



**The Genetic Use Restriction
Technologies, Intellectual Property
Rights and Sustainable Development in
Eastern and Southern Africa**

by

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Executive Summary

Many Eastern and Southern African (ESA) countries have had to revisit their intellectual property rights regimes in response to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) of the World Trade Organization (WTO). This has coincided with the development of new technologies that necessitate changes in the domestic laws on the protection of new inventions. The dearth of human and resource capacity in both intellectual property (IP) and the emerging technologies has constrained the space that these countries have to think through and respond to the arising needs considering their national development agendas. The countries have therefore engaged in legislative changes at the domestic level purely as a legal requirement without analysing the impacts of the changes on the countries and the region as a whole. The protection of genetic use restriction technologies (GURTs) through intellectual property rights (IPRs) could, for instance, have a significant impact on access to technology by farmers in the region. However, this has not been explicitly addressed in the IP legislation. The ambivalence of this legislation to GURTs can, in some instances, be misinterpreted as support for GURTs IPRs.

It is in light of this that the Trade Law Centre for Southern Africa (tralac) commissioned this research on the interface between GURTs and IPRs on sustainable use of agrobiodiversity and food security. There is particular concern that IPRs would have a negative impact on agriculture, which is the biggest source of employment and also a great contributor to the economies of ESA countries. This study examines the role of IPRs in the region and the place of GURTs in that schema. It looks particularly at the role of IPRs in development and the arguments for and against GURTs, proposing possible responses that ESA countries could consider to mitigate the potential adverse impacts of IPRs for GURTs on agriculture in the region.

The authors aver that both IPRs and GURTs allow control over the use of genetic materials, differing in the mode of control. The former provide *legal control* over the use of genetic material whereas the latter provide *technological control*. Countries have the option to use both legal and technological control to protect innovations. In the light of the lack of technological capacity in ESA countries, the best means of control remains

the legal one. In this regard, the countries must categorically provide for the subject matter of intellectual property protection (IPP) to exclude GURTs. Ambivalence of legislation on the matter leaves the issue open for misinterpretation since there is no reason to deny legal protection of GURTs if they satisfy IPP requirements. We propose strategic and policy responses to IPP for GURTs, such as assessment of benefits, costs and risks of IPP for GURTs; alignment of IPP with national development imperatives; use of flexibilities under TRIPs; regulation; engagement in ongoing debates on GURTs informed by research from the region; development of a well thought out *sui generis* regime that takes into account the diversity of actors; and putting in place effective institutional and administrative frameworks. The authors conclude that IPP and GURTs serve distinct purposes from the perspectives of technology developers and users and that there is a convergence of interests for the technology developer in instances where GURTs are amenable to IPP. In the light of this, the paper proposes that ESA countries should make explicit legal provisions excluding GURTs that are inimical to the interests of farmers and the general economy of the countries from IPP even where they satisfy the criteria for IPP.

Abbreviations and acronyms

ARIPO	African Regional Intellectual Property Organization
CBD	Convention on Biological Diversity
ESA	Eastern & Southern Africa
FAO	Food and Agricultural Organization
GURTs	Genetic Use Restriction Technologies
ICTSD	International Centre for Trade and Sustainable Development
IP	Intellectual Property
IPP	Intellectual Property Protection
IPRs	Intellectual Property Rights
OAU	Organisation of African States
PBRs	Plant Breeders' Rights
R&D	Research and Development
TRIPs	Agreement on Trade Related Aspects of Intellectual Property Rights
UNCTAD:	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UPOV	International Convention for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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1. Introduction

This paper is divided into six parts. Part I introduces both IPRs and GURTs from a global perspective but contextualises them in the ESA region.¹ It also points out the demands put on nations in ESA by TRIPs. Part II discusses trends in the Council for TRIPs of the WTO and the World Intellectual Property Organization (WIPO) and the implications that these have for ESA countries. It focuses particularly on international rule-making and standard-setting on IP, forums at which such rules and standards are agreed on, and the costs of setting up IP systems. Part III looks at IPRs and GURTs as different means of providing control over the use of genetic material, arguing that GURTs are broader, more effective for technology developers and less limited by time constraints than the protection conferred by IPRs.² It also puts forward arguments that have been made for and against GURTs. This paves way for the discussion in Part IV which focuses on the positive and negative impacts of intellectual property protection (IPP) for GURTs in the ESA countries. Part V addresses ESA countries' approach to IPP. It argues that since IPP laws in ESA countries can, at least in theory, be used to protect GURTs, there is a need to prevent the potential negative impacts of such a trend. As pointed out above, current legislation is ambivalent on the issue of GURTs' protection through IPRs. This situation is not desirable. Countries need to decide on the approach to take to GURTs and use IPR and other laws to give effect to that approach. Where national development imperatives demand exclusion of IPP for GURTs, this should be provided for through law. In this regard, we propose the need to craft well-thought out strategic and policy responses to IPP for GURTs. These include *sui generis* regimes that take the specific conditions in ESA countries into account.

1.1 Intellectual Property Rights

The role of intellectual property rights (IPRs) in the attainment of sustainable development continues to be a subject of great interest among different groups of people. Many developing countries consider IPRs, particularly patents, as a tool that

¹ The paper uses South Africa and Kenya, the two countries with most developed IP regimes in ESA.

² Jefferson, R. et al. 1999. *Genetic Use Restriction Technologies Technical Assessment of the Set of New Technologies which Sterilise or Reduce the Agronomic Value of Second Generation Seed as Exemplified by US Patent No. 8,423*, Expert Paper prepared for the Secretariat of the CBD's Subsidiary Body on Scientific, Technical and Technological Advice, Montreal. See also UNEP/CBD/SBSTTA/4/9/REV/Annex.

fosters economic development. Existing conventions for intellectual property protection (IPP) favour those with ready access to economic and legal resources whereas they can work unfairly against those who do not have such access.³ The internationalisation of IPP through the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) of the World Trade Organization (WTO) ensures that technology owners have protection of their IP in all areas of technology.⁴ Discussions about the implications of this provision in the context of a human right to food and healthcare perspective have been the basis of heated discussions at international level. The protection of IP in the realm of food and healthcare is not always easy to reconcile with these rights where access is hindered by the existence of IPRs.⁵

IPRs have generally been conceived as statutory rights which can only be justified from a societal point of view if they are balanced with specific safeguards for the public interest. Thus, patents are usually granted for a limited duration and the patentee has to disclose his/her invention in return for the monopoly rights granted by the state. For a long time, IPRs were conceived as a purely technical tool which contributed to technological development. This theoretical premise has been challenged over time from different directions. Firstly, the appropriate scope of protection has been the subject of debate for a long time. The balance between the need to provide incentives or rewards to inventors and to promote innovations has always been difficult to justify because protection entails granting an entity exclusive rights to information that may be critical for other research endeavours. Secondly, and related to the previous issue is the confluence between IPRs and sustainable development.⁶ In developed countries, the granting of patents on lifeforms has progressively blurred the line between human inventiveness and nature's creation. In developing countries, the adoption and implementation of the TRIPs Agreement has clearly brought out the fact that the introduction of IPRs not only has

³ The Crucible Group. 1994. *People, Plants and Patents: The Impact of Intellectual Property on Biodiversity, Conservation, Trade and Rural Society*. International Development Research Centre. p. 54.

⁴ Article 27 of the TRIPs Agreement

⁵ Kameri-Mbote, P. & Cullet, P. 2004. *International Property Protection and Sustainable Development – Towards a Common African Institutional Framework and Strategy*, A Background Study Commissioned by the Science and Technology Commission of the New Partnership for Africa's Development (December, 2004) (on file with the authors).

⁶ Cullet, P. 2005. *Intellectual Property Protection & Sustainable Development*. New Delhi: Lexis Nexis, Butterworths.

economic and technological consequences but also human rights, social, environmental and agricultural implications.⁷ In fact, the biggest challenge that African countries face today is the need to reconcile the introduction of minimum IPP standards of the TRIPs Agreement with the need to comply with all their international and national sustainable development commitments.⁸

Following the adoption of the TRIPs Agreement and its progressive implementation in developing countries, debates concerning the contribution of IPRs to economic and social development have become much more pronounced.⁹ The TRIPs Agreement commits developing countries to significantly raising their standards of intellectual property rights protection even though it is generally accepted that this will at best have some positive results in the long-term for most countries.¹⁰ The TRIPs Agreement also makes few concessions to the smaller, economically weaker countries, with a particular few concessions to least developed countries. Limited differentiation has led to major controversies, for example, concerning access to drugs in countries severely affected by HIV/AIDS. In the context of increasing appropriation of knowledge through intellectual property rights, which has characterised developed countries over the past couple of decades, there are renewed debates over the 'appropriate' level of intellectual property protection for social and economic development.¹¹

In a North-South context, concerns about the appropriate scope of intellectual property protection include the whole gamut of issues debated in developed countries and a host of other issues. Among a number of initiatives that have been taken in recent years to address some of the IPR-related problems in developing countries, the 2002 report of the Commission on Intellectual Property Rights stands out.¹² It provided a largely balanced account of the pros and cons of intellectual property protection in developing countries, finding that there were a number of significant problems in the existing system.

