

WAGENINGEN UNIVERSITY

**SEED SYTEMS AND INTELLECTUAL PROPERTY RIGHTS: AN
INVENTORY FROM FIVE SUB SAHARAN AFRICAN COUNTRIES**

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Executive Summary

Many developing countries are in the process of developing or updating their national Intellectual Property Rights (IPRs) systems in order to adhere to international agreements. With respect to the agricultural sector in developing countries, the importance of implementing a Plant Variety Protection (PVP) system that suits national and local needs and conditions is of utmost importance. Developing country economies are highly dependent on their agricultural sector for income, employment and food and, at the same time, approximately 75% of the world's hungry and poor live in rural areas and are involved in agriculture. As protection mechanism in the market, PVP rights can stimulate investments in plant breeding and promote the dissemination of agricultural innovations. Yet, a PVP system that effectively disallows the exchange of seeds by farmers will obstruct access to new protected varieties since smallholder farmers almost exclusively source such varieties from informal sectors.

The challenge for developing countries is to create an IPR system that suits both their commercial, national food security, and smallholder farmers' interests. This report aims to assist in that endeavour by analysing the current status of IPR legislation and regulations regarding seed in five African countries: Burkina Faso, Kenya, Rwanda, Tanzania and Uganda; and the international and regional IPR organisations that encompass them: in particular OAPI and ARIPO. In addition, we investigate the possibilities for, and examples of, a PVP system that creates different levels of protection in order to fit the needs and characteristics of the various seed systems that exist in a given country –i.e. both formal (public and/or private sector based) and informal (farmers and community based) seed systems.

This is what we call a differentiated PVP regime: a PVP system that creates different levels of protection for different crops and/or with respect to different groups, in order to recognize the importance of the various seed systems and to respond to the needs and interests of the diverse stakeholders involved. We analyse the legal space provided by the international IPR regime (particularly the TRIPs agreement and UPOV conventions) for countries to adopt such an approach, in combination with a typology of the main seed systems that exist in the five target countries. Data has been derived from desk studies, expert interviews in the Netherlands and the five target countries, and a regional workshop that was held in Nairobi, Kenya on 3-4 October 2012.

Kenya, Rwanda, Tanzania and Uganda are members of the African Regional Intellectual Property Organisation (ARIPO), while Burkina Faso is a member of its West African counterpart the Organisation Africaine de la Propriété Intellectuelle (OAPI). Not only these two regional organisations coordinate the development of intellectual property law and policies in line with the international developments, they also handle a considerable amount of tasks in respect of registration and administration of some IP regionally, on behalf of the member states. There is however a key difference between these two organisations. OAPI effectively plays the role of both a national and common intellectual property office for each member state, meaning that in respect of plant variety protection for example, a PVP certificate applied for and granted from the OAPI headquarters in Yaoundé Cameroon targeting one country will be enforceable in all the member countries of the organisation. As opposed to OAPI, ARIPO administers a number of IP protocols on patents, trademarks and designs and largely undertakes substantive examination of the applications filed at the national level. The actual protection is down to a specific jurisdiction and the intellectual property title granted will only be valid in the territorial boundaries of that jurisdiction.

Specifically in respect of the systems of plant variety protection operating in the two regional international organisations (OAPI and ARIPO), this reports finds that OAPI already has a plant variety protection regime which is enshrined in annex X of the 1999 revised Bangui Agreement; while ARIPO is still in the process of developing the ARIPO legal framework for the protection of new varieties of plants. Both regimes are shaped to be compliant with the 1991 version of the UPOV Act, this approach being an indication of these organisations' plans to apply for and eventually join UPOV as full members under the 1991 Act. Alongside OAPI and ARIPO, other economic organisations and

policy research-led organisations namely COMESA and ASARECA, are pursuing initiatives aimed at promoting policy development in the agriculture sector in the sub regions, in particular the harmonisation of seeds regimes and intellectual property policies across countries.

With regards to the national legislations pertaining to seeds in all the five study countries, this research finds that each of the countries has a seed law in place. Concerning the alignment of these regimes to the international standards on seed quality control, it emerges that Burkina Faso and Rwanda are neither members of the OECD Seed Certification Standards Scheme nor members of the ISTA seed testing standards. This may be a reflection of the acute lack of implementing regulations of the national seed legislations of these two countries, more than in the other study countries. Such implementing regulations effectively target quality control on such areas as seed production, processing and labelling for the purpose of commercialisation. Of the remaining countries, Kenya and Uganda are members of both the OECD seed certification scheme and of ISTA seed testing standards.

Alongside the seed legislations, most countries selected have or are in the process of developing or amending their plant variety protection regimes with the exception of Rwanda where there has been no indication of plan to develop a national PVP law soon. Burkina Faso, as a member of OAPI is bound by the PVP regulations included in Annex X of the 1999 Revised Bangui Agreement. In November 2012, the Tanzanian Parliament passed its 2012 PVP Bill, which is now awaiting presidential assent to become an Act. The passing of this Bill represents an important step on the materialisation of Tanzania's ambition to join UPOV as a full member under the 1991 Act. Uganda is still in the process of discussing its PVP Bill which is currently going through parliament, while Kenya is also in the process of amending its current Seeds and Plant Varieties Act, with the new Bill going through parliament. Policymakers in both Uganda and Kenya are hoping that the conclusion of these processes will lead to the countries joining UPOV as full members under the 1991 Act. In the case of Kenya, this will mean an upgrade from its current membership under the 1978 Act.

The importance of the UPOV system for stimulating plant breeding and harmonizing IPR standards was emphasised by the participants of the regional workshop in Nairobi. However, it was also recognized that in its current form, the UPOV system does not recognize informal seed systems. There are different typologies of seed systems operating in the five countries. These are farmer-based seed systems, community-based seed systems, public formal seed systems, mixed public-private seed systems, relief seed systems, and pure private value chains. For a myriad of reasons, informal seed sources (farmer-based, community based and relief seed systems) are the main supply channel of seed to smallholder farmers. For as long as farmers have inadequate access to farm input markets; access to credit to purchase seed remain limited; and market channels will remain unfavourable to farmers in remote areas, informal seed sources will continue to reign supreme in these countries. It is therefore recommended that these seed systems also require strengthening and recognition within the existing policy infrastructure. The report notes that already with the support of the Dutch government and institutions, the African Union Commission through the Integrated Seed Sector Development Project (ISSD), is engaging a number of African countries on the need for and mechanisms to strengthening their informal seed sector.

The TRIPs agreement provides countries with considerable flexibility to develop IPR laws that fit their national priorities with respect to agriculture. In particular, it allows member countries to (only) provide for a *sui generis* system for the protection of plant varieties without defining the components such system should be composed of. As such, the TRIPs agreement certainly allows for the establishment a differentiated PVP system. The UPOV 91 Act only allows for a differentiated PVP system to some content. A good example is the EU Council Regulation on Community Plant Variety Rights, which creates three levels of protection by including a list of crops for which the farmers' privilege applies, and by excluding small farmers from the requirement to pay a remuneration to the breeder. Seed exchange among farmers is not permitted under UPOV 91.

