE/TFN/GEN/23-OR, ACP/00/0371/00, 8.2.00.
<http://europa.eu.int/comm/trade/pdf/acp.pdf> [Art 45]

However, India might prohibit or stop any activity of Indians in case the activities are detrimental or contrary to the objectives of conservation and sustainable use of biodiversity or equitable benefit sharing arising out of such activity. However, the activities of Indians accessing Indians genetic resources must fall in the scope of the national research strategy in particular the national biotechnology strategy. This strategy is very wide and is based on the objective to promote the national fast growing biotechnology sector. For this purpose, the Indian law also attempts to define what is an Indian company and who is Indian?

Furthermore, according to Indian law, the NBA shall determine the formula for benefit sharing on case-by-case basis. However, it shall be concluded in mutually agreed quantum between the persons applying for access and the NBA in consultation with the local bodies and benefit claimers. 1% of the benefit sharing must go to national effort in conservation and sustainable use of biodiversity.

In addition, India assigned four different bodies to govern ABS at different level. These are: the National Biodiversity Authority (NBA); the State Biodiversity Authority (SBA); the Biodiversity Management Committees (BMC), and the Local Biodiversity Fund (LBF). The government assigns all members of these bodies, and there is no public representation. Participation occurs only when the NBA has to consult the BMC while taking any decision relating to the use of biological resources and knowledge associated with such resources occurring within the territorial jurisdiction of the BMC. The BMC is the body to represent the local interests, and is also mostly includes assigned members. Therefore, it is not clear what is the legal nature of the consultation obligations and whether it constitutes the PIC required by the CBD. Furthermore, India has the Indian Patent Law (amended 2004). It constitutes the implementation of the TRIPs Agreement. A key relevant element of the Indian patent legislation is the requirement of disclosure of origin in patent applications on products that used genetic resources and/or traditional knowledge. This requirement is included in the Biodiversity Act, but patent offices must comply with it.

In order to protect traditional knowledge, India introduced two major concepts: first it attempts to extend the concept of 'Geographical Indications of Goods' to protect national traditional knowledge and products. The Indian attempts to include parts of its traditional knowledge in the scope of Article 22-24 would be only enforceable in India. Secondly, as mentioned above, India engaged in the creation of the so-called Traditional Knowledge Digital Library (TKDL) and many other registers as *sui generis* systems. The database would enable oral traditional knowledge to be collected and registered, taken out of the public domain, and hence not being patentable. In addition, the Indian Parliament has passed the Plant Variety Protection and Farmers' Rights Bill (2001). The law also grants Farmers' Rights. The law enables Indian farmers to sell seed to other farmers, even if the variety was protected by a Breeders' Right.

Besides these efforts, India adopted different policy documents that are strongly linked to its ABS governance. These are The National Biodiversity Strategy and Action Plan (NBSAP) (2004) and the National Biotechnology Strategy (2005). The Biotechnology strategy includes the country's strategy on promoting the national biotechnology sector. Interviews showed that the Biodiversity Act have been drafted with a strong cooperation between both the ministry of environment and the ministry of science and technology. Interviews also showed, that the Biodiversity Act has been drafted to directly support the National Biotechnology

Strategy. However, most interviews supported the link and the free access provided to the national industry.

In addition, the Indian patent includes clear provisions on the disclosure of origin; these provisions have no chance to be enforced outside India. It can only avoid that foreign companies patent Indian traditional knowledge and Indian genetic resources.

Despite the improving national enforcement in India has been improving over the last years, India is still not able to challenge or stop all forms of the uncompensated shift in property rights outside the country borders. National efforts to create the TKDL are able to be enforced at the national level, however, the TKDL would only then be able to stop the biopiracy of Indian traditional knowledge, if foreign patent offices would integrate the information provided by TKDL in their databases and would reject any patents applications that includes Indian traditional knowledge. The TKDL might also enable India to challenge some patents at national courts in other countries. The database would enable oral traditional knowledge to be collected and registered, taken out of the public domain, and hence not being patentable.