⁷ Above footnote 3.

⁸ Above footnote 5.

⁹ Ibid.

¹⁰ Commission on Intellectual Property Rights. 2002. *Integrating Intellectual Property Rights and Development Policy*. London: IPR Commission.

¹¹ Above footnote 5.

¹² Above footnote 10.

The interface between intellectual property protection and sustainable development has become pronounced as biotechnological innovations have progressed. In addressing IPRs and biotechnology in Africa, the issue of genetic resources and the role that these resources play in African countries is pivotal to the perception of proprietary rights. This is linked to the value of the resources and the issues of access, control and ownership. IPRs for biotechnological innovations raise heated debates at international, regional and national levels over firstly, control of biotechnology IPRs, and secondly, ownership of biotechnology inventions in instances where the invention is based on resources nurtured by others.¹³ The valuation scale does not indicate a continuum from the raw material to the transformed product. There is a marked dichotomy between the valueless raw germplasm and the modified varieties that are bred or developed in laboratories.¹⁴

IPP has grappled with a definition of protectable biological subject matter given the living and self-reproducing nature of this material. Relevant IPRs in the field of biotechnology are patents and plant breeders' rights (PBRs).¹⁵ Traditionally, plants were excluded from patentability and were governed by PBRs.¹⁶ The gradual move towards the patenting of life forms in the US first affected plants and has recently been extended to animals. Since the US case, *Diamond v Chakrabarty*, biotechnology IPRs have been liberally granted. The Supreme Court held in that case that the fact that these were living organisms was no objection to the grant of patent rights and that the patent system should grant patent protection for 'everything under the sun made by the hand of man'.¹⁷ Many African countries exclude plants and animals from patentability.¹⁸ The African Regional

¹³ Kameri-Mbote, P. et al, *Unlocking Africa's Future: Biotechnology & Law* (Forthcoming 2006).

¹⁴ Vandana Shiva. 1993. *Monocultures of the Mind: Perspectives on Biodiversity and Biotechnology*. See also Barton, J.H. & Christensen, E. 1988. Diversity Compensation Systems: Ways to Compensate Developing Nations for Providing Genetic Materials. In Kloppenburg, J.R. Jr (ed). *Seeds and Sovereignty - The Use and Control of Plant Genetic Resources*. Place and publisher. p. 338.

¹⁵ Trademarks also relate to biotechnology in instances where products of biotechnology are branded to distinguish them from other products of competing firms. This is especially the case in the area of pharmaceutical products.

¹⁶ See, e.g. Eisenberg, R.S. 1987. Proprietary Rights and the Norms of Science in Biotechnology Research. *Yale Law Journal* 97: 177.

¹⁷ *Diamond v Chakrabarty*, 100 S.Ct.2204, 2208 (1980). Chakrabarty applied to patent a bacterium from the genus *Pseudomonas* containing therein at least two stable energy generating plasmids, each said plasmid providing a separate hydrocarbon degradative pathway. The US Supreme Court held that 'the patentee had produced a new bacterium with markedly different characteristics from any found in nature.... His discovery is not nature's handiwork, but his own, accordingly, it was patentable'. See also *Ex Parte Hibberd* 227 U.S.P.Q (BNA) 443 (1985) which allowed plant patents to be included under the broad category of utility patents allowing the patenting of the individual components of varieties.

¹⁸ See, e.g., South Africa, Kenya, Uganda, and Zimbabwe.

Intellectual Property Organization (ARIPO) which deals with industrial property defers to African countries' national legislations with respect to the subject matter for protection. For instance, the ARIPO regime confers on its member states the power to refuse acknowledgment of an ARIPO patent on the grounds that the invention is not patentable in accordance with the Protocol and that the patent cannot be granted under the national law of that state because of the nature of the invention.¹⁹ With respect to plants, countries provide for plant variety protection through plant breeders' rights. This genus of IPRs was first developed within the context of the International Convention for the Protection of New Varieties of Plants (UPOV).²⁰ These rights were an alternative to full-fledged patents and were seen as more flexible and admitting of seed exchange between farmers and breeders. South Africa and Kenya are parties to this Convention. Countries in the East African region are likely to be influenced by the approach that Kenya takes to plant variety protection given that there is an initiative to harmonise seed laws within the aegis of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).

The following key questions in relation to IPRs generally arise in sub-Saharan Africa:

- First, whether there is evidence that inventors are being encouraged by the system to invent new products and processes to improve older technologies. To this end, it is necessary to establish evidence that links rates of inventions to the existence of IPRs as an incentive to invent.
- Second, whether there is evidence of an improvement in and maintenance of high rates of inventiveness as a direct result of IPRs. In other words, are IPRs fostering improvements in the rate of technological development in the biotechnology realm?

¹⁹ Section 3 (6) of the Protocol.

²⁰ The International Convention for the Protection of New Varieties of Plants (UPOV Convention) was concluded in Paris on 2 December 1961. It was revised at Geneva on 10 November 1972, 23 October 1978 and 19 March 1991 (UPOV Doc. 221(E), 1996). While the intention was to have a distinct system for the protection of plant varieties and breeders' rights, progressive revisions of UPOV have narrowed the distinction between patents and breeders' rights as the flexibilities such as breeders' exemption and farmers' privilege have been qualified to accord greater protection to breeders. See Cullet, P. & Kameri-Mbote, P. 1999. Agro-biodiversity and International Law – A Conceptual Framework. *Journal of Environmental Law*, 1999.

- Third, whether inventors in the region appreciate the concept of IPRs as a form of reward for inventions, and an encouragement for engendering new ideas and inventions.
- Fourth, whether existing regimes of intellectual property rights protection promote access to new technologies by balancing the interests of inventors with those of users.
- Finally, and in a nutshell, whether the theoretical functions of IPRs are being successfully and practically translated in the field of biotechnology in sub-Saharan Africa.

The role of IPR in Africa's development has to be considered within an array of factors. On the one hand, African farmers have limited access to seeds and technology. This is blamed on restrictive IPRs that act as a barrier to the acquisition of seeds and propagative material as well as the use of genetic use restriction technologies which limit farmers' use of seeds. The ownership of IPRs, specifically patents, by multinational corporations based in developed countries is replicated in the realm of biotechnology. This domination of world food products by a few companies and the increased dependence on industrialised countries by developing countries pit the latter group of countries against IPRs. The situation is not helped by examples of bio-piracy, foreign exploitation of natural resources of poor countries by entities from developed countries and lack of R&D investment in crops of importance to African societies, such as sorghum, millet and yams.

In developing countries, in particular, it might have been expected that technological innovations would be encouraged by such regulatory tools as IPRs and that those innovations would be of such a nature as to promote sustainable development. However, it seems that these expectations are unlikely to be realised. This is so, mainly because modern trends in international IP rule-making tend towards a single model or a one-size-

fits-all approach to IP. It has been amply demonstrated elsewhere that this approach is not compatible with developing country needs.²¹

It is within this context that this paper addresses the link between IPP and genetic use restriction technologies (GURTs) or terminator technologies, as they are commonly referred to. Terminator technologies are really induced technological responses to inadequacies and weaknesses of existing intellectual property protection (IPP).²² To that extent, the question of whether GURTs are an IP issue or not (which has been discussed widely) is, in our view, moot. GURTs are innovations which are amenable to IPP. The commonplace view is, first, that GURTs are 'bad', and second, that IPRs promote the use of GURTs. If both IPRs and GURTs allow control over the use of targeted genetic materials, one might be excused for claiming that there is an association between IPRs and GURTs. However, it is hard to see how that association is causative; and the rise of GURTs may not be fairly traceable to the protection of IPP even though availability of IPP for GURTs encourages innovations thereof. The central issue here is the impact of IPP for GURTs innovations on access to seeds and technologies by farmers in developing countries. GURTs are said to have a great potential for significantly impacting the seed industry and the organisation of agriculture since they alter a fundamental characteristic of the seed, viz. its self-reproducing nature, and threaten to change agricultural practices developed over millennia.²³ Not surprisingly, they are perceived as unethical, with negative impacts on millions of people, especially resource-poor farmers, because of their focus on returns on investment as opposed to access to technologies. GURTs have the potential to aid in the appropriation by corporate actors of indigenous knowledge about seeds nurtured by communities over the years.²⁴

²¹ See e.g. Commission on IPRS, above footnote 10. The issues of access to medicine for HIV-AIDS and to seeds for farmers exemplify this point. See also Cullet, P. 2003. Patents and Medicines: The Relationship Between TRIPS and the Human Right to Health. 79 *International Affairs*, 2003, 139, and Kameri-Mbote, P. 2003. Community, farmers' and breeders' rights in Africa: towards a legal framework for *sui generis* legislation. *University of Nairobi Law Journal*, 2003 p. 120. [Online]. Available: www.ielrc.org/content/a0302.pdf

²² Jefferson, R. et al, above footnote 2. Similar measures have been taken in the realm of copyright to prevent copying of music and software.