Given the importance of informal seed systems for the provision of seed and the conservation of agro biodiversity, several proposals have been made to amend UPOV 91 in such a way that the exchange

of farm-saved seed for certain crops and/or farmers is permitted. For example, by creating a separate PVP right for open pollinated food crops; by expanding the private and non-commercial use exemption to resource-poor farmers; or by broadening the farmers' privilege. Such amendments would obviously increase the legal space member countries have to establish a PVP system that recognizes and suits their different seed systems. Discussion on these proposals and on the concept of a differentiated PVP regime within UPOV circles is therefore to be encouraged.

Some developing countries have or are in the process of developing an alternative *sui generis* system for plant variety protection. Malaysia, for example, has a PVP law that follows the contours of UPOV '91 but added special provisions to facilitate the protection of farmers varieties and the needs of smallholder farmers. The Ethiopian draft PVP law creates three levels of protection as it intends to include a list of crops by ministerial directive for which farmers have no right to reproduce seed on farm, while for all other crops they have, and smallholders are also allowed to exchange and sell farm-saved seed amongst themselves. The African Model Law, and the PVP laws in some Asian countries, include ABS provisions as part of their objective to recognize and secure the full spectrum of farmers' rights and rights of traditional communities as derived from the CBD and ITPGRFA.

With respect to a differentiated PVP system, the workshop participants observed that one of the main difficulties is to define the different levels of protection in practical and legal terms. To further reflect on the form, feasibility and realisation of a differentiated PVP system in the five target countries, an intensive round of consultations will be needed with policymakers and relevant stakeholders on a country per country basis. Depending on the country, such process will have to involve capacity building components tailored to the needs of different stakeholders, and formula that facilitate transparency and the inclusion of all stakeholders involved.

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List of Acronyms

ACP Group: African Caribbean and Pacific Group
ARIPO: African Regional Intellectual Property Organisation
ASARECA: Association for Strengthening Agricultural Research in Eastern and Central Africa
ASBP: Africa Seed and Biotechnology Programme
AU: Africa Union
BRELA: Business Registration and Licensing Agency –Tanzania
CAADP: Comprehensive Africa Agricultural Development Programme
CBD: Convention on Biological Diversity
CBSD: Cassava Brown Streak Disease
CCT: Christian Council of Tanzania
CMD: Cassava Mosaic Disease
COMESA: Common Market for Eastern and Southern Africa
CONAGREP: Commission Nationale de Gestion des Ressources Phytogenetiques
CRS: Catholic Relief Services
DUS: Distinctiveness, Uniformity and Stability
EAAPP: World Bank funded East Africa Agricultural Productivity Programme
EAC: East African Community
EC: European Commission
EDV: Essentially Derived Varieties
EPAs: Economic Partnership Agreements
ESARIPO: English Speaking African Regional Industrial Property Organisation
EU: European Union
FAO: Food and Agriculture Organisation of the United Nations
FTAs: Free Trade Agreements
GLCI: Great Lakes Cassava Initiative
GMOs: Genetically Modified Organisms
GNIS: French National Seed and Seedling Association (Groupement National Interprofessionnel des Semences et Plantes)
ICRISAT: International Crops Research Institute for the Semi-Arid Tropics
IPRs: Intellectual Property Rights
ISAR: Rwanda Agricultural Research Institute
ISSD: Integrated Seed Sector Development
ISTA: International Seed Testing Association
ITPGRFA: International Treaty on Plant Genetic Resources for Food and Agriculture
KEPHIS: Kenya Plant Health Inspectorate Services
LDCs: Least Developed Countries
MAIF: Ministry of Agriculture Animal Industry and Fisheries-Uganda
MTA: Material Transfer Agreement
NARO-Uganda: National Agricultural Research Organization
NPT: National Performance Trials
NVRC: National Variety Released Committee
NWO: Netherlands Organisation for Scientific Research
OAPI: Organisation Africaine de la Propriété Intellectuelle
OECD: Organisation for Economic Cooperation and Development
PBRO: Plant Breeders' Rights Office
PBRs: Plant Breeders' Rights
PVP: plant Variety Protection
PVPO: Plant Variety Protection Office
QDS: Quality Declared Seeds
RADA: Rwanda Agricultural Development Authority
RDW: Rwandan Development Board

SMTA: Standard Material Transfer Agreement
TOSCI: Tanzanian Official Seed Certification Institute
TRIPS Agreement: Agreement on Trade Related Aspects of Intellectual Property Rights
UPOV: International Union for the Protection of New Varieties Plants
USPTO: United States Patents and Trademark Office
USRB: Uganda Services Registration Bureau
WTO: World Trade Organisation

Chapter one: Introduction

Bram De Jonge & Marcelin Tonye Mahop

Intellectual Property Rights (IPRs) are generally understood to promote investments in knowledge creation and business innovation by granting exclusive rights to right-holders to prevent others from using newly developed technologies, goods and services without their permission. In return for the exclusive right, the inventor is required to disclose the invention and is stimulated to disseminate the new knowledge and technologies through innovations on the market. In principle, this should be for the benefit of both the innovator and society at large. This is reflected in the objective of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) of the World Trade Organisation (WTO):

The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations.¹

The TRIPs agreement sets minimum standards on the protection of intellectual property for all member states of the WTO. Since its enactment in 1994, many developing countries have started to develop or upgrade their IPR systems in order to adhere to the international standards. However, the IPR models on which these standards are based have their origin in the industrialised countries. Their value for, and compatibility with, the socio-economic conditions in developing countries is therefore disputed.

One of the main arguments for developing countries to implement and enforce international IPR standards is that this will facilitate their integration in the world economy, stimulating much needed technology inflows in the form of foreign direct investments, licensing and exports.¹ There is, however, little scientific evidence that supports this argument, especially regarding countries with weak technical absorptive capabilities.² On the contrary, historical evidence seems to suggest that many developed countries have benefited from reverse engineering and imitation facilitated by weak IPR regimes in the course of their development.³

With respect to the agricultural sector in developing countries, the importance of implementing an IPR system that suits national and local needs and conditions is of utmost importance. Developing country economies are highly dependent on their agricultural sector for income, employment and food and, at the same time, approximately 75% of the world's hungry and poor live in rural areas and are involved in agriculture.⁴ Access to new agricultural technologies is important for farmers to improve their situation or even to cope with changing conditions such as climate change or decreasing soil fertility. As a farm input, seed is an important carrier of technology that enables farmers to meet their

¹ Maskus, 2000. Intellectual Property Rights in the Global Economy. Washington DC: Institute for International Economics;

² Hassan, Yaqub, Diepenveen, 2010. Intellectual Property and Developing Countries: A review of the literature. http://www.rand.org/content/dam/rand/pubs/technical_reports/2010/RAND_TR804.pdf; Lall, Sanjaya, 2003. "Indicators of the relative importance of IPRs in developing countries," Research Policy, Elsevier, vol. 32(9), pages 1657-1680, October.

³ Commission on Intellectual Property Rights, 2002. Integrating Intellectual Property Rights and Development Policy. http://www.iprcommission.org/papers/pdfs/final_report/ciprfullfinal.pdf; Linsu Kim, 2003, Technology Transfer &

Intellectual Property Rights: The Korean Experience. http://ictsd.net/downloads/2008/06/cs_kim.pdf

⁴ FAO, 2005. State of Food Insecurity in the World 2005. Eradicating world hunger – key to achieving the Millennium Development Goals, <ftp://ftp.fao.org/docrep/fao/008/a0200e/a0200e.pdf>

pressing needs. Yet, an estimated 80% to 95% of all seed used in developing countries is produced in informal seed systems, which means that the saving of seed on-farm, and the sharing of seed among neighbours and kin, is the main source of seed for most crops in developing countries. An IPR system that effectively disallows the exchange of seeds by farmers will obstruct access to new protected varieties since resource-poor farmers almost exclusively source such varieties from informal sectors.