6.1.3. Over-regulations: Brazil

The term “over-regulations” in the context of this study relates to national legislations that aimed to implement international obligations, but ended in creating additional bureaucratic obstacles and ended up not achieving its own objectives. The key legislations regulating ABS in Brazil is the Provisional Measure on Access and Benefit Sharing (2001) and the Brazilian Patent Law (1997). The measure is provisional, as it is not adopted by the parliament. The Brazilian president has released it, since the Brazilian parliament was not able to reach an agreement on central issues. The objectives of this Measure is to regulate the access to genetic patrimony in Brazil, protection of and access to associated traditional knowledge, the sharing of benefits and access to technology and the transfer of technology for its conservation and use. Since the current legal framework is based on a provisional measure, according to Brazilian Law it can only create administrative but not criminal or civil penalties for violators.

The Provisional Measure determines that access to associated traditional knowledge, and to genetic heritage extant in Brazil, as well as its shipment abroad, should only be carried out with the consent of the Brazilian central government. For this purpose the Measures established the Genetic Heritage Management Council (CGEN) as the competent authority. Furthermore, Brazil transformed the concept of national sovereignty into public-private ownership. Each owner of land, owns the benefit sharing arising from the utilisation of use of the genetic resources existing within the land. Brazil has been divided into three areas: private lands; Indians lands, and government lands, which also include protected area. Benefit sharing is not connected to the other two objective of the CBD and there are no sustainability or conservation restrictions in the arrangement. The access requires the prior informed consent (PIC) of the landowner and CGEN. Besides the requirement of PIC, parties have to provide a contract that must be approved by the council. The contracts are mostly confidential. The contracts are private in nature and include provisions on the access, time and place and benefit sharing elements in case a commercialisation of the product is undertaken.

The Measure distinguishes between three different purposes of the access, namely scientific research, bioprospecting and technological development. Scientific Research: this is research using genetic resources with no economic purpose undergo fast tracking, in which special authorisations are issued to domestic academic institutions that encompass a group of projects. However, research that involves associated traditional knowledge is authorised by CGEN on *ad hoc* basis, after the analysis of the PIC. Bioprospecting and technological development are also activities that are analysed at CGEN on *ad hoc* basis.

Furthermore, the Measure does not distinguish between public, private, foreign, national access. One of the main problems of the Brazilian legislation is that for the access to genetic resources in Brazil, about five different approvals are needed. And if foreign researchers are involved two more permissions are added (Little 2005: 460).

One of the main objectives of the Provisional Measures is to protection and access to associated traditional knowledge. However, due to complex bureaucracies concerning the PIC of the Indians, bioprospecting hardly occur in their land. Each access to their land requires additional consent of the National Foundation for Indians (FUNAI); a governmental body that is the ombudsman for all Indians in Brazil. Indians in Brazil do not have the right to sign a contract or enter into a process in court (Vallera 2003: 12). Interviews with governmental agents, different non-governmental organisation and a leading ethno botanical company in Brazil indicated, that FUNAI has very limited credibility among Indians, *inter alia*, due to the complex history of the relationship between Brazil and its Indians. So the Brazilian new Constitution aimed to improve the livelihood of the Indian and recognise their property rights on land they occupy, implementation of these plans has proven to be very difficult and complex. Therefore, in many cases, Indian live in areas, that is either owned by a private person, or they lack no legal title on the land, that would entitle them to enter an ABS agreement with potential users. Many Indian groups fear, that after their marginalisation and the confiscations of their land, now it is the turn of their indigenous knowledge. In this context, the recognition of land ownership of the Indians is key to the recognition of their ownership over genetic resources existing within their land.

Furthermore, there are difficulties to enter contracts with many Indian groups, since many of them are not fluent in Portuguese and have no experiences with the legal world. The interests of the Indians are represented at the national level through different NGOs, however the way of complete empowerment and emancipation is still very long. So long, these problems exist at the national level; it is unlikely that the Indians will get fair and equitable benefit sharing.