²³ Srinivasan C. S. & Thirtle, C. 2002. Terminator Technologies in Developing Countries. In Evenson, R.E. et. al (eds). *Economic and Social Issues in Agricultural Biotechnology*. Oxon & New York: CABI Publishing. p. 159.

²⁴ *Ban Terminator, Traditional Knowledge and Terminator Technology*. [Online]. Available: www.banterminator.org.

1.2 Genetic Use Restriction Technologies (GURTs)

GURTs may be defined as a set of 'technological means that rely on genetic transformation of plants to introduce a genetic switch mechanism which prevents unauthorised use of either particular plant germplasm, or trait(s) associated with that germplasm'²⁵. In other words, the term GURTs describes a class of biotechnology-based switch mechanisms applied to restrict the unauthorised use of genetic material. There are two types of GURTs: variety-use restriction (V-GURTs) and use-restriction of a specific trait (T-GURTs). V-GURTs, also known as 'terminator' technology, render the subsequent generation sterile whereas T-GURTs, also known as 'technology protection system', require the external application of inducers to activate the trait's expression. T-GURTs refer to a set of technologies that, by using an external trigger, makes it possible to switch on and off specific characteristics of a plant, such as resistance to disease.

The opponents of GURTs argue that there are no profound agronomic benefits other than imposing a limitless biological patent on the relevant crops. Moreover, T-GURTs may exacerbate this situation by creating dependency on costly seeds and chemicals as well as on the foreign companies that produce them. The diffusion of such technologies to farmers is also seen as problematic and these technologies, in light of seed companies' monopoly over markets, also deny farmers their democratic rights to choose if the only seeds available are the ones incorporating GURTs. Altogether, GURTs are argued to be a threat to food security. The potential negative impacts range from loss of agricultural biodiversity to alteration of ecosystems and widening of the technological gap between resource-poor and better-off farmers. T-GURTs are however more justifiable than V-GURTs because they can be used for different purposes (including biosafety) and their means of control may be less absolute.

The proponents of this technological innovation argue that it is self-regulating. It provides a biological means of strengthening IPP on newly developed agricultural crop varieties or animal breeds. This enables the technology owner to restrict others from reproducing

²⁵ Jefferson, R. et al, above footnote 2.

their innovation.²⁶ Thus, it can reduce the costs of policing seed patents or breeders' rights. This, in turn, allows innovators to capture the returns on their investments and encourages further innovation. Also, it prevents horizontal gene transfers from genetically modified (GM) crops because it has a built-in safety mechanism to prevent germination of seeds produced by unwarranted pollination from transgenic plants. It can also be used in 'precision agriculture'²⁷ to turn specific traits on and off when so desired by the farmer or breeder. GURTs therefore present a useful tool for containing trans-genes in biosafety systems.²⁸ The motives for using GURTs include protection of property interests, environmental containment of varieties and restriction of expression of a specific trait during experimentation.²⁹

This paper specifically focuses on IPRs, related regulatory and the potential impact of GURTs in ESA. While both IPRs and GURTs allow control over the use of genetic materials, they differ in the mode of control. Thus, the question here is how the countries in the region can use regulatory mechanisms to harness the positive impacts of GURTs without compromising their national and regional sustainable development goals. We suggest that IPRs, or anything akin to IPRs, are inadequate to enable ESA countries to avoid the real or potential adverse impacts of GURTs. This is largely so because IPRs provide *legal control* over the use of genetic material whereas GURTs provide *technological control*. The relevance of this distinction lies in the fact that GURTs transcend the legal realm in the sense that they may apply whether or not the technology in question is itself subject to legal protection (in the form of IPRs or related *sui generis* regimes). The absence of technological capacity on the part of ESA countries may indeed disadvantage them when it comes to the use of GURTs to secure their innovations or for biosafety purposes. It has, for instance, been observed that farmers (as compared to breeders) are likely to be disadvantaged in accessing technology to

²⁶ Eaton, D. et al. 2002 Economic and Policy Aspects of 'Terminator' Technology. *Biotechnology and Development Monitor*, 49: 19-22.

²⁷ Precision agriculture is an agricultural concept requiring the use of new technologies and information management tools to assess and understand variations. Collected information may be used to more precisely evaluate optimum sowing density, estimate fertilizers and other inputs needs, and to more accurately predict crop yields. See http://en.wikipedia.org/wiki/Precision_agriculture.

²⁸ Cullet, P. above footnote 26.

²⁹ Viser, B. et al. 2001. The Impact of 'Terminator' Technology. *Biotechnology and Development Monitor* 48, Dec. 2001: 9-12.

circumvent GURTs. Moreover, market considerations will influence the application of GURTs.³⁰ The legal control over genetic material provided by IPRs, on the other hand, is limited to the innovations that satisfy criteria for IPP. There are potential benefits, costs and risks of IPP for GURTs from different viewpoints. (See Table A). ESA countries need to assess these and to align them to different actors within their territories in order to determine the best way to go with GURTs.

Table A: Genetic Use Restriction Technology (GURT): Potential Economic Benefits, Costs & Risks

	Benefits	Costs	Risks
Farmers	Increased productivity from improved inputs due to increased research and development (R & D) investment	Increased input costs from seed purchase (including transaction costs)	Misuse of monopoly powers by breeders Reduced seed security and access to genetic improvements (marginalised farmers) Increased dependency of 'industrial' seeds
Breeders (especially Private Sector)	Increased appropriation of research benefits from new products	Increased cost for access to gene pools of other breeders	
Governments	Reduced investment requirements in breeding Fewer enforcement costs for plant variety protection (PVP)	Complementary R & D investment requirements Other regulatory sources	<i>Compromised food sovereignty</i>
Society	Increased agricultural productivity Facilitated control over GMOs	<i>Potential reduction in the use of traditional and domesticated varieties</i>	Reduced genetic diversity in fields

Source: Eaton, D. et al. 2002 Economic and Policy Aspects of 'Terminator' Technology. *Biotechnology and Development Monitor*, 49: 19-22. (Italicised text added by the authors).

The work of the Food and Agricultural Organization (FAO) of the United Nations and the United Nations Environment Programme (UNEP) on GURTs provides some of the most instructive analyses on this subject. This paper draws partially from this literature on GURTs. It is important to point out that there is relatively little information about GURTs

³⁰ Above footnote 23.

at both the global level and in ESA. Thus, one can at best draw only speculative conclusions regarding ESA from the little information that is currently available.

2. Some relevant trends at the international level

2.1 International rule-making and standard-setting on IP

There are various justifications for IP protection, revolving mainly around reward. The argument can be made that the creator of something deserves something in return for his/her effort. That reward may take various forms but the generally accepted one is ownership. A related utilitarian argument holds that creations of the human mind are necessary for the development of society and that such creations gain fresh impetus from some form of reward. In other words, innovators spend a lot of time, effort, money and other personal resources to generate and develop ideas. They need to be rewarded in one form or another for such work and investment. Above all, society in general is expected to benefit from new ideas that are made available for wider use.

This utilitarian justification for IP appears to have been adopted by the World Trade Organization (WTO). The WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) essentially treats IPRs as economic or commercial rights. However, it captures the utilitarian justification in the Article 7 objective, namely that IP protection should contribute to the promotion of technological innovation and to the transfer and dissemination of technology.

Two important issues arise from the foregoing. First, critics might question the justice of rewards. For instance, is ownership (whether in the form of IPRs or not) the best and a just reward? Indeed, a utilitarian might argue that putting all ideas in the public domain (for instance, by relaxing or abolishing IPRs) would be more beneficial to society as anyone could work on or develop anything and therefore generate more innovators. Second, critics often point out that to say IP stimulates technological innovators is little more than an article of faith. Put in another way, does IP actually encourage innovations? Within the WTO, some developing countries are increasingly becoming

pessimistic in reference to the question of whether the objective of TRIPs in establishing a viable technological base in all countries is achievable.

2.1.1 Institutional anchorage of IP

The World Intellectual Property Organisation (WIPO) was established in 1970 by a convention that was adopted in 1967. A specialised agency of the UN since 1974, WIPO administers over 20 multilateral treaties on different aspects of IP and counts 179 nations as member states. The main role of WIPO is to promote the protection of IP and assist developing countries in the enactment and enforcement of IP laws. While WIPO agreements are binding and can be used in the interpretations of legal issues presented before the International Court of Justice and other international tribunals, they do not have the same enforcement force as the dispute settlement mechanisms under the WTO. The UPOV Convention, which specifically deals with plant variety protection, also lacks enforcement measures which are largely left to national legislation of member states.³¹

In the 1980s, there was a shift from WIPO to the General Agreement on Tariffs and Trade (GATT) Uruguay round of multilateral trade negotiations. These negotiations resulted in, among others, the inception of TRIPs under the aegis of the WTO in 1995. Why was the IP area forced into the realm of the WTO? A number of reasons might be given for the forum shift. First, WIPO lacked a formal judicial dispute settlement mechanism. Second, WIPO gave states enormous sovereign discretion over IP standard-setting. In light of this flexibility, the competitiveness of countries that greatly relied on information-based goods and services was threatened, at least to the extent that any developing country would enjoy relatively low standards of IP protection. WIPO also lacked a linkage-bargain diplomacy whereby countries could agree on trade-offs in return for concessions in other areas.