In addition, by not taking local needs and conditions into account it is very unlikely that an IPR system will stir domestic innovation. There are very few impact assessment studies of IPR protection on plant breeding and agricultural development in developing countries. But the studies that exist generally observe little or no evidence of an increased number of plant varieties available to farmers apart from those producing for commercial (export) markets.⁵ Local research or R&D aimed at the needs of poor farmers is not stimulated, and some studies warn for the perverse incentives that IPRs can create for agricultural research organisations by steering research priorities away from food crops that do not have high commercial value.⁶

For these reasons, developing countries have been repeatedly advised to make as much use as possible of the legal space provided by the international IPR regime in order to create an IPR system that fits their national needs and objectives with respect to agriculture.⁷ Yet, as many developing countries are characterised by a dwindling public breeding sector and an emerging private sector, and by an increasing number of city dwellers next to large numbers of resource-poor farmers, the challenge for developing countries is to create a Plant Variety Protection (PVP) system that suits both their commercial, national food security, and smallholder farmers' interests.

This report aims to assist in that endeavour by analysing the current status of IPR legislation and regulations regarding seed in selected countries in Sub-Saharan Africa. In addition, an inventory will be made of the main seed systems that need to be distinguished in the target countries. Finally, we analyse the legal space that countries have to develop and/or adapt their PVP laws to the needs and conditions of these different seed systems. For that purpose, we will explore examples of, and proposals for PVP systems that establish different levels of protection for different crops and/or with respect to different groups. These are what we call differentiated PVP regimes that aim to recognize and strengthen the various seed systems that exist in developing countries and respond to the needs and interests of the main stakeholders involved.

This research project is commissioned by the Dutch Topsector Horticulture and Starting Materials, and funded by the Dutch Ministry of Economic Affairs, Agriculture and Innovation. The countries that have been selected are Kenya, Burkina Faso, Rwanda, Tanzania and Uganda. The short duration of the project has been utilized for an extended identification phase involving desk study, expert interviews and one week missions to the five target countries. In addition, a regional workshop was held in Nairobi, Kenya on 3-4 October 2012. During this workshop, discussions on country experiences were held with seed regulation specialists, plant breeders and IPR officials from the five

⁵ World Bank, 2006. *Intellectual Property Rights: Designing regimes to support plant breeding in developing countries*. Washington DC: World Bank Agriculture and Rural Development, Report 35517, http://siteresources.worldbank.org/INTARD/Resources/IPR_ESW.pdf; UPOV, 2005. *The Impact of Plant Variety Protection*, UPOV Publication No. 353(E); Rangnekar, D., 2002. 'Intellectual property rights and agriculture: An analysis of the economic impact of plant breeders' rights'.

⁶ World Bank, 2006. *Intellectual Property Rights: Designing regimes to support plant breeding in developing countries*. Washington DC: World Bank Agriculture and Rural Development, Report 35517, http://siteresources.worldbank.org/INTARD/Resources/IPR_ESW.pdf

⁷ Dutfield, G., Muraguri, I., Lerverve, F. 2006. *Exploring the flexibilities of TRIPS to promote biotechnology capacity building and appropriate technology transfer*. Final Report IPDEV Work Package 7. http://www.ecologic.eu/download/projekte/1800-1849/1802/wp7_final_report.pdf; World Bank, 2001. "Global Economic Prospects and the Developing Countries 2002: Making Trade Work for the World's Poor", World Bank, Washington DC, p. 133.

target countries. Apart from verifying and discussing national legislation and implementation processes, and the different seed systems that are to be discerned, workshop participants discussed the pro's and con's of implementing a differentiated PVP system in their countries.

Outline

The second chapter describes the international legal framework in which the target countries operate. An important dimension of this analysis relates to the sub-regional intellectual property schemes to which the selected countries are involved, which are those promoted by the African Regional Intellectual Property Organization (ARIPO), and its West African counterpart the Organisation Africaine de la Propriété Intellectuelle (OAPI). Furthermore, the report describes key international intellectual property and seed related instruments focusing on issues of farmers' rights and plant breeders' rights protection and seed certification and quality evaluation. The International instruments covered by the report include the 1978 and 1991 UPOV Conventions, the 1994 TRIPs agreement of the WTO, the 1992 Convention on Biological Diversity and its protocols, the 2001 International Treaty on Plant Genetic Resources (ITPGR) for Food and Agriculture of the FAO, and the OECD and ISTA seed certification and seed quality standards.

The third chapter reports on the identification missions that have taken place in order to analyse the IPR legislation regarding seed (i.e. patent law, PVP law, and seed laws) in the five target countries. This component has focused on the national legislation in place and its actual implementation, the international and regional IPR agreements/organisations to which the countries are members, and the (updating) processes that are currently taking place.

In the fourth chapter an inventory has been made of the main seed systems that need to be distinguished in the five target countries. It is worth stressing that, conscious of the time constraint, the conduct of the inventory of the typology of seed systems in the study countries has followed a general approach, considering that it was not feasible to undertake a detailed exploration of the seed systems of each country.

The fifth chapter analyses the legal space provided by the international IPR regime (particularly TRIPs and UPOV) in order to investigate the possibilities for developing countries to develop and/or adapt their patent and PVP laws to fit their national priorities with respect to agriculture. The chapter discusses the flexibilities countries have with respect to patent law and the *sui generis* option for the protection of plant varieties. Special attention will go to the possibilities for, and examples of, a differentiated PVP regime, and several PVP laws from countries and regions around the world are explored.

In the sixth and final chapter, we will bring together the findings of the previous chapters and reflect on the conclusions of the regional workshop in which the current IPR situation in the target countries and the perspectives on developing a differentiated PVP regime have been discussed. This will be followed by recommendations on the main actions that need to be performed in order to work towards the realisation of an IPR system that suits both commercial, national food security, and smallholder farmers' interests in the target countries.

The workshop was organised back to back with the project on Access and Benefit-Sharing Systems in Africa. Furthermore, collaboration and complementarity have been established with the Integrated Seed Sector Development (ISSD) project, and the project Intellectual Property Regimes for Pro-Poor Innovation in Agriculture, part of the research programme Responsible Innovation, which is financed by the Netherlands Organisation for Scientific Research (NWO).

Chapter two: The international and Regional Instruments and Processes Relevant to Plant Variety Protection and Seed Systems in Sub-Saharan Africa

Marcelin Tonye Mahop

In approaching the seeds systems in Sub-Saharan in view to comprehend how they operate and make recommendations for a differentiated plant variety protection system that recognises and strengthens the various systems, it is useful to assess the extent to which current international and regional regimes address the varying interests of actors involved in the seed sector. The international systems and instruments explored are the UPOV system of plant variety protection, the 2004 International Treaty on Plant Genetic Resources for Food and Agriculture, the 1994 WTO TRIPS agreement, the Convention on Biological Diversity and its protocols and key seed certification and testing standard promoted respectively under the OECD and the International Seed Testing Association (ISTA). At the regional level, the two regulatory systems explored are the African Organisation of Intellectual Property (OAPI) and the African Regional Intellectual Property Organisation (ARIPO)

The UPOV Plant Variety Protection system.¹

The Convention of the Union Internationale pour la Protection des Obtentions Vegetales (UPOV) was adopted in Paris in 1961 by industrialised countries keen to protect the interests of their breeding industry both in their domestic markets and overseas. It has been revised three times in 1972, in 1978 and the most recent version of the UPOV convention is the UPOV 1991 version. As of 27 April 2012, UPOV counts 70 members in total among whom 47 are industrialised countries and 23 are non-industrialised countries.² As it stands, new and prospective candidates to the full membership of UPOV are no longer able to sign up to the 1978 act. The UPOV convention is a *sui generis* system designed specifically to protect the rights of breeders over new plant varieties. In protecting the rights of breeders of new varieties of plants, the convention works as an incentivising tool for those who invest their time, money and put their ingenuity in the production of new and improved planting materials to the benefit of humanity.