In addition, the Provisional Measure does not foresee the creation of traditional knowledge databases or registers. The main protection in Brazil for traditional knowledge is the inclusion of the requirement of disclosure of origin in the law. Article 31 of Brazil's Provisional Measure provides that:

“The grant of industrial property rights by the competent bodies for a process or product obtained using samples of components of the genetic heritage is contingent on the observance of this Provisional Measure, the applicant being obliged to specify the origin of the genetic material and the associated traditional knowledge, as the case may be.”

Interview conducted with a leading Indian NGO in Brazil indicated that Brazil does not believe, that the creation of databases is a useful instrument to protect traditional knowledge.

The main arguments raised are: (1) lack of security against the uncompensated shift in property rights, and (2) lack of cooperation among large parts of the Indians.

The public-private approach Brazil applies in its ABS arrangements favours only private landowners. Benefit sharing is treated as private issue. Therefore, Most bioprospecting occurs in private own land. Since most Brazilian is concentrated in the hand of few that own the land since the Portuguese colonialisation, the private approach makes ABS in Brazil very complex and problematic. For instance, a foreign company can own as much land as it owns, and enter a contract with itself, where benefit sharing becomes a pure internal issue. The Brazilian law does not discriminate between the foreign and the private access, but any foreign company that maintain an office in Brazil, is Brazilian according to the Constitution. So, the landownership issue in Brazil becomes central to the distribution of benefit sharing. Brazil undergoes currently land reform, that are supposed to transfer large lands to the Indians but these reforms are being interrupted due to the strong opposition of both Brazilian communities and the companies, in particular the agribusiness, that is extremely strong in Brazil.

Although the law enforcement in Brazil has been improving over the last years, Brazil is not able to challenge or stop the uncompensated shift of property rights outside the country' borders. Interviewees repeated, that Brazil is too big to control all borders and in addition, it is not possible to know all steps a company or a researcher conducted with materials collected in Brazil. The main argument for that, that user countries have no laws that outlaw the uncompensated shift in property rights.

5.2. Implementation in user countries

Currently, no significant developed user country has adopted legislative, administrative, or other measures that directly regulate the access and use of genetic resources by entities under their jurisdiction (Young 2004: 5). Even in the very rare case, a country enacted “ABS law”, the legislation focused nearly exclusively on access issues and not on benefit sharing (Young 2004: 76). Therefore, the questions of compliance with the Bonn Guidelines are very critical, as most voluntary agreements do not provide any identifiable or trivial incentives to promote compliance.

Even in the very rare case, a country enacted “ABS law”, the legislation focused nearly exclusively on access issues and not on benefit sharing (Young 2004: 76). Therefore, the questions of compliance with the Bonn Guidelines are very critical, as most voluntary agreements do not provide any identifiable or trivial incentives to promote compliance.

On the other hand, all user countries have fully implemented the TRIPs Agreement and many of them pursue their interests through the so-called TRIPs-Plus agreements. For instance, the European regime on IPRs in biotechnology has undergone large developments in recent decade. One of the major EU laws on IPRs in biotechnology is Council Directive 98/44 on the Legal Protection of Biotechnological Inventions, which came into existence to implement the TRIPs Agreement. This Directive joined the European Patent Convention, adopted on 5 October 1973 in Munich. It is not a part of the EC legal system, but does apply to many EU countries. In the contrary to the US patent legislation (Plant Protection Act 1930), this Convention excludes plant varieties from patentability. The reason for that is that when the Convention was drafted, plants and animals were not patentable because at that time breeding

did not result in plants and animals that can be reproduced. The EU Directive came as an answer for technological developments (Linarelli 2002: 432).

The Directive adopted a wide definition of biological material, namely ‘any material containing genetic information and capable of reproducing itself or being reproduced in a biological system.’ Furthermore, the Directive adopted a wide patentability scope. According to Article 3.2 any biological material even if found in nature may be patented if it has been isolated from nature or a technical process has been applied in its production.

The EU makes use of Article 27.3 in the following way. According to Article 4.1(a), plant and animal varieties as such are not patentable. Yet, according to Article 4.2, inventions related to plants and animals are patentable under the condition that the technical feasibility of the invention is not confined to a particular plant or animal variety. Furthermore, Article 4.1(b) does not permit patents on ‘essentially biological process for the production of plants and animals’. Thus, plants varieties are protected in Council Regulation 2100/94/EC, which constitute the implementation of the UPOV Convention.