WIPO has, however, been conscious of the criticism that has been levelled at the potential of IP to be used in appropriating traditional knowledge. The WIPO General Assembly responded by establishing, in cooperation with other organisations, the WIPO

³¹ Article 30 UPOV Convention, above footnote 20.

Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) in October 2000.³² This has provided an international forum for debate and dialogue concerning the interplay between IP, traditional knowledge, genetic resources, and traditional cultural expressions (folklore). It is noteworthy that WIPO is developing draft legal mechanisms and a range of practical tools aimed at enhancing the IP interests of the holders of such knowledge, resources and expressions.³³

The Convention on Biological Diversity (CBD) addresses IPRs to the extent that they are relevant for meeting its objectives, namely conservation of biological diversity, sustainable utilisation of its components, and fair and equitable sharing of benefits emanating from the resources. Article 15 of the CBD, while recognising the sovereignty principle enunciated in Article 1, provides that the state concerned should exploit its resources according to environmental policies and should endeavour to conserve the resources and promote their sustainable utilisation. The CBD also seeks to ensure both the availability of biological resources for the scientific community and the enjoyment of the benefits accruing therefrom to the state providing the resources.³⁴ The CBD recognises the need to ensure equitable allocation of ownership rights and intellectual property rights to biotechnology. Further, while stressing the need for recognition of intellectual property rights, Article 16 provides that such rights should support the objectives of the CBD and not run counter thereto.³⁵ It emphasises the need to have the intellectual property rights enhance the objectives of the Convention but does not provide which of the two should prevail in the event of a conflict.³⁶ Article 22 of the Convention also suggests the possibility of property rights being overridden where they threaten serious damage to the environment.

³² WIPO document WO/GA/26/6 (2000)

³³ <http://www.wipo.int/tk/en/igc>

³⁴ It exhorts states entering into agreements for access to genetic resources to take legislative, policy and administrative measures to ensure fair and equitable sharing of the research results and benefits arising from the commercial utilisation of the resources between the parties. It also recommends the participation of the source state in scientific research using resources from such state.

³⁵ See Article 16 (4) of the Biodiversity Convention, United Nations Conference on Environment and Development: Convention on Biological Diversity. Done at Rio de Janeiro, June 5, 1992, reprinted in 31 I.L.M. 818 (1992), which provides that 'Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall co-operate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives'.

³⁶ See Sands P. 1995. *Principles of International Environmental Law* 748, 1995.

With regard to GURTs, the CBD adopted a *de facto* moratorium in 2000 reasoning that a precautionary approach was needed in field testing and commercial development of GURTs. Paragraph 23 of Decision V/5 of the CBD recommended that:

In the current absence of reliable data on genetic use restriction technologies, without which there is an inadequate basis on which to assess their potential risks, and in accordance with the precautionary approach, products incorporating such technologies should not be approved by Parties for field testing until appropriate scientific data can justify such testing, and for commercial use until appropriate, authorized and strictly controlled scientific assessments with regard to, inter alia, their ecological and socio-economic impacts and any adverse effects for biological diversity, food security and human health have been carried out in a transparent manner and the conditions for their safe and beneficial use validated ...

This issue was revisited at the sixth meeting of the Conference of the Parties to the CBD in 2002. Noting the absence of adequate reliable data on GURTs, the meeting reaffirmed Paragraph 23 of Decision V/5. It also invited the Food and Agriculture Organization of the United Nations to consider GURTs in the further development of the Code of Conduct on Biotechnology as it relates to genetic resources for food and agriculture; and UPOV, the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore of the World Intellectual Property Organization (WIPO) and other relevant organisations to examine, in the context of their work, the specific intellectual property implications of GURTs, particularly in respect of indigenous and local communities .³⁷

A number of countries are seeking or have since sought to have this ban lifted and this has prompted opposition from civil society organisations representing developing countries where the farmers' practice of saving seed is the lifeline of agriculture. The issue has become very contentious as more corporations have obtained intellectual

³⁷ Paragraph 6 (d) & (e), *Report on the Impacts of the Application of Genetic Use Restriction Technologies on Indigenous and Local Communities and Farmers' Rights* (UNEP/CBD/COP/6/11/Add.1) 1 February 2002.

property protection for GURTs. At the eighth meeting of the Conference of Parties in March 2006, Decision V/5 was reaffirmed amidst heated debates which had polarised the parties, with some arguing for a case by case risk assessment of GURTs and others favouring the reaffirmation of Decision V/5 of 2000. In affirming the Decision, the Conference of the Parties encouraged Parties and other interested stakeholders to respect traditional knowledge and farmers' rights to the preservation of seeds under traditional cultivation; further research on the impacts of GURTs as underscored in Decision V/5; dissemination of results of studies on potential environmental, socio-economic and cultural impacts of GURTs and capacity building and technology transfer to developing countries and countries with economies in transition with regard to assessment and decision-making on GURTs.³⁸

From the foregoing, it is clear that GURTs and IPP are the subject of different normative and institutional regimes ranging from the CBD and the WTO TRIPs to WIPO. Unless developments in these regimes are synchronised at national levels, ESA countries will continue to find their options for mitigating the negative impacts of GURTs and IPP for GURTs contradictory and limited.

2.2 Modern trends in the world of IP

2.2.1 The cost of IP systems

Although there are no definitive studies on the impact of TRIPs on developing countries, reliable empirical estimates indicate that, overall, developing countries lose out by protecting IP even at the minimum standard in TRIPs.³⁹ These studies appear to support speculations that had been made prior to the adoption of TRIPs. One economist predicted that 'all evidence and arguments ...point to the conclusion that... the impact

³⁸ UNEP/CBD/WG8J/4/L.7, Conference of the Parties to the Convention on Biological Diversity, Eighth meeting, held in Curitiba, Brazil, 20-31 March 2006.

³⁹ Sanjaya, L. and Albaladejo, M. 2001. *Indicators of the Relative Importance of IPRs in Developing Countries*. Paper commissioned by UNCTAD/ICTSD (November 2001).

effect of enhanced IPR protection...will be a transfer of wealth from [developing countries] to foreign, mostly industrial country firms'.⁴⁰

When the cost of maintaining IP systems (in terms of both money and practicability) is assessed in the light of the meagre resources of many developing countries, especially those from ESA, one might wonder whether it makes sense for these countries to be subjected to onerous IP regimes like TRIPs. Bearing in mind that most ESA countries have had IPP regimes dependent on their former colonising powers, operationalising a full-fledged and all-encompassing IPP regime as laid out in the TRIPs Agreement is a major challenge. For instance, most countries in the region have not had plant variety protection regimes and they are required under TRIPs to put these in place.

2.2.2 Speculations about a (new) development agenda in the WTO

Since the 2001 Doha WTO Ministerial Conference, development issues have come to the forefront of debates on IP in both the WTO and WIPO. In the WTO, for instance, not only is the TRIPs Council directed to follow TRIPs objectives and principles, it is obliged to take development objectives fully into account.⁴¹ Moreover, the preamble to the WTO Agreement states that the objective is to ensure the 'use of the world's resources in accordance with the objective of sustainable development'. This objective has been analysed by a number of panels in some WTO disputes. For example, the Appellate Body in the *US – Shrimp* case stressed that this language of the WTO preamble 'demonstrates recognition by WTO negotiators that the optimal use of the world's resources should be made in accordance with the objective of sustainable development'.⁴²

IPRs provided for under TRIPs have implications for the environment, food security and agriculture. For ESA countries, these issues are inextricably linked to development making the approach to IPP for GURTS both a livelihood as well and a sovereignty

⁴⁰ Rodrik, D. 1994. Comments on Maskus and Eby-Konan. In Deardorff, A. and Stern, A (eds). *Analytical and Negotiating Issues in the Global Trade System*. Michigan: University of Michigan Press. p. 449.

⁴¹ Doha WTO Ministerial. 2001. *Ministerial Declaration* (14 November 2001) WT/MIN (01)/DEC/1 (Doha Implementation Decision), paras 17-19.

⁴² WTO. *United States; import prohibition of certain shrimp and shrimp production AB – 1998 – 4*. Report of the Appellate Body (WT/DS58/AB/R) 153.

question. However, given the nature of IP generally and the measurement problems associated with it, our understanding of its role in the economic development process and on livelihoods is incomplete. Information is sparse in this regard and this is the lens through which one looks at IPRs for GURTs.