With no intent to engage into another full analysis of the UPOV convention, such analysis that have been extensively carried out elsewhere,³ this section presents the key components of the UPOV PVP system in a comparative manner, between the two recent acts notably the 1978 and the 1991 Acts. The components of the UPOV regulatory system presented below include the coverage of varieties eligible for protection, the question of dual protection, the scope of the protected rights of plant breeders over new plant varieties and the length of protection provided to PBRs, the exemptions to breeders rights, and whether or not farmers' privileges have been taken into account in the two versions of the UPOV acts discussed here.

Coverage of varieties

The 1991 Act of UPOV provides for a gradual process of inclusion of plant genera and species leading to a comprehensive coverage for the protection of all plant varieties.⁴ Upon joining UPOV, new members must provide for the protection of at least 15 plant genera or species and will be expected to extend protection to all plant genera and species within 10 years of membership.⁵ This is

¹ The UPOV conventions are further discussed in Chapter 5

² <http://www.upov.int/export/sites/upov/members/en/pdf/pub423.pdf>

³ See Dhar, B. 2002. *Sui Generis Systems for Plant Variety Protection, Options under TRIPS: A discussion Paper*. Quaker United Nations Office (QUNO), Geneva

⁴ Article 3(1) of the 1991 UPOV Act

⁵ Article 3(2) of the 1991 UPOV Act

contrary to the 1978 act that has not taken the approach for protection of all plant genera and species. Rather article 4 of the 1978 act stipulates that member can progressively provide protection to an increasing number of genera and species, beginning with five on the date the act enters into force and reaching 24 within eight years. In addition, the 1978 act allows member to freely limit the act's application to a specific genus or species.

Dual protection PBRs and patents

In permitting countries to provide for the protection of new varieties of plant through PBRs or patents, the 1978 Convention of UPOV forbids the option of granting both forms of protection to the same variety.⁶ This restriction of dual protection has been lifted by the 1991 Act which now permits states to protect the same variety with both patents and PBRs.

Scope of PBRs and length of protection

UPOV 1991 act has expanded from the scope of the 1978 version to include other actions requiring the authorisation of the breeder. The 1978 Act provides for a limited number of actions the conduct of which requires the authorization of the breeder and these include: production for the purpose of commercial marketing; the offering for sale and marketing of the reproductive or vegetative propagating materials.⁷ In comparison, the 1991 Act expands this list to include such acts as production or reproduction, conditioning for the purpose of propagation, offering for sale, selling or other marketing, exporting, importing and stocking for all of the above mentioned purposes require prior authorisation of the breeder.⁸

In addition, the 1991 Act of UPOV has extended protection to what is defined as Essentially Derived Varieties (EDV) and on the parts harvested from the original proprietary materials. This is to ensure that first generation breeders of a variety earn rewards from second generation breeders, who, under the previous versions of UPOV, could undertake minor or cosmetic breeding based on a protected variety and claim PBRs on a second generation variety. The length of protection of PBRs has also been amended in the 1991 version in the interest of breeders, as compared to the 1978 version moving from 15 years (1978 Act) to minimally 20 years (1991 Act) for any variety with the exception for trees and vines for which the length of protection is 25 years (1991 Act).

Breeders' exemptions

The rights of plant breeders to use a protected variety as an initial research material for the development of new varieties is upheld in both the 1978 and the 1991 versions of the UPOV convention.⁹

Farmers' privileges

The 1978 Act of UPOV does not have any mention of the privileges or rights of farmers to exchange, sell or re-sow seeds harvested from proprietary plant varieties. However, the exemption to PBRs in the 1978 Act regarding 'private use for non-commercial purposes' may be implemented to uphold farmers' privileges. The 1991 Act of UPOV addresses farmers' privileges as an optional exemption to breeders' rights.¹⁰ However, domestic PVP law should provide that farmers exercise their privilege 'within reasonable limits' and 'subject to safeguarding the legitimate interest of breeders'.

⁶ Article 2(1) of the 1978 Act UPOV

⁷ Article 5 of the 1978 UPOV Act

⁸ Article 14 of the 1991 UPOV Act

⁹ Article 5(3) of the 1978 Act of UPOV and Article 15(1) of the 1991 UPOV Act

¹⁰ See Article 15(2) of UPOV 1991 Act

Table 1: Comparison between 1978 and 1991 Acts of UPOV

Issues	UPOV 1978	UPOV 1991
Scope of coverage	Number of genera or species required for protection to be increased gradually from 5 at the time of accession to the Act to 24 eight years later	Increasing number of genera or species required to be protected, from 15 at time of accession to Act to all genera and species 10 years later (5 years for members of earlier UPOV Act).
Eligibility Requirements	Novelty, distinctness, uniformity, and stability.	Novelty, distinctness, uniformity, and stability.
Minimum exclusive rights in propagating material	Production for purposes of commercial marketing; offering for sale; marketing; repeated use for the commercial production of another variety.	Production or reproduction; conditioning for the purposes of propagation; offering for sale; selling or other marketing; exporting; importing or stocking for any of these purposes
Minimum exclusive rights in harvested material	No such obligation, except for ornamental plants used for commercial propagating purposes.	Same acts as above if harvested material obtained through unauthorized use of propagating material and if breeder had no reasonable opportunity to exercise his right in relation to the propagating material.
Prohibition on dual protection with patent	Yes, for same botanical genus or species.	No.
Breeders' exemption	Mandatory. Breeders free to use protected variety to develop a new variety.	Permissive, but breeding and exploitation of new variety "essentially derived" from earlier variety requires right holder's authorization
Farmers' privilege	Implicitly allowed under the definition of minimum exclusive rights and under exemptions to plant breeders' rights in respect of private use for non-commercial purposes.	Allowed at the option of the member country within reasonable limits and subject to safeguarding the legitimate interests of the right holder
Minimum term of protection	18 years for grapevines and trees; 15 years for all other plants	25 years for grapevines and trees; 20 years for all other plants

Adapted from Helfer, L.R., Intellectual Property Rights in Plant Varieties: an Overview with options for National Governments, FAO Legal Papers Online 31, July 2002.

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

The international Treaty was adopted in 2001 and entered into force in 2004. As a successor of the 1983 International Undertaking, the Treaty and some key resolutions of the FAO have in their own way attempted to address the interests of the seed industry and those of farmers. The International Undertaking was largely seen as hooked on the principle of genetic resources as common heritage of mankind. This means that they should be available for anyone to use according to one's wish, with relatively less accountability in or no obligation to respect any rights such as the sovereign rights of

the countries of origin or farmers' rights. This common heritage principle was thought to be damaging to the sustainability of genetic resources which could therefore be exploited by entities with the capacities to do so, with no obligation to respect the rights of farmers or to compensate the source or origins of such resources.