However, none of the European patent legislations included any requirements or even reference to fair and equitable benefit sharing or any requirements of disclosure of origin or certificate of origin. Therefore, it can be argued, that the implementation of the CBD and the TRIPs Agreement has been conducted in completely different aspects with hardly any interplay.

Additional efforts in the EU related to the protection of genetic resources are the Regulations 870/20004 and 1590/2004, which establish a programme on the conservation, and characterisation, collection and utilisation of genetic resources in agriculture. This programme as stated deals only with agriculture plants and hence does not cover other genetic resources relevant for other sectors, such as medicine and cosmetics. These regulations also do not include any requirements on disclosure of origin or benefit sharing. In line with this programme, many EU countries developed a clearing-house mechanism (CHM). For instance Austria established a database that is based on nationwide documentations of Austrian collections of species diversity and traditional knowledge. Yet Austria does not have specific regulations determining the ownership on these resources (Leidwein 2006: 258-259).

Furthermore, Council Regulation 2081/91 provides positive protection for agriculture products and foodstuffs. This protection is similar to the trademark protection. Registered products are protected against any misuse, such as direct or indirect commercial use. This regulation lay down the protection for ‘designations of origin’ and ‘geographical indication’. Concepts that be used to protect traditional knowledge, yet non-EU traditional knowledge is not included in the scope of these regulations, as EU law applies only within the borders of the EU (Leidwein 2006: 261, 264). Another regulation, which aims to protect traditional knowledge in the EU, is Council Regulation (EEC) No. 2082/92. This regulation provides positive protection for agriculture products and foodstuffs with a specific character, such as bread, cakes and pasta. According to Article 4.1. for a product to be registered, it must fulfil the following conditions; use of traditional raw materials; being characterised by a traditional composition; or being a code of production and/or processing that reflect a traditional type of production and/or processing. Although, also Non-EU traditional knowledge would fulfil

these requirements, this regulation does not provide any protection for non-EU traditional knowledge.

6.3. Analysis: user measures vs. provider countries measures

There is clear link between fair and equitable benefit sharing and IPRs. Existing patent legislations in user countries encourage R&D in biotechnology and enable private persons and companies to patent biological material regardless of CBD provisions on ABS. Therewith, these legislations implicitly enable the uncompensated shift in property rights. Legally seen, in order to have legally binding obligations on private persons or companies, the obligations must be first introduced in the relevant jurisdiction (Tvedt 2006: 191). The major problem of current international ABS governance is that it requires from private persons and companies to comply with the ABS legislation of a country while residing in another countries. A more complex issue is the enforcement of foreign legislations in another country.

Broadly said, international law and relations are designed that only the government or its agencies are entitled to enforce laws and measures within the national jurisdiction. Yet, within existing international private rules on cooperation on civil and criminal, it is possible to cooperate on the enforcement of foreign laws within another country. Yet, a key requirement is, that contracting parties to such an arrangement first agreed mutually on this issue, and second their criminal or civil law system included similar legal standards (FOOTNOTE).

The CBD does not indicate how a country can tackle on illegal access to their genetic resources outside its national jurisdiction. The CBD includes a merely weak enforcement and remedies mechanism that cannot be applied on private stakeholders, such as industry and scientists, who mostly conduct the access to genetic resources. Yet, it indicates that user countries shall enact supportive legislations in the aim to ensure the fair and equitable benefit sharing with provider countries (Article 15(7)). As currently, most user countries did not implement these obligations resulting from Article 15 (7), together with the fact that the CBD is not self-executing, achieving fair and equitable benefit sharing become similar to ‘mission impossible’.

Voluntary instruments, such as the Bonn Guidelines and code of conducts can be helpful instruments to regulate ABS in user countries, where the compliance can be monitored at the national level, but it is doubtful, whether these concepts are efficient to comply with legislations in provider countries, as there is no legislations in their home country that limits or restricts their activity abroad. In particular, home country legislations aiming to foster and protect the expansion of IPRs, do not impose any requirements or conditions on fair and equitable benefit sharing in their patent legislations.