2.2.3 Changing perceptions of developing countries

The argument by developing countries to move IPR issues from the TRIPs Council of the WTO to WIPO is influenced by the perception that WIPO is more developing country friendly than the WTO. Prior to the inception of the WTO, WIPO proactively promoted policies that seemed to favour developing countries. Today, however, WIPO has had to adjust itself to meet new realities in the global era of the governance of IP. This adjustment has been characterised by practices such as adoption of arbitration mechanism in certain areas on IP and attempts at harmonisation/internationalisation of standards. For example, WIPO's work on a patent law treaty brings with it both costs and benefits for developing countries. There is also an ongoing endeavour in WIPO on traditional knowledge and folklore. While many developing countries are likely to support this work on the ground that they are the main producers of such creations, it is worth pointing out that this may not necessarily be the case. Besides the fact that 'African countries have received little assistance from the WTO, WIPO or other relevant organization with regard to IPRs ... whenever any assistance is forthcoming it appears to be disadvantageous from a developing country perspective' (footnotes omitted).⁴³ For instance, if some developing countries that turned to WIPO for legislative assistance were made to implement in their national IP laws more extensive protection than is otherwise required under the already onerous TRIPs, it is difficult to see how WIPO can be regarded as being considerate towards the development concerns of the developing countries.

3. GURTs and IPRs

Both IPRs and GURTs provide control over the use of genetic material. However, GURTs are designed to provide a genetic, built-in protection against unauthorised

⁴³ Ayamunda, J. 2004. *Bilateralism and TRIPS*. Unpublished MLitt thesis (Oxford University 2004) 1525.

reproduction of the seed or the added-value trait. GURTs thus may be broader, more effective and less limited by time constraints than the protection conferred by IPRs.⁴⁴

Due to the potential adverse impacts of GURTs on food security, agro-biodiversity, environment, and so on, policy and regulatory concerns have tended to unduly revolve around whether and how IPRs mechanisms might be used to discourage GURTs. This approach is inadequate, largely because even where IP legislation invalidates IPRs on certain types of GURTs, for example those that are adjudged repugnant to the national food policy, that invalidation does not necessarily mean that those particular GURTs will no longer be in use. This is so because of the very nature of GURTs – which are capable of being applied irrespective of whether or not they are subject to legal protection, that is, the biological, built-in mechanism prevents infringement. In fact, there seems to be anecdotal evidence to suggest that denial of patents on GURTs could actually encourage their commercial use.⁴⁵ Therefore, the most appropriate approach to discouraging the use of GURTs is a mix of policy and regulatory tools restricting use.

However, regarding the potential impact of GURTs on the regulatory framework, FAO recommends that:

GURTs, by increasing the level of technological protection over the product, may result in a significant lowering of transaction costs that would otherwise have been required to enforce the intellectual property protection through legal channels, and may ensure such protection in countries with no IPR systems in place. This could ensure a higher return to breeders and thus motivate increased R&D investments. If the higher returns were passed on to the farmer, this might result in cheaper seed. The policy question facing governments is whether increased technological protection to genetic resources by GURTs is desirable, and how this would interface with IPR regimes. In this, governments may wish to distinguish between GURTs

⁴⁴ Jefferson, R. et al, above footnote 2.

⁴⁵ Jefferson, R. et al, above footnote 2 & UNEP/CBD/SBSTTA/4/9/REV/Annex 1 *above* footnote 2.

applications that offer intrinsic production increases, and those that serve merely as use restriction strategies.⁴⁶

The US, commenting on the FAO Report, points out that this recommendation (that countries may discriminate in their national laws between those GURTs that enhance agricultural production and those that mainly serve to restrict use of specific genetic material) fails to take into account countries' obligations under international regulatory instruments such as TRIPs. They point to TRIPs Article 27.1 forbidding discrimination against types of technologies. In their view, therefore, the recommended approach might violate TRIPs.

Likewise, Article 27.2 of TRIPs states that:

Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by domestic law.

The FAO Report refers to this provision. A number of concerns, however, still remain. First, already many countries that are parties to TRIPs have opted to exercise their rights under that provision by expressly providing in their relevant national regulatory frameworks that IP protection would be denied on technologies that represent a danger to the environment or to human, animal or plant health. However, the difficulty is that to date there has been no conclusive evidence that GURTs actually pose such a danger. But having said that, WTO Members that are also parties to the CBD and the Cartagena Protocol on Biosafety can apply the precautionary principle and, hence, prohibit deployment of negative traits of GURTs on that basis.⁴⁷

⁴⁶ CGRFA 9/02/17 Annex, 'Potential Impacts of GURTS on Agricultural Production Systems: Technical study' [44].

⁴⁷ There is an ongoing dispute before the WTO dispute settlement bodies between the United States and the European Union regarding the alleged failure by the EU to apply its Regulations to allow for importation

Second, and perhaps more importantly, even if one were able to exclude from IP protection certain GURTs under Article 27.2 of TRIPs, there might still remain the other problem of restricting use. As discussed above, exclusion from patentability does not necessarily mean that the technology may not be used.

Within the context of the CBD, an ad hoc Technical Expert Group meeting on the potential impacts of genetic use restriction technologies on smallholder farmers, indigenous and local communities and farmers' rights was held in 2003.⁴⁸ The meeting identified potential positive and negative impacts of GURTs on smallholder farmers and indigenous and local communities. The main negative impacts identified included gene-flow and environmental containment where the genes could escape and pass on to other members of the same or other species. This was perceived as being of particular concern in the centres of origin. The biosafety advantage of GURTs – particularly V-GURTs sterility – which makes the technology potentially useful in preventing unwarranted escape of genetic material into the wild – was seen as promoting genetically modified crops. In addition, the promotion of GURTs could prevent and/or reduce further research on gene containment alternatives at a legal and biological level. Other potential negative impacts included reduced availability of new varieties, unintentional use of GURTs food grain as seed, dependency, intentional misuse and diversion of agriculture research and development resources from the public sector to the private sector.⁴⁹ The potential impacts of GURTs on Farmers' Rights were identified as a restriction on traditional practices, such as seed saving, farmer breeding and unhindered exchange of seeds. GURTs were also seen as increasing opportunities for the appropriation of genetic resources by the developers and owners of the technology, beyond the possibilities of hybridisation, outside the bounds of patents, other IPRs and regulatory systems. The appropriation and enclosure of elements of traditional knowledge and genetic resources through IPP for GURTs will negatively impact on the rights of smallholder farmers and indigenous and local communities to equitably

of genetically modified organisms, thereby instituting a barrier to trade. This dispute was decided in favour of the US in a preliminary report in February 2006.

⁴⁸ UNEP/CBD/SBSTTA/9/INF/6-UNEP/CBD/WG8J/3/INF/2, 29 September 2003.

⁴⁹ Annex 1, UNEP/CBD/SBSTTA/9/INF/6-UNEP/CBD/WG8J/3/INF/2, 29 September 2003.

participate in the sharing of benefits arising from the utilisation of plant genetic resources.⁵⁰

4. The potential impact of GURTs IPP in ESA

It must be stated right at the outset that there is no scientific evidence or any data that assess the impact of GURTs on agro-biodiversity and related issues in reference to the ESA region. However, a number of global studies conducted on GURTs generally and with particular reference to smallholder farmers, indigenous and local communities and farmers' rights may be of direct relevance to ESA.⁵¹

In brief, despite the lack of reliable scientific data, it is clear that GURTs could have numerous positive and negative impacts. One might therefore go along with the US suggestion that, given the novel challenges that GURTs pose, there is need for 'careful, sound, scientific, case-by-case assessment of these technologies' risks and benefits'.⁵² This must have been the view that informed the *de facto* moratorium. Given the grant of IPRs for GURTs, there is an urgent need to pay closer attention to critics of GURTs because their commercialisation in a globalised world is likely to have diverse impacts on differently placed farmers. The concerns about GURTs should spur more rigorous research.

Some of the potential benefits associated with GURTs include increasing the amount of R&D efforts devoted to 'value-added crops'; improving the ability to reduce unintended gene-flow from transgenic crop varieties to non-transgenic varieties and wild relatives of crops; and contributing important new basic knowledge of plant genomes and reproductive biology overall.⁵³ For innovators, GURTs present an opportunity to protect innovations through technology where legal measures in the form of IPRs offer inadequate protection.

⁵⁰ Annex 1, UNEP/CBD/SBSTTA/9/INF/6-UNEP/CBD/WG8J/3/INF/2, 29 September 2003. Ad hoc Open-ended Inter-Sessional Working Group on Article 8(j) and Related Provisions.

⁵¹ See e.g. *Report of the ad hoc Technical Expert Group Meeting on the Potential Impacts of Genetic Use Restriction Technologies on Smallholder Farmers, Indigenous and Local Communities and Farmers' Rights*. UNEP/CBD/SBSTTA/9/INF/6– UNEP/CBD/WG8J/3/INF/2 29 September 2003.