Broadly speaking, it seems fair to say that in the form that the IU was adopted in 1983, it failed to address the protection of plant breeders' rights in the manner was crafted by the UPOV 1978 Act, to the discontent of industrialised countries and their strong breeding industry. But the developing countries also, concerned with the common heritage of mankind principle over genetic resources, felt let down by the IU as it failed to properly tackle the protection of farmers' rights.¹¹ To address these critical concerns of plant breeders and farmers in a balanced manner, the FAO adopted two key resolutions in 1989. At the FAO general assembly in 1989, Resolution 4/89 accepted the primacy of PBRs and allowed member countries bound by UPOV to impose very limited restrictions to farmers' practices of free exchange of seeds and other cultivating materials as provided by the IU. With regards to farmers' rights, resolution 5/89, provided for a recognition (albeit arguably vaguely) of the contribution and rights of farmers to the maintenance of agrobiodiversity.

Following the trend of the two above mentioned FAO resolutions, the 2001 FAO Plant Treaty appears to have further strengthened the recognition of farmers' rights. The preamble of the Plant Treaty straightforwardly addresses farmers' rights to save, use, exchange and sell farm saved seed and other propagating materials. Despite this very explicit tone with regards to farmers' rights in the preamble, part III, Article 9 of the plant treaty which is solely dedicated to the question of farmers' rights, appears to have diminished the international obligation of countries to protect farmers' rights as Article 9(3) subjects such a protection to the discretion of individual countries and according to national law. Nonetheless, in encapsulating farmers' rights, the Plant Treaty is the only international instrument that has done so and countries have the opportunity through the implementation of Article 9 of the Treaty to demonstrate their seriousness in addressing farmers' rights.

The 2001 Plant Treaty has not left the issue of IP in relation to genetic resources for food and agriculture untouched. In relation to access and utilisation of genetic resources within the framework of the multilateral system, the plant treaty adopted a very ambiguous approach in article 12.3(d) in which it stresses that 'Recipients shall not claim any intellectual property or other rights that limit the facilitated access to the plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the Multilateral System'. Depending on whether one is sympathetic to the protection of farmers' rights or a proponent of IP protection on genetic resources based discoveries, the interpretation of this article is still subject to intense debate.

The 1994 WTO TRIPS Agreement¹²

The 1994 WTO Trade Related Aspects of Intellectual Property Rights (TRIPS) was adopted and incorporated as Annex 1c among a package of agreements that were annexed to the Marrakesh Agreement that Established the World Trade Organization in 1994 as an outcome to the Uruguay Round of Negotiations of the General Agreement on Tariffs and Trade (GATT). The adoption of this agreement marked a significant shift, pushed by a group of developed countries that wanted IPRs to be part of the global trading system.¹³

Unlike previous IP agreements¹⁴, the TRIPS agreement brought about significant changes in the international instruments dealing with IP protection. One of such changes is the requirement that

¹¹ Mahop, M.T.2010. Intellectual Property, Community Rights and Human Rights: the Biological and Genetic Resources of Developing Countries, Taylor & Francis

¹² The TRIPs agreement is further discussed in Chapter 5.

¹³ Matthews, D. 2002. Globalising Intellectual Property Rights: The TRIPS Agreement, London: Routledge.

¹⁴ E.g. the 1883 Paris Convention for the Protection of Industrial Property and the 1886 Berne Convention for the Protection of Literary and Artistic Works both administered by WIPO

patents be granted to inventions whether products or processes, in all fields of technology, as long as they are new, involve an inventive step and are capable of industrial application. Before TRIPS, countries had the possibility to exclude for instance certain technological sectors from patent protection according to their level of industrial development and their national development strategies. In requiring all WTO members to ensure that IP protection mechanisms are in place for all fields of technology and subject to the relevant transitional periods, TRIPS provides for the minimum standards for such IP protection but do not oblige nor prevent parties to implement more extensive protection standards than required by the agreement.¹⁵ Using to their advantage this flexibility enshrined in TRIPS, some countries have brought their counterparts to provide for TRIPS+ protection through the conclusion of bilateral Free Trade Agreements (FTAs) and Economic Partnership Agreements (EPA).¹⁶ The formula TRIPS+ is meant to signify that the intellectual property provisions of the FTAs and EPA generally call for level of IP protection beyond TRIPS minimum standards to be pursued in domestic legislations. Aimed at all countries that belong to the Africa Caribbean and Pacific (ACP) group, the EU signed on 23 June 2000 a 20 years agreement, known as the Cotonou Agreement, which is a framework treaty on trade, aid and political cooperation.¹⁷ The Cotonou Agreement provides that parties recognise the need to ensure an adequate and effective level of protection of intellectual, industrial and commercial property rights, and other rights covered by TRIPS including protection of geographical indications, in line with the international standards with a view to reducing distortions and impediments to bilateral trade'.¹⁸ Pushing for higher standards of protection beyond TRIPS among parties in the Cotonou Agreement, the agreement defines intellectual property rights broadly to include among other tools, patents, including patents for biotechnological inventions and plant varieties or other effective sui generis systems.¹⁹ The implication of this clause is far reaching. ACP countries including the five study countries entering specific Economic Partnerships Agreements with the EU or some EU countries should expect to find it hard to refuse patenting on GMOs or other biotechnological innovations in relation to agriculture. Of the five study countries, Kenya, Rwanda, Tanzania and Uganda are in the process of negotiating a comprehensive EPA with the EC, focussing on development cooperation, agriculture and rules of origin.²⁰

Despite reducing the possibility that countries had in defining the technologies that may be protected by patents prior to its adoption, TRIPS has accommodated a great deal of flexibilities WTO members can lean on in designing their TRIPS compliant IP regimes.²¹

With regards to the protection of agricultural innovations in particular plant variety protection, relevant to this report is TRIPS article 27.3.b which stipulates that:

Members may exclude from patentability: (b) plants and animals but not microorganisms, and essentially biological processes for the production of plants and animals, other than non-biological and microbiological processes. However, members shall provide for the protection of new plant varieties either by patents or by an efficient sui generis system or by any combination thereof.

¹⁵ Article 1 of the 1994 WTO TRIPS Agreement

¹⁶ Negotiating FTA and EPA is a stratagem by developed countries to secure from their counterparts, other developed countries and largely developing countries, the intellectual property protection that could not consensually be secured through multilateral processes. See Blakeney, M. 2012. 'the Legal Infrastructure for the Protection of GIs' in (Blakeney, *et al* Ed.) *Extending the Protection of Geographical Indications: Case Studies of Agricultural Products in Africa*, Earthscan from Routledge: Oxford and New York, pp. 51-83

¹⁷ See European Communities, 2006. Partnership Agreement ACP-EC: Signed in Cotonou on 23 June 2000 and revised in Luxembourg on 25 June 2005', Office for official Publications: Luxembourg,.

¹⁸ Article 46.1 of the Cotonou Agreement

¹⁹ Article 46.5 of the Cotonou Agreement.

²⁰ http://trade.ec.europa.eu/doclib/docs/2009/september/tradoc_144912.pdf

²¹ Some of these flexibilities are embedded in Article 1 in relation to the methods of implementation of TRIPS provisions at the national level; Article 8 on the principles in particular in relation to countries' discretion to design IP measures necessary to protection nutrition, health and to address public interests. Public interest related provisions in domestic IP regulations would e.g. relate breeders' exemption and farmers' privileges.