Therefore, the lack of any matching legislation in user countries not only undermines provider countries’ effort to ensure fair and equitable benefit sharing, it also constitute an incentive to the user of the genetic resources not to comply with the ABS arrangement, as the user can anytime request a patent protection, and earn the benefits without having in mind any substantial legal steps undertaken to enforce the ABS arrangement.

7. Concluding remarks

This study argues that sovereignty of genetic resources has always existed, thus also prior to the adoption of the CBD. Property rights of indigenous and local communities are subject to national legislation. The concept of fair and equitable benefit sharing is strongly linked to ownership questions, as only the owner of a thing can claim benefit sharing. Unfortunately, the CBD provisions on benefit sharing are weak and lack any self-executing mechanisms. The Bonn Guidelines do not affect or change any of the CBD interpretation or the Parties sovereign and ownership rights. More importantly, they cannot substitute national legislation in dealing with a country that does not have any national ABS legislation.

Benefit sharing is only then fair and equitable when it is based on mutual recognition of existing property rights. This requires that parties are equal in their negotiations power in designing the ABS agreement. This implies that provider countries and indigenous and local communities must recognise the need of the industry to patent the results of their R&D. In return, the industry must recognise the existing claims on property rights of countries and indigenous and local communities. In this context, a key prerequisite for this situation is that provider countries must have clear legislation regulating the property rights on genetic resources and associated genetic resources.

However, this study emphasises that even if countries would maximise their efforts to achieve fair and equitable benefit sharing, their efforts are most likely to be unsuccessful because they cannot enforce their laws in user countries, home of research institutes and private companies. There is no doubt that for Tanzania and other countries without ABS legislations, it is very urgent to enact national ABS legislations. However, these countries have little incentive to do so, as countries with strong ABS legislations are not able to halt the uncompensated use of genetic resources and traditional knowledge.

India drafted its law in the light of its biotechnology strategy with little attention to rights of indigenous and local communities, as it tries to respond to international challenges and benefit its national biotechnology sector, however, it is doubtful, whether this strategy will pay off for weaker or poor developing countries with hardly any considerable biotechnology industry. Also Brazil, which established too many institutions and bodies to govern ABS in Brazil, in the lack of legislations in user countries, the efforts of Brazil are unlikely to yield the fair and equitable benefit sharing.

This study argues that the self-executing TRIPs Agreements and the lack of implementation of Article 15.7 in user countries legalise the encouraged uncompensated shift in property rights from owner of genetic resources and holders of traditional knowledge to private hands. Without an institutional interplay in implementing the TRIPs Agreement and the CBD provisions on ABS, the uncompensated shift in property rights is unlikely to be achieved. Therefore, any future international binding regime on ABS must include a binding requirement of disclosure of origin for both user and provider in order to be able to stop the uncompensated shift in property rights and generate fair and equitable benefit sharing.

Acknowledgment:

The research for this article was undertaken within the context of the N.W.O Vidi Project Intergovernmental and Private International Regimes: Compatibility with Good Governance,

Paper prepared for the IDGEC Synthesis Conference, Bali, 6–9 December, 2006

the Rule of Law and Sustainable Development, at the Institute for Environmental Studies,
Vrije Universiteit Amsterdam.

References:

- Abu Amara, S. and M., Ketunnen, (2006). *Assessment of key issues likely to emerge at the COP-MOP meeting on Biodiversity/Biosafety to be held in March 2006 in Curitiba/Brazil*. Policy Brief for the European Parliament Environment Committee IP/A/ENVI/FWC/2005-35, Brief number 03/2006.
- Aguilar, G. (2001). Access to genetic resources and protection of traditional knowledge in the territories of indigenous peoples, *Environmental Science & Policy*,4: 241-256.
- Bengwayan, M. (2003). *Intellectual and cultural property rights of indigenous and tribal peoples in Asia*, London, Minority Rights Group International.
- Birnie, P & Boyle, A. (2002). *International Law & The Environment 2*. ed. Oxford University Press, New York.
- Bodeker, G. (2003). Traditional Medical Knowledge, Intellectual Property Rights & Benefit Sharing. *Cardozo Journal of International and Comparative Law* 11:785-812.
- Boyle, A. (1996). The Rio Convention on Biological Diversity, in: M. Bowman and C. Redgwell, *International law and the conservation of biological diversity*, Kluwer Law International, The Hague, pp. 33-49.
- Bugge, H. & Tvedt M. (2000). A legal look at Article 15 in the Convention on Biological Diversity: access to genetic resources. In: H. Svarstad and S. S. Dhillon (eds.), *Responding to bioprospecting, from medicines in the south to medicines in the north*, Spartacus Forlag AS, Oslo, pp. 169-192.
- Burhenne-Guilmin, F. and S. Casey-Lefkowitz (1992). The Convention on Biological Diversity: a hard won global achievement, *Yearbook of International Environmental Law*, 3:43-59.
- Bystroem, B. & P. Einarsson (1999). Fair and equitable, sharing the benefits from use of genetic resources and traditional knowledge, Swedish Scientific Council on Biological Diversity, Stockholm.
- Castree, N. (2003). Bioprospecting: from theory to practice (and back again). *Transactions of the Institute of British Geographers*, 28(1): 35-55.
- Cunningham, D.; Tobin, B.; Watanabe, K. (2004). Tracking genetic resources and international access and benefit sharing governance: The role of certificates of origin, United Nations University Institute of Advanced Studies, 6F, International Organizations Center Pacifico-Yokohama, Background paper for Smithsonian/UNU-IAS Roundtable on certificates of origin (9 September 2004).
- Desai, B. H. (2003). *Institutionalizing international environmental law*, Ardsley, Transnational Publishers, Inc.
- Dixon, M. (2000). *Textbook on International Law*. 4th edition, Blackstone Press Limited, London.
- Downes, D. R. 2000. 'How intellectual property could be a tool to protect traditional knowledge. *Columbia Journal of Environmental Law*, 25: 253-281.
- Drahos, P. & Braithwaite, J. (2002) *Information feudalism: who owns the knowledge economy?*, London: Earthscan
- Drahos, P., (1996) *A Philosophy of Intellectual Property*, Aldershot: Dartmouth.
- Endeshaw, A. (2005). Asian perspective on Post-TRIPs Issues in intellectual property, in: the *Journal of World Intellectual Property*, 8(2): 211-235.
- Firestone, L. (2003). You say yes, I say no; defining community prior informed consent under the convention on biological diversity. *Georgia International Environmental Law Review*. 16, 171.
- Gepts, P. (2004). Who Owns Biodiversity, and How Should Owners be Compensated? *Plant Physiology*, 134: 1295-1307.