⁵² US Comments on CGRFA 9/02/17 Annex, 'Potential Impacts of GURTs on Agricultural Production Systems: Technical Study'.

⁵³ US Comments on CGRFA 9/0217 Annex.

Many of the ESA countries have their economies anchored in agriculture. The majority of the farmers are subsistence farmers. The impacts of GURTs have therefore to be seen within the context of smallholder farmers. The prediction is that GURTs will replicate the experiences in hybrid-based agriculture where there will be increased investment by private seed companies. Conversely, there will be reduced public expenditures in agricultural R&D.⁵⁴ Given that IPRs are private monopoly rights, it is likely that they will provide incentives to private actors to invest in GURTs as an additional protection for their innovations.

Over and above all these is the fact that the level of biotechnology development in ESA countries is low. Only a handful of countries are working on genetic modification technologies.⁵⁵ Similarly, many of the countries have not developed IPP regimes to cover biotechnology innovations. Consequently, it remains to be seen whether these countries will allow innovators to utilise GURTs to protect their innovations or to what extent GURTs will impact on access to seeds by farmers in the region.

5. Eastern and Southern Africa (ESA) approach to IPP

Many ESA countries are members of the WTO and have also signed and ratified the CBD. To that extent, they are bound to implement nationally the IPP provisions of TRIPs. Theoretically, they would grant IPP for GURTs since patents are available for all technologies. Article 27.1 of TRIPs Agreement stipulates that 'patents shall be available for any inventions, whether products or processes, in all fields of technology' and the patents shall be available and patent rights enjoyable without discrimination as to the field of technology. This provision implies that patents may be available in the biotechnological field. Further, Article 27.3 stipulates 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. This provision further consolidates the position with regard to the granting of IPRs in the field of biotechnology, particularly as it relates to plant

⁵⁴ Goeschl, T. & Swanson, T. 2002. The Impact of Genetic Use Restriction Technologies on Developing Countries: A Forecast. In Evenson, R.E. et. al. (eds). 2002. *Economic and Social Issues in Agricultural Biotechnology*. Oxon & New York: CABI Publishing. p. 93.

⁵⁵ These include South Africa, Kenya and Zimbabwe.

varieties. First, under the TRIPs Agreement, the subject matter of protection is left to the discretion of individual states, and therefore the scope of protection of products and processes of new technologies is uncertain. Second, countries exclude different subject matter from patentability, and thus unification and harmonisation of patent laws is a remote goal. The absence of criteria for patentability is favourable because each country, with distinctive public interests shaped by its level of economic development, is able to pattern its national patent laws to correspond to its development goals. This enables developing countries to use infant industry arguments to protect certain sectors from competition or limit the application of the general patent system in certain fields such as pharmaceutical or food industries.⁵⁶ Unfortunately, most African countries have not availed themselves of the flexibility allowed to them through TRIPs.

UPOV has been promoted as a *sui generis* mechanism for protecting new plant varieties. It creates its own system that requires that a plant variety be new, distinct, homogeneous or uniform and stable in order to be eligible for protection. There are four versions of UPOV.⁵⁷ The 1991 UPOV version restricts the plant breeder's and farmer's exemption by extending PBRs beyond the reproductive material to the harvested material. This form of UPOV entered into force in 1998 is currently the only available UPOV option for new membership. Countries such as Kenya and South Africa signed the 1978 version of UPOV in a bid to provide protection for plant varieties. This preempts opportunities for coming up with locally designed *sui generis* regimes for protecting plant varieties. *Sui generis* regimes provide an opportunity for defining national agenda and could provide a way of dealing with GURTs as a national development agenda item.

At the regional level, the only effort at defining a regime concerning biological resources is the model law on community rights on access to biological resources developed in the context of the Organisation of African Unity (OAU). It generally recognises the need to protect the rights of local communities over biological resources and their knowledge,

⁵⁶ This would involve extending protection to products and processes that are simple, adaptive, and appropriate to local conditions. It would also allow limitation of patentability to local products rather than granting protection to imports as well, thereby permitting imitation processes and products to thrive, and assisting in the development of these countries. The duration of patents should also be considered to be in line with the development concerns of the country. A shorter period may be conducive to development as the patented product or process quickly passes into public domain allowing others to use it.

⁵⁷ The International Union for the Protection of New Varieties of Plants (UPOV) was concluded in Paris in 1961, and revised in Geneva in 1972, 1978 and 1991.

innovations and practices. This implies at a minimum recognition in perpetuity of the fact that local communities are creators, users and custodians of their biological resources and knowledge. The model law accepts the principle that traditional ways of use or exchange of biological resources and knowledge between local communities will not be affected by the law put in place and also recognises the right of local communities to restrict access to their resources and knowledge. It further affirms local communities' inalienable right to keep, use, exchange or share their biological resources that sustain their livelihood systems. Some countries such as Namibia, Ethiopia and Uganda are in the process of domesticating some of the provisions of the OAU Model Law.

The need to protect the rights of communities is of great concern in ESA countries. Articles 8(j) and 10(c) of the Convention on Biological Diversity and Article 9 of the International Treaty on Plant Genetic Resources call for the recognition of these rights. The environment policy of Ethiopia, adopted in April 1997, acknowledges community intellectual property rights and decrees the need to create a system for the protection of community intellectual property rights. The concept of community intellectual property rights is a new concept. It is very difficult to define the subject matter of protection, who the holders of such a right are, and how the rights will be exercised and enforced. These are the issues that the OAU model legislation for the recognition and protection of local communities, farmers and breeders seeks to address.

5.1 The case for *sui generis* regimes as a counter to negative impacts of GURTs

The TRIPS Agreement provides that members may exclude from patentability:

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.⁵⁸

⁵⁸ Section 5, Article 27(3b).

Under this Article, countries can provide protection for plant varieties by patents and/or by any effective *sui generis* system. There are no parameters for a *sui generis* system and the term 'effective' is not defined. Although this is subject to the general principles of TRIPs and may be ultimately determined by WTO provisions, especially those relating to dispute resolution, TRIPs leaves wide latitude for interpretation. For that reason, each country can pattern its national laws to correspond to its particular circumstances and aspirations. One way of countering GURTs would be the protection and enforcement of community rights, farmers' and breeders' rights through a *sui generis* system. Such a system can be tailored to require limitations on protection of GURTs. Since innovations would be subject to the rights and interests of farmers, the incentives to come up with GURTs will be less in a situation where monopoly and individual IPRs are not available.

5.1.1 Community rights

One of the main concerns regarding community rights is determining what can be protected (and the strength of the protection). Article 8(j) of CBD calls for the protection of knowledge, innovations and practices of indigenous communities. In this context a *sui generis* system of legislation would be one that would recognise the unique status of *local* communities and their contribution to the conservation of biodiversity, sustainable use of genetic resources, and fair and equitable benefit-sharing arising from its use.⁵⁹ GURTs as a form of *technological control* are unlikely to provide the balance of societal and individual benefits that even mainstream IPRs seek to achieve.⁶⁰

In most African customary societies there are entities with the capacity of legal persons. These entities could receive recognition in national legislation and be vested with rights so as to keep away potential GURTs that can impinge on such rights. The nature of these groups is very well captured in the following statement on the land tenure system:

Access has always been specific to function, for example, cultivation or grazing. Thus, in any given community a number of persons could each hold a

⁵⁹ Cullet, P. 2005. *Intellectual Property Protection & Sustainable Development*. New Delhi: Lexis Nexis, Butterworths.

⁶⁰ Annex 1, UNEP/CBD/SBSTTA/9/INF/6-UNEP/CBD/WG8J/3/INF/2, 29 September 2003.

right, or bundle of rights, expressing a specific range of functions. In a typical case, therefore, a village could claim grazing rights over a parcel of land subject to the hunting rights of another, the transit rights of a third and the cultivation rights of a fourth. Each one of these categories carries with it varying degrees of levels of social organization. For example, while cultivation rights were generally allocated and controlled at the extended family level, grazing rights were a matter of much wider segment. The *raison d'être* of control was to guarantee these rights and to allocate them among other members of community should this be necessary.⁶¹

Community proprietary rights are in accord with TRIPs⁶² and the OAU Model Law on Community Rights.⁶³ The main problem in providing for community rights alongside individual ones is that the incentives for conservation in the former are both economic and social.

In reference to what might constitute an effective *sui generis* regime, the following are important considerations: The relevant legislation should be one that would provide mechanisms for protecting new plant varieties. Further, and more importantly, that protection need only be real and not necessarily the strongest possible. However, to be effective it must provide for the effective enforcement of IPRs, for example through a transparent judicial procedure and border control measures. While it is possible to enact a *sui generis* law for community rights and for plant varieties that takes into account farmers' rights, it is hard to see how certain regional regulatory models can nonetheless

⁶¹ Okoth-Ogendo, H.W.O. 1979. *Land Tenure and Transformation of Peasant Economies in Kenya*. Paper presented at the International Women's Year Tribune's Panel on the Family, Mexico City, Mexico, p. 153, quoted in Kiriro, A. & Juma, C. (eds.), 1991, *Gaining Ground: Institutional Innovations in Land-use Management in Kenya*. Nairobi: Acts Press. pp. 43 – 44.