Pursuant therefore to this article and subject to the relevant transitional periods,²² it is an obligation to all members of the WTO to provide some form of protection to plant varieties and this can be through patents and/or through an effective *sui generis* system.²³ The TRIPS Agreement does not however define what an 'effective *sui generis* system' is. This lack of definition therefore provides some amount of flexibility to countries as to how to approach plant variety protection at the domestic level.

The Convention on Biological Diversity and its protocols

Despite not dealing specifically with seeds or new varieties of plants, the 1992 Convention on Biological Diversity (CBD) and its protocols can be counted among the international instruments pertaining to agricultural innovations albeit indirectly. The Cartagena Protocol on Biosafety to the Convention was adopted on 29 January 2000 and entered into force in 2003. Its aim is to ensure the safe handling, transport and use of living modified organisms resulting from modern biotechnology that may have adverse effects on biological diversity taking into account all risks to human health. The implementation of this protocol is likely to have some implications on the handling of seeds especially in respect of GMOs, considering that there is an unsettled debate surrounding the impact of GMOs in general on human health and biodiversity.²⁴ Genetically modified seeds produced through biotechnologically based agricultural research methods are more likely to be protected through patents than through the PVP system. However, the role of biosafety laws is critical in the dissemination of GMOs products because even if patent law allows the protection of GMOs products, biosafety law and other markets approval regulatory frameworks may impede on the use of such products.

The second protocol to the CBD, which was adopted in Nagoya in 2010, deals essentially with the implementation of the third objective of the convention which addresses the fair and equitable sharing of the benefits arising from the utilization of genetic resources. The impact of the implementation of the Nagoya Protocol over agricultural innovations such as access to and utilisation of genetic resources for food and agriculture is still to be explored and understood, especially as compared to the role of the 2001 FAO plant treaty's multilateral system.

If the CBD is to be viewed as addressing farmer's interests in relation to seeds, this idea will be associated with the Article 8(j) of the CB that stipulates that:

Subject to national legislation, contracting parties shall as far as possible and as appropriate 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.

²² The TRIPS Council, through its decision IP/C/40, extended the general TRIPS compliance transition period for LDC Members for all obligations under the TRIPS Agreement, other than Articles 3, 4 and 5, until 1 July 2013 or until such date on which a Member ceases to be an LDC, whichever date is earlier. Least developed countries still in considerable needs for technical and financial capacities to fully implement TRIPS are already calling for an extension of the transition period beyond July 2013. This call was made by Uganda and Tanzania at the last symposium on LDC priority needs for technical and financial cooperation that was held at the WTO in Geneva from 31st October to 2nd November 2012.

²³ A brief discussion on national approaches for the implementation of TRIPS Article 27.3.b and the importance of this article in a design of a differentiated PVP system pertaining to the seed systems at domestic level is carried out in chapter 5 below.

²⁴ For further information concerning the debate surrounding the handling of GMOs, see visit broadly numerous publications of the African Center for Biosafety at: <http://www.acbio.org.za/index.php/gmo-risk>

Some countries have included provisions in their PVP laws to address the rights and interests of (traditional) farmers in this respect.²⁵

Article 16 of the CBD that deals with Access to and Transfer of Technology acknowledges that biotechnology tools can be protected by IPRs including patents, but developed countries' parties where such technologies are developed should legislate in a way that facilitates access and transfer to developing countries.

International standards on seed certification and testing: the OECD and ISTA

The Organisation for Economic Cooperation and Development (OECD) has an established scheme aimed at promoting Varietal Certification of Seed Moving in International Trade known as the OECD seed certification scheme. Primarily including membership of OECD countries, since 1958, the membership scope of this scheme has expanded to include non-OECD countries.²⁶ The OECD certification scheme harmonises seed certification standards rules and regulations among all the participating countries, to be applicable in assessing varieties that satisfy the conditions of distinctiveness, uniformity and stability (DUS) and having an agronomic value. The rules and regulations²⁷ on the certification standards have been developed for a number of selected varieties and species including Grasses and Legumes, Crucifers and other Oil or Fibre species, Cereals, Maize and Sorghum, Sugar and Fodder Beet, and Vegetables.²⁸

In addition to the detailed rules and regulations per species as promoted by the OECD seed scheme, there are additional guidelines on specific seed production aspects including the OECD guidelines for Control Plot Tests and Field Inspection of Seed Crops,²⁹ the Guidelines for Multiplication Abroad,³⁰ and the Guidelines for the Authorization of some Certification Activities under the OECD Seed Schemes.³¹ It is expected that the implementation of these rules and regulations and the associated guidelines will lead to the production of 'quality guaranteed' seed in participating countries, this facilitating the movement of seeds internationally and therefore contributing to the removal of technical trade barriers in seeds. Among the countries selected for this study, only Kenya and Uganda are members of the OECD seed certification scheme, meaning these two countries can exchange and trade in seeds with other OECD members.

Another international scheme focussing on the quality of seeds is the scheme promoted by the International Seed Testing Association (ISTA), which works with members spread across 79 countries worldwide.³² The association pursues as its vision the establishment of 'uniformity in seed quality

²⁵ See chapter 5.

²⁶ Members of the OECD seed certification scheme found in the following link include some sub Saharan African countries such as Kenya, South Africa, Uganda and Zimbabwe: <http://www.oecd.org/tad/standardsforseedtractorsforestfruitandvegetables/countriesparticipatingintheoecdseedsschemes.htm>

²⁷ For detailed rules and regulations per species targeted by the OECD seed scheme, see: <http://www.oecd.org/tad/standardsforseedtractorsforestfruitandvegetables/oecdseedsschemesrulesandregulations.htm>

²⁸ See OECD seed schemes at: <http://www.oecd.org/tad/standardsforseedtractorsforestfruitandvegetables/abouttheoecdseedsschemes.htm>

²⁹ Guidelines accessible at: <http://www.oecd.org/tad/standardsforseedtractorsforestfruitandvegetables/ControlPlotEN092012.pdf>

³⁰ Guidelines accessible at: <http://www.oecd.org/tad/standardsforseedtractorsforestfruitandvegetables/46091764.pdf>

³¹ Guidelines accessible at: http://www.oecd.org/tad/standardsforseedtractorsforestfruitandvegetables/seedsguidelinescertificationactivities2012_EN.pdf

³² Membership of ISTA as of December 2010 included 201 member laboratories, 52 personal members and 42 corporate members. More details on these categories of members accessible at: <http://seedtest.org/en/members.html>.

evaluation worldwide'. It does this by bringing its members to develop internationally agreed rules in seed testing, seed sampling and research focussing on specific seed quality features such as seed vigour, health, purity and germination.³³ Of the five countries selected for this study, ISTA members are found in four countries except in Burkina Faso. There are 120 laboratories accredited by ISTA which are the only laboratories that can issue the International Seed Analysis certificates, and the Kenya Plant Health Inspectorate Services (KEPHIS) is among these. In order to be counted among the credible players in quality seed production and to possibly integrate the international seed trade or at least get its seeds to be accepted beyond national borders, countries may consider endeavouring to bring the seed testing provisions of domestic regulations to ISTA standards. Of the study countries, Kenya and Tanzania appear to have clear provisions on quality seed production in domestic legislations while the other countries are yet to develop implementing regulations to their seed acts targeting seed quality standards.