- Gupta, S. K. (2003). Turmeric in medicine: tradition or science? *University of Toronto Medical Journal*, Vol. 80(2):156-157.
- Khor, Martin (2002) *Intellectual property, biodiversity and sustainable development: resolving the difficult issues*, Zed Books, London.
- King, S. R. *et al.* (2000). Issues in the commercialization of medicinal plants. In: H. Svarstad and S. S. Dhillon (eds.), *Responding to bioprospecting, from medicines in the south to medicines in the north*, Spartucs Forlag AS, Oslo, pp. 77-88.
- Koopman, J. (2003), *Biotechnology, Patent Law and Piracy: Mirroring the Interests in Resources of Life and Culture*, vol. 7.5 *Electronic Journal of Comparative Law*, <<http://www.ejcl/75/art75-7.html>>
- Laird, S. (2002) (ed.). *Biodiversity and traditional knowledge, equitable partnership in practice*, Earthscan publications, London.
- Laird, S.A. & Wynberg, R. (2003). *Biodiversity prospecting & access and benefit-sharing*. An introductory primer. IUCN. Gland (Switzerland) and Cambridge (UK).
- Larid, S. and K. ten Kate (2002). Biodiversity prospecting: the commercial use of genetic resources and best practice in benefit sharing, in: S. Larid, *Biodiversity and traditional knowledge, equitable partnerships in practice*, London, Earthscan.
- Leidwein, A. (2006). Protection of traditional knowledge associated with biological and genetic resources. General legal issues and measures already taken by the European Union and its member states in the field of agriculture and food production, *The Journal of world Intellectual Property*, 3(3): 251-275.
- Linarelli, J. (2002). Trade-related aspects of intellectual property rights and biotechnology: European aspects, *Singapore Journal of International & Comparative Law*, 6:406-435.
- Little, P. E. (2005). Indigenous peoples and sustainable development subprojects in Brazilian Amazonia: the challenges of interculturality, *Law & Policy*, 27(3): 450-468.
- MacKay, F. (1998). *From concept to design: creating an international environmental ombudsperson, The rights of indigenous peoples in international law*, Berkeley, the Nautilus Institute for Security and Sustainable Development.
- McGraw, M. D. (2002). The story of the biodiversity convention: from negotiations to implementation. In: In: P. G. Le Prestre, *Governing Global Biodiversity*, Ashgate, Burlington, pp. 7-38.
- Mgbeoji, I. (2001) Patents and Traditional Knowledge of the Uses of Plants: Is a Communal Patent Regime Part of the Solution to the Scourge of Bio Piracy? *Indiana Journal of Global Legal Studies*, 9:163-186.
- Mgbeoji, Ik (2005). *Global biopiracy, patents, plants and indigenous knowledge*, UBC Press, Vancouver.
- Mhame, P. (2004). The role of traditional knowledge in the national economy: traditional medicine in Tanzania. In: Twarog, S. & Kapoor, P (eds), *Protecting and promoting traditional knowledge: systems, national experiences and international dimensions*, United Nations, New York and Geneva.
- Monney, P.R. (2000). Why we call it biopiracy. In: H. Svarstad and S.S. Dhillon, (eds). *Responding to bioprospecting, from biodiversity in the south to medicines in the north*, Spartacus Forlag As, Oslo, pp. 37-55.
- Nijar, G. S. & Ling, C.Y. (1994). The implications of the intellectual property rights regime of the Convention on Biological Diversity and GATT on biodiversity conservation: a third world perspective. In: Krattiger, A.F. *et al.* (eds), *Widening perspectives on biodiversity*, IUCN, Gland.