⁶² TRIPs do not prohibit the development of additional protection systems or subject matter. Article 8 of TRIPs allows measures to be taken to protect public health and nutrition; and to promote the public interest in sectors of vital importance to their socio-economic and technological development. The cumulative effect of this is to entitle member countries to enact a law recognising community intellectual rights to safeguard their local knowledge systems as well as their informal innovations and thereby protect them from illegal exploitation.

⁶³ OAU African Model Law for the Recognition and Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources. Another international initiative to strengthen community rights is the UNESCO/WIPO 'Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and other Prejudicial Actions', UNESCO/WIPO, Paris 1985.

be TRIPs compliant.⁶⁴ Nevertheless, to some experts the major objectives of a *sui generis* system should be conservation of biodiversity and sustainable use of genetic resources.⁶⁵

Toward this end the regime must seek alternative mechanisms of protection of property rights of local communities. For instance, the regime should be a form of property rights substantively different from any existing systems, such as UPOV or patents,⁶⁶ have little emphasis on commercialisation; and be 'effective' in the sense that its definition of property rights cater for all concerned parties and be in harmony with other legal instruments.⁶⁷

5.1.2 Breeders' Rights

Granting breeders' rights is another way of countering GURTs. Under UPOV, plant breeder's exemption is allowed. This refers to the right of the breeder to use protected varieties for research. Additionally, farmers' exemption accords farmers the liberty to save harvested seed from protected varieties for replanting. Farmers' ability to store seed for replanting or utilise it for experimental purposes is curtailed under the 1991 UPOV version. However, member states may allow farmers to save seed for their own use.⁶⁸ Plant variety protection in the form of breeders' rights needs to safeguard this aspect, which is totally absent when GURTs are used. It is however noteworthy that UPOV, responding to the call by the 6th meeting of the Conference of the Parties to the CBD to comment on IPP implications of GURTs, noted that plant varieties containing GURTs were eligible for grant of Plant breeders' rights if they satisfied the conditions set.⁶⁹ It

⁶⁴ For example, the OAU Model Law appears to entirely reject any form of patentability of life forms.

⁶⁵ Cullet, P. 2001. Plant Variety Protection in Africa – Towards Compliance with the TRIPs Agreement. *Journal of African Law* 97.

⁶⁶ However, the regime for the protection of plant breeders' rights under Article 27(3) (b) of TRIPs will essentially establish IPRs albeit in a unique manner.

⁶⁷ Above footnote 58, pp. 10 – 12.

⁶⁸ It is instructive to note that although other articles of TRIPs refer to other agreements, Section 5, Article 27. 3 (b) does not refer to UPOV. It is not clear whether this omission means that UPOV is not an effective *sui generis* system or that it was meant to give parties a wider space of designing their regimes.

⁶⁹ Position of the International Union for the Protection of New Varieties of Plants (UPOV) Concerning Decision VI/5 of the Conference of the Parties to the Convention on Biological Diversity (CBD) Communicated to the CBD Secretariat as adopted by the Council on 11 April 2003.

further opined that an effective system of breeders' rights protection would preempt the need to rely on other systems of protection such as GURTs.⁷⁰

Local communities feel that they should be guaranteed rights so as to enable them to breed new varieties that maintain genetic diversity in their communities.⁷¹ Most traditional varieties are locked out. If the criterion is made broader there is the risk of broadening property claims (including for GURTs) and subsequently limiting the nature of the right granted. Further, any 'effective' *sui generis* system must clearly define what is protected. Due to the leeway in Article 27.3(b) of TRIPs, the term 'plant variety' could be defined in various ways. In the interests of protection, compensation and conservation, the traditional PBRs system's criteria (requiring distinctiveness, stability and uniformity) could be abandoned and replaced by the sole criterion of identifiability. Such a system would effectively cover the interests of both local communities and large-scale commercial breeders.

5.1.3 Farmers' rights

This concept was given an international impetus in 1989 when it was recognised by the FAO International Undertaking on Plant Genetic Resources. Farmers' rights have been defined as 'rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity'.⁷²

It is worth noting that farmers' rights emerged as a counter-measure in response to the growing use and expansion of plant breeders' rights, particularly within the context of UPOV whose remit is breeders' rights and not farmers' rights. The term was not legally defined and to date there is widespread disagreement on the nature of the rights,⁷³ with efforts being made at both the international and national levels to interpret the term as a legal concept.

⁷⁰ Ibid.

⁷¹ Acharya, R. 1992. *Intellectual Property, Biotechnology and Trade: The Impact of the Uruguay Round on Biotechnology*. Nairobi: Acts Press. P. 16.

⁷² Bragdon, S.H. & Downes, D.R. 1998. *Recent policy trends and developments related to the conservation, use and development of genetic resources*. Rome: IPGRI. Page 27.

⁷³ Cullet, P. above, footnote 59.

As a legal term, it would be necessary to define the rights, say, as a form of IPRs. These rights would cover, for example, the products of farmer selection and breeding. As noted above, GURTs may threaten traditional practices such as seed saving, farmer breeding and unhindered seed exchange. Recognising and protecting farmers' rights is one way of securing these rights against appropriation by owners and developers of GURTs.

6. Strategic policy responses and way forward

It is worth pointing out that, firstly, GURTs are technologies and that no technology is innately good or bad. The utility of any technology depends on the use to which it is put. Secondly, GURTs as a technology is amenable to IPP. If they satisfy the criteria set out for granting IPRs, reasons would have to be found for refusing to grant the rights. TRIPs have provisions against discrimination based on the nature of the technology or invention. Consequently, the application of GURTs in ESA is unlikely to be countered through non-recognition of GURTs or IPP for GURTs. Countries have to opt to either grant no IPP for GURTs or to limit the IP protection given for GURTs through explicit legislation. The following are some strategic measures that can be used to link GURTs and IPP with sustainable development.

6.1 Assessment of benefits, costs and risks of GURTs and IPP

In determining whether or not to disallow or limit IPP for GURTs, it is imperative that ESA countries assess the impacts of both IPP and GURTs on food security, agriculture and the environment in the region. This assessment should be followed by a determination of what measures the countries should take to counter the negative impacts while building on the potential positive impacts of GURTs. The analysis in Table A on benefits, costs and risks is informative and can form an initial basis for assessment.

6.2 Alignment with national development imperatives

The assessment of benefits, costs and risks should be followed by an alignment of GURTs and IPP with strategic needs, such as food security, sustainable agro-biodiversity management and environmental sustainability. It should also include an assessment of

the role of seed industry and local farmers in seed management activities. An appropriate regime could then be tailored to motivate all actors within their contexts, given that the motivation of private seed companies may be economic while that of farmers may be both economic and social.

6.3 Use of flexibilities under TRIPs

If IPP is deemed to be a useful tool in this regard, countries should determine the best way to utilise it without flouting obligations under TRIPs. The use of flexibilities under TRIPs is one way of exempting particular technologies from patentability, especially if they are a threat to national security. Framing a food security or environmental sustainability argument as a national security concern is one way in which ESA countries can limit the negative impacts of GURTs and IPP. If GURTs are proven to impact adversely on access to seeds by farmers and this is linked to national food security, a country may be able to argue that it will not grant patents for GURTs. Experiences from the access to medicines initiative would be useful in this regard.

6.4 Regulation

Regulation of the application of GURTs should be established to ensure that the negative impacts are minimised while the positive ones are harnessed. Mechanisms such as compulsory licensing can be used to make GURTs available where this is deemed important for national food security. Where GURTs are likely to lead to reduced public R&D investment as investors concentrate on financially rewarding ventures, concerted efforts should be made to ensure that strategic investment in public sector research takes place to make R&D results available to resource-poor farmers.

6.5 Engagement in ongoing debates on GURTs

There is also a window of opportunity presented/granted by the Article 8(j) Working Group of the CBD, which was mandated to examine the socio-economic impacts of

GURTs.⁷⁴ Countries in ESA should participate effectively in this working group to bring their perspectives to bear on the findings and the actions. Article 8(j) provides that each contracting Party shall:

Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

This provides a context for bringing in the protection of community, breeders and farmers' rights as a counter to negative impacts of GURTs. Indeed, having GURTs addressed under this provision provides a context for linking IPP to technology and exigencies of equity in the sharing of benefits by taking into account the multiplicity of actors involved in the conservation and management of biological resources.

6.6 Development of a *sui generis* regime

The negative impacts of GURTs and IPP on sustainable development can be countered through the fashioning of an effective *sui generis* regime. The core elements of a *sui generis* national policy and legislation for plant varieties should include the following:⁷⁵

- Recognition and protection of the rights of local communities. Additional requirements such as allocating value for cultivation and use (to provide incentives for innovation in the interests of local needs such as food security) and declaration of origin (to help establish whether prior informed consent was obtained) may be set up.