Selected sub regional IP and policy mechanisms pertaining to seeds

The African Regional Intellectual Property Organisation (ARIPO)

The African Regional Intellectual Property Organisation (ARIPO)³⁴ is the successor of the English Speaking African Regional Industrial Property Organisation (ESARIPO) which was created by the 1976 Lusaka Agreement. ARIPO was created to take advantage from effective and continuous exchange of information and the harmonisation and coordination of IP policies, laws and activities. Today, ARIPO administers the Harare and Banjul Protocols that were adopted respectively in 1982 and 1997. The purpose of the Harare and the Banjul Agreements is mainly to streamline the processes of registration, filing, processing and granting of patents, utility model, industrial design and trademark applications. These two protocols are known as the two regional IP systems in force and administered by ARIPO.

With the potential to join these two regional IP systems, is the prospective ARIPO Protocol for the protection of new plant varieties that was discussed at the 36th session of Administrative Council of ARIPO which is expected to meet from 26 to 30 November 2012 in Zanzibar. There are concerns about the draft ARIPO legal framework for PVP including in relation to the process of its development and its potential impact on farmers' rights and food security. In relation to the process, the main concern raised by civil society organisations of ARIPO member states is that this instrument has been developed with consultations mainly between ARIPO and some external actors such as UPOV, CIOPORA, the African Seed Trade Association (ASTA), the French National Seed and Seedling Association (GNIS), the USPTO, excluding actors from member countries. In the absence of consultations with member states actors, it is thought that the legal framework does not reflect the realities of plant breeding and the seed systems of member states. Consequently, the proposed legal framework, as it reflects UPOV 1991, is not supportive of farmers' rights and farmers seed systems in ARIPO member states.³⁵ Without going into a detailed legal analysis of this draft instrument, for the purpose of this report it may suffice to stress that it first considers the challenges facing agricultural development in Africa, before setting the policy choices that should guide the legal framework for the protection of new varieties of plants in Africa. One of the major challenges for instance facing Africa is its growing number of undernourished people, about 200 million and the fact that more than 33 million children go to sleep without food. The development of agriculture in Africa must therefore be achieved in such a way that it becomes able to produce enough food to feed the continent.

³³ See for example a planned ISTA workshop on seed purity and germination scheduled in Ankara, Turkey from 06/06/2013 to 09/06/2013. Accessible at: <http://www.seedtest.org/en/event-detail---0--0--0--35.html>.

³⁴ ARIPO member states include: Botswana, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mozambique, Namibia, Rwanda, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe.

³⁵ The full CSO declaration issued on 06 November 2012 is available at:

<http://www.acbio.org.za/images/stories/dmdocuments/CSOconcernsonARIPO-PVPframework.pdf>

Among other policy considerations that should guide the development of a legal framework for the protection of plant varieties, the draft ARIPO regional policy proposes the development of agricultural innovation systems taking into account the phenomenon of climate change, the development of the seed industry, the role of biotechnology in exploring and protecting agricultural genetic resources, and the establishment of an effective plant variety protection system at the national and regional levels. With regards to this last point, the draft regional policy appears to have made a choice for an effective *sui generis* system for the protection of plant varieties based on the 1991 version of the UPOV convention. The basis for this choice according to ARIPO is that adopting such a legal framework will facilitate ARIPO application to join UPOV as full member in the future. Based on the UPOV 1991 act therefore, the draft legal framework has provisions for the protection of new plant varieties and the measures for conducting examination of varieties. The exceptions to plant breeders' rights include a provision on the so called farmers' privilege, which also is attuned to the UPOV 1991 act.

If adopted, this regional policy and the legal framework will form the ARIPO protocol for the protection of plant varieties.

The African Intellectual Property Organisation (OAPI)

The African Organisation of intellectual Property (OAPI)³⁶ was created pursuant to the 1977 Bangui Agreement that was revised in 1999 in order to bring the regime of protection of intellectual property rights in line with developments at the international level, notably, the TRIPS Agreement. The 1999 revised Bangui agreement assigns a number of responsibilities to OAPI, including, but not limited to the implementation of common administrative procedures deriving from a uniform system for the protection of industrial property and handling of administrative services related to industrial property. The system of administration of industrial property applied by OAPI is a common system in which OAPI serves both as the national industrial property office within the meaning of Article 12 of the Paris Convention and as the central patent documentation and information body for all member countries. The 1999 Revised Bangui comprises the Agreement itself and ten annexes dealing with one specific tool for the protection of intellectual property rights, with annex X covering plant variety protection.

Despite not being a member of UPOV, Annex X of the Bangui Agreement deals with the protection of plant varieties in a manner that is much attuned to the UPOV 1991 Act. Like the draft ARIPO regional policy for plant variety protection, Annex X of the 1999 Revised Bangui Agreement has provisions on the scope of plant breeders' rights, criteria for the protection of plant varieties, exception to plant breeders' rights, variety denomination and nullity and cancellation of plant breeders' rights etc. Tailoring annex X to reflect the 1991 act of UPOV suggests that OAPI has chosen the UPOV 1991 act as the effective *sui generis* system for the protection of plant varieties in the context of the Organisation's implementation of Article 27.3.b of the WTO TRIPS Agreement. However, it may be a questionable approach for OAPI to adopt a strong PBRs regime for countries of low level of economic and agricultural research; countries in which more than 70% of seeds use can still be qualified as belonging to the informal system; and for its LDCs countries that are not yet legally expected to implement a strong PBRs regime based on the extension of the transition period for TRIPS compliance accorded to LDCs by the 29 December 2005 decision of the TRIPS council.

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) Intellectual Property policy Initiative

Alongside the intellectual property regimes of the two prominent African IP organisations ARIPO and OAPI, other important initiatives are carried out by established associations with interests in the

³⁶ Member countries of OAPI include: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Mali, Mauritania, Niger, Senegal, Togo

agricultural sector, specifically seed issues. A notable example is the proposal for a regional intellectual property policy put forward by the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). ASARECA was established in 1994 by a group of ten countries, each of which represented by its agricultural research for development institute. The founding countries of ASARECA are Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania, and Uganda. These countries were joined by South Sudan in 2011 making ASARECA's countries' membership to 11 countries. The mission of ASARECA is to 'enhance regional collective action in agricultural research for development, extension and agricultural training and education to promote economic growth, fight poverty, eradicate hunger and enhance sustainable use of resources in Eastern and Central Africa'.³⁷ In pursuing its mission, ASARECA 'recognises the value of regional collaboration among member countries to overcome poverty and hunger and foster the development aims of broad-based economic growth, poverty eradication and improved livelihood'.³⁸

The harmonisation of seed policies being one of the core interests of the association, ASARECA recognises the importance of intellectual property rights for the protection of plant varieties and proposes a regional intellectual property policy pertaining to seeds in a number of countries. The countries concerned with this policy are those involved in the ASARECA's five year World Bank funded East Africa Agricultural Productivity Programme (EAAPP) covering Ethiopia, Kenya, Tanzania and Uganda.³⁹ The proposed policy starts by recognising that the EAAPP countries are implementing most of the international instruments on intellectual property rights; that improved varieties and quality seeds are available in the EAAPP countries and that exchange of germplasm occurs through Standard Material Transfer Agreement (SMTA) or other forms of MTA. An important part of the proposed policy is its assessment of the status of national and institutional IPRs policies in the EAAPP countries. Following this assessment, the proposed policy identifies some of the issues that are not working in the EAAPP countries and proposes the way forward. One prominent issue that is found not working across all the EAAPP countries is the limited recourse to protection of agricultural innovations (such as plant varieties) through IPR due to low stakeholders' awareness. In individual countries, the draft policy observes that in Kenya there is inefficiency in managing the IP issues due to lack of a strong IP Management office; while in Uganda there is no plant variety protection law in force in the country. As a way forward on the regional IP policy, one of the major recommendations of the draft policy is for the EAAPP member countries to fast track the implementation of the harmonization agreement on seed policies and regulations, enact PVP laws which are compliant to the UPOV 1991 convention and fast track the compliance to the ISTA and OECD standards on seed quality evaluation and seed certification respectively.

³⁷ <http://www.asareca.org/content/about-us-0>

³⁸ Id

³⁹ <http://www.eaapp.org>

Chapter three: Plant Variety Protection Regimes, Seed Regulations and the patenting of genetic resources in the Study Countries

Marcelin Tonye Mahop

This chapter provides an overview of the IPR legislation and regulations pertaining to seeds in the five countries covered by this study. The categories of regulations concerned are in particular the Plant Variety Protection (PVP) acts and the seed acts of each of the selected countries. The analysis below are organized in the following order starting with Kenya, then Burkina Faso, followed by Rwanda, Tanzania and Uganda. In a final section, the issue of patent protection over plant varieties in the study countries will be discussed.

Kenya

There is a range of regulatory instruments governing the production and handling of new plant varieties in Kenya. This section provides a quick scan through a number of instruments governing seeds' production and plant breeders' rights in Kenya.

The National Seed Policy of Kenya 2010

In 2010, the government of Kenya adopted the National Seed Policy which encapsulates Kenya's ambitions and orientations aimed at boosting the seed sector. The National Seed Policy 2010 acknowledges the contribution of the agricultural sector in the country's GDP estimated at 24% and to Kenya's export earnings estimated at 60%. Furthermore, the National Seed Policy stresses that about 80% of the Kenyan population depends on agriculture as the primary source of livelihood. According to the policy, 'agriculture retains significant potential in addressing pro-poor growth and development and improving the standard of living of Kenyans'.¹ Despite its emergence as a regional leader in the seed industry by the end of 2008 with the registration of about 73 seed companies, it is still the case that the large majority of seeds planted in Kenya derive from the informal sector. Kenya is still lacking significant quantities of improved seeds especially for crops like potatoes, wheat and some pulses and certain varieties of seed maize suited for arid and semi-arid areas.

The 2010 National Seed Policy has identified a number of problems affecting the Kenyan seed sector such as the insufficiency of certified seed materials and this particular problem affects nearly every crop planted in Kenya apart from hybrid maize seeds. Other problems include but are not limited to the low adoption of improved seeds and complementary technologies; the inconsistency of the legal and regulatory framework owing to the fact that many pieces of legislations govern the seed sector; the inadequacy of suitable varieties for marginal areas; the lack of access to affordable credit. The Kenyan National seed policy aims at addressing the problems identified through research the outcome of which will provide clear direction for the seed sub sector development in order to sustainably avail adequate high quality and planting material to the users. The specific seed policy objectives of the National Seed Policy that will support the development of the Kenyan seed industry are multifold and include issues ranging from the exploitation of the potential of improved varieties and technologies for increased agricultural and forestry productivity through to the monitoring of seed supply and demand situation in order to ensure adequate strategic seed reserves.²

It is still early days to assess the impact of the National Seed Policy on the ground in relation to addressing the various issues earmarked in the specific policy objectives. Perhaps the realization of

¹ Government of the Republic of Kenya, National Seed Policy 2010, Ministry of Agriculture, P.O.Box 30028-00100.

² Ibid, 2010 National Seed Policy Kenya

the specific policy objectives of the seed policy depends on the effectiveness of the implementation of the other pieces of legislations governing the seed sector in Kenya.

The Seed and Plant Varieties Regulations 1991 and the Seed and Plant Variety Bill 2011

The current legislation in Kenya governing the seed sector broadly speaking but specifically, seed production and multiplication and the rights associated with the production of new plant varieties is the Seed and Plant Varieties Act of 1972 which entered into force in 1975. To guide the implementation of the Seed and Plant Varieties Act, regulations were promulgated in 1991 and amended in 1994 which included the protection of breeders' rights over new varieties of plants. Within the framework of the implementation of the 1975 Seed Act and with the country's ambition to join UPOV, the Plant Variety Protection Office was established in 1997 and based at KEPHIS and in 1999, Kenya acceded to UPOV 1978. To date, the Seed and Plant Varieties Act is being amended with Kenyan Seed and Plant Varieties Bill 2011 before parliament, awaiting final approval. It is suggested that the 2011 Seed and Plant Varieties Bill complies with the 1991 Act of UPOV, meaning that if adopted, this instrument will pave the way for Kenya's accession to UPOV 1991.

The 1975 Seed and Plant Varieties Act provide that the regulations enunciated in the Act are meant for the regulation and control of the production, processing, testing, certification and marketing of seeds.³ In addition, the seeds regulations are also specifically expected to be applied for such purposes as to ensure that reliable and adequate information is available concerning the nature, condition and quality of seeds intended for sale; for preventing the sale of seeds which are deleterious or which have not been produced in specified conditions or which have not been tested for purity or germination or which are of a plant variety of which the performance has not been subjected to trials. Only seeds produced in a prescribed manner, processed, tested⁴ and certified and indexed as per section 7 of the Act can therefore legally be marketed legally. Arguably, this approach can be seen as potentially beneficial for the development of the agricultural sector in Kenya if its implementation results in the supply, accessibility and utilization of improved and adapted materials to farmers. However, like in most sub Saharan African countries, the reality on the ground is that the large majority of seeds of other crops planted in Kenya (apart from hybrid maize seeds) is produced according to the prescriptions of the seed regulations. Categorized as the informal system, a large amount of seeds can be acquired as grains from the market and utilized as seeds. Some seeds are exchanged among small holder farmers and farmers are still to a large extent making use of the seed saving practices from the previous farming season for replanting during the following planting season. A strict implementation of the regulations is likely to be very detrimental to the informal seed sector in Kenya.

One key area of the 1975 Seed and Plant Varieties Act of Kenya is part V which deals with plant breeders' rights. The Act defines the applicant's for plant breeder's rights as the person who bred or discovered the plant variety concerned or his successor in title.⁵The 1975 Act contemplates that the rights accorded over new plant varieties shall not be exercised for over 25 years. But specifically, with regards to fruit trees and their root stocks, forest and ornamental trees and grape vines, the period over which PBRs may be exercised shall be no less than eighteen years; while for any other varieties, the period prescribed by the Act for the exercise of the rights shall be no less than fifteen years.⁶ Section 20 of the 1975 Seed Act deals with nature of rights providing that the holder of PBRs has the exclusive rights to do and to authorize others to do such acts as produce propagating material of the variety for commercial purposes, to commercialize it, to offer it for sale, to export it, to stock it for any of these purposes and to have any or all of their activities performed. An exception however which is the breeders' research exemption under article 20(1)(b) of the Act which stipulates that the propagation and stocking of proprietary