- Normand, V. (2004). *Identification of Outstanding ABS Issues: Level of National Implementation*. Paper presented at: International Expert Workshop on Access to Genetic Resources and Benefit Sharing (ABS), Cuernavaca, Mexico; 24-27 October 2004.
- Ostergard, R.L., Tubin, M. & Altman, J. (2001). Stealing from the past: globalisation, strategic formation and the use of indigenous intellectual property in the biotechnology industry. *Third World Quarterly*, 22(4), 643-656.
- Philip, B. G. (ed) (1986). *Webster's Third New International Dictionary 1818*.
- RAFI (Rural Advancement Foundation International) (1994) *Conserving Indigenous Knowledge: integrating two systems of innovation*, New York: United Nations Development Programme.
- Rawls, J. (1971). *A theory of justice*. Cambridge, Mass: Harvard University Press.
- Rawls, J. (1999). *Collected papers*. Cambridge, Mass: Harvard University Press.
- Rawls, J. (2001). *Justice as fairness: a restatement*. Cambridge, Mass.: Harvard University Press.
- Reid, W. V. (1993). *Biodiversity prospecting: Using genetic resources for sustainable development*. World Resources Institute, Washington.
- Rosendal, K. (1995). The Convention on Biological Diversity: a viable instrument for conservation and sustainable use. In Bergesen, H., Patmann, G. & Thommessen O.B. (eds.), *Green globe yearbook of international co-operation on environment and development*, Oxford University Press, Oxford, pp. 69-81,
- Rosendal, K. (2006). Regulating the use of genetic resources – between international authorities, *European Environment*, 16:265-277.
- Rosendal, K. (2006). The Convention on Biological Diversity: Tensions with the WTO TRIPs Agreement over access to genetic resources and sharing of benefits. In: S. Oberthuer and T. Gehring, *Institutional interaction in global environmental governance: synergy and conflict among international and EU policies*, Massachusetts, pp. 79-102.
- Sand, P. (2003). *Principles of int. environmental law*. Cambridge Press, Cambridge, UK.
- Sanders, D. (1991). Collective rights, *Human Rights Quarterly*, 13, 386.
- Shiva V. (1997). *Biopiracy. The Plunder of Nature and Knowledge*, Boston: South End Press
- Shiva, V. & Crompton, T. (1998). Monopoly and monoculture: trends in Indian seed industry. *Economic and Political Weekly*. 26 September 1998. A-137-A-151.
- Shiva, V. (2000). North-South conflicts in intellectual property rights. *Peace Review*, 12(4): 501-508.
- Shiva, V. (2001). *Doha: saving the WTO, killing democracy*, Znet, New Delhi. Available online at: <http://www.ratical.org/co-globalize/QatarShiva.pdf>. (visited last 20-11-2006)
- Shiva, V. (2001). *Protect or plunder, understanding intellectual property rights*. David Philip press, Cape Town.
- Shiva, V. (2005). Global trade and intellectual property: threats to indigenous resources. In: S. Krimsky and P. Shroett (eds.), *Rights and liberties in the biotech age: why we need a genetic bill of rights*, Lanham, Rowman & Littlefield Publishers, Inc.
- Shiva, V., Bhar, R.H. & Jafri, A.H. (2002). *Corporate hijack of biodiversity, how WTO-TRIPs rules promote corporate hijack of people's biodiversity and knowledge*. Navadanya, New Delhi.
- Svarstad and S. S. Dhillion (eds.) (2002), *Responding to bioprospecting, from medicines in the south to medicines in the north*, Spartucs Forlag AS, Oslo. Pp. 89-99.
- Tienhaara, K. (2006). What You Don't Know Can Hurt You: Investor-State Disputes and the Environment. *Global Environmental Politics* 6(4): 73-100.
- Tully, S. (2003). The Bonn Guidelines on access to genetic resources and benefit sharing, *Review of European Community & International Environmental Law* 12(1), pp. 84-97.

- Tvedt, M. W. (2006). Elements for legislation in user countries to meet the fair and equitable benefit-sharing Commitment, *The Journal of World Intellectual Property*, 9, no. 2, pp. 189-212.
- Tvedt, M.W. (2005). How will a substantive patent law treaty affect the public domain for genetic resources and biological material? *The Journal of World Intellectual Property*, 3: 311-344.
- Ulrich, H. (2006). Traditional knowledge, biodiversity, benefit-sharing and the patent system: romantics v. economics?, in: F. Francioni and T. Scovazzi (eds). *Biotechnology and international law*, Portland, Oxford and Portland, Oregon, pp. 201-230.
- UNWGIP (1996). *Aboriginal and Torres Strait Islander Commission: a definition of 'indigenous people'*? UN DOC.E/CN.4/Sub.2/AC.4/2/Add.1.
- Varella, M. (2003). *Access to genetic resources and benefit sharings: main aspects of some legal frameworks*. Paper prepared for presentation at the Open Meeting of the Global Environmental Change Research Community, Montreal, Canada, 16-18 October, 2003.
- Woods, N. (1999). Good Governance in International Organizations. *Global Governance*, 5: 39-62.
- World Resources Institutes (1992). *Global Biodiversity Strategy, Guidelines for action to save, study and use Earth's biotic wealth sustainably and equitably*. Washington.
- Yamin, F. (1995). Biodiversity, ethics and international law. *International Affairs* (Royal Institute of International Affairs 1944), 71(3): 529-546.
- Young, T. R. (2004). An implementation perspective on international law of genetic resources: incentive, consistency, and effective operation, *Yearbook of International Environmental Law*, 15: 3-93.
- Zhang, X. Traditional medicine: its importance and protection. In: S. Twarog and P. Kapoor (eds.), *Protecting and promoting traditional knowledge: systems, national experiences and international dimensions*, United Nations, New York, pp. 3-5.