⁷⁴ Decision VII/16(D), Article 8(j) and Related Provisions, in *Report of the Seventh Meeting of the Conference of the Parties to the Convention on Biological Diversity*, UN Document: UNEP/CBD/COP/7/21 (2004).

⁷⁵ Kameri-Mbote, P. 2003. Community, farmers' and Breeders' Rights in Africa: Towards a Legal Framework for *sui generis* Legislation. *University of Nairobi Law Journal* (2003).

- Recognition and protection of farmers' and community rights without the need for registration.
- Restriction of breeders' rights to exclude harvested crops.
- Limitation of the concept of an essentially derived variety.
- Enhancement of farmers' privilege to save seeds.
- Public interest broadly construed must prevail over plant breeders' rights.
- Enhancement of plant breeders' exceptions such as research.
- Provision for compulsory licensing.
- Full consideration of environmental and ethical concerns.
- Promotion of food and health security.

National law should assist not only in contributing to the sustainable management of biodiversity but also in giving and allocating property rights to local innovators as well as to all other actors in the seed and agriculture industry. Accordingly, the following measures are proposed:

6.6.1 Community rights⁷⁶

The community should be defined as a legal entity referring to a group of people having a long-standing social organisation and include indigenous people and local communities. Such a community should have inalienable rights over its biological resources, innovations, practices, knowledge and technology (including the community's right to use and collectively benefit from those resources). The recognition of the community's intellectual rights should not be predicated on registration, and customary laws and practices of communities should be applicable to community rights.

Any access to biological resources belonging to a community should be subject to prior informed consent of the community through an established procedure. Further, the right to use resources should be coupled with the corresponding duty towards the conservation and sustainable use of biological diversity. The existence of concurrent rights for a number of persons in a community should be permitted so that each member

⁷⁶ Above footnote 75.

may hold a right, or bundle of rights, expressing a specific range of functions. Where the community institutions have disintegrated, the rights should be vested in a trustee appointed by the state to hold in trust for concerned communities.

6.6.2 Farmers' rights

Farmers' rights should be expressly recognised and protected as the rights arising from the past, present and future contributions of farmers in conserving, improving and making available plant genetic resources. Like community rights, these rights must not require prior declaration or registration. The rights must be defined as a form of IPR and would cover the products of farmer selection and breeding, and the traditional resources that contribute to the conservation, development and sustainable use of plant and animal genetic resources. They would include rights to use, exchange and market farm-saved seeds, to protect traditional knowledge, and to make use of benefit sharing and participation in decision making at the national level. They must also include the right to information so that farmers can participate effectively in the decision-making process. Additionally, the customary laws and practices of the concerned communities must be applied in the protection of farmers' rights.⁷⁷

6.6.3 Breeders' rights

The core elements of a *sui generis* national policy and legislation on plant varieties should include the recognition and protection of the rights of local communities (such as the requirement that their prior consent must be sought). There should be no creation of rights in favour of third parties in respect of local varieties. Breeders' rights should allow for farmers' rights to produce and/or sell plants, and propagating material of the protected variety on a non-commercial basis must be respected. Additional requirements such as value for cultivation and use (to provide incentives for innovations in the interests of local needs such as food security) and declaration of origin (to help establish whether prior informed consent was obtained) may also be instituted.

⁷⁷ Above footnote 75.

Identifiability (and distinctness) of the new variety should be the only criteria of eligibility for recognition and protection. The requirements of uniformity and stability could be applied in a very flexible manner. This is in the interest of protection, compensation and conservation. Such a system would effectively cover the interests of both local communities and large-scale commercial breeders. However, the plant grouping may still have to be distinct. In the public interest, provision should be made for compulsory licensing or limitation on the number or type of varieties. Public interest should be broadly construed to prevail over plant breeders' rights but ensure compensation and due process of the law through provisions for the effective enforcement of IPRs, for example through a transparent judicial procedure. Further, the duration of plant variety protection for commercial breeders should, as much as possible, conform to the socio-economic context and circumstances of each country. Full consideration of environmental and ethical concerns should be made by, for instance, excluding protection of certain plant varieties in order to protect plant life or the environment; prohibiting the patenting of plants, animals and traditional knowledge; including biosafety provisions such as the ban on the protection of varieties injurious to biodiversity; and promoting food and health security.

6.6.4 Benefit sharing

Benefit sharing needs definition in key areas. These include the mechanisms of benefit sharing, namely who should receive benefits, and what constitutes a benefit. Benefits can be a form of compensation, reward or recognition. Benefits may include royalties, lump sum fees, technology transfer and training, business ventures and development assistance (especially in the context of community rights).⁷⁸

Fair and equitable sharing of benefits should also be defined. Prior informed consent and declaration of origin are critical instruments for the implementation of benefit-sharing mechanisms, and could also be used as additional protection requirements. One option is to place the resources in trust with the government. Concerned groups could then make claims to the government. Another option is to create community funds or trusts

⁷⁸ Above footnote 75.

into which royalties could be channelled. Establishing registers would go a long way towards facilitating benefit-sharing mechanisms. Alternatively, community group representatives could be registered and used as custodians of these resources.⁷⁹

Specific descriptions should be provided of the manner in which benefit-sharing arrangements should be negotiated. Fair and equitable sharing of benefits should cater for the coffers of government, private and public sector institutions and local communities. Legal guarantees should include biodiversity-collecting regulations. The critical elements of such legislation should include user fees where appropriate and provisions for the equitable sharing of benefits.⁸⁰

Contractual agreements should be developed for access to biological resources. In the context of joint research and development, technology transfer could be used as a form of benefit sharing. Access and sharing of benefits should depend on various factors such as the nature of the objective (for example commerce or education/research). Commercial research agreements could also be more rigorous in pursuit of benefit sharing.

6.6.5 Institutional and administrative frameworks

Sui generis policies and legislation should provide for the establishment or designation of appropriate institutions for their effective implementation. These institutions could include a national institute or other authority and a national trust fund (for distribution of benefits). A judicial or administrative enforcement structure should be set up. Most countries' environmental management authorities have formulated draft regulations on the national environment. These regulations contain the recognition and appreciation of farmers' and community rights and traditional knowledge systems. The authorities are mandated to promulgate regulations on access to genetic resources including guidelines on benefit sharing.⁸¹

⁷⁹ Above footnote 75.

⁸⁰ Above footnote 75.

⁸¹ Above footnote 75.

National policy and legislation can go a long way towards achieving the objectives of conservation, development and equitable benefit sharing. However, legislation alone may not be sufficient. There is also a need to enhance capacity building in terms of research and training as well as institutional, legal, commercial, technological, informational and human capacity.⁸²

Above are some of the institutional and technical matters of particular concern to developing countries. Community and farmers' rights must be recognised at the outset. Only then can the different interests be balanced with the need for active participation by all players. Countries may need to strengthen regional approaches to benefit from stronger negotiating positions. The East African Community (EAC) and the South African Development Community provide the context for cooperation in areas of food security and natural resources.⁸³

7. Conclusion

The development of GURTs needs to be contextualised within the broader agenda of providing greater protection for technology developers. GURTs provide additional technical protection where legal protection is deemed inadequate. Consequently, a country's approach to IPP for GURTS must of essence be informed by the level of technological development and the use to which GURTS will be put. We have pointed out above that the development of IPP regimes in ESA countries needs to be informed by the context within these countries – the dearth of technological expertise and the prevalence of subsistence agriculture practised by local farmers. Though these countries are members of the WTO under which there is an agenda for internationalisation of IPP, they still have some room to craft IPP regimes informed by the local conditions. In the area of GURTs, such legislation is necessary to ensure that IPP and GURTs do not negatively impact on the economies in the region, which are based largely on agriculture.

There is a need to look at the relevance of *sui generis* regimes within which to deal with IPP for GURTs, so as to take into account the eccentricities of the countries and the

⁸² Above footnote 75.

⁸³ Above footnote 75.

region. We have outlined the basic tenets of such *sui generis* regimes for ESA countries. It is, however, important to note that while national initiatives are very critical, it is imperative that the ESA region develop a regional approach to the issues of IPP and GURTs. Such an approach can both inform their engagement in international discussions relating to GURTS under the CBD, WIPO, UPOV and FAO as well as provide the basis for informed and effective individual country initiatives.

From the perspectives of technology developers and users, IPP and GURTs serve distinct purposes. There is a convergence of interests for the technology developer in instances where GURTs are amenable to IPP. It is in the light of this that ESA countries should make explicit legal provisions based on GURTs. Such provisions should entail greater protection for the rights of farmers and local communities and the regulation of GURTs. ESA countries should restrict the application of GURTs by exempting them from IPP unless they are proven to be beneficial to the local communities and nation.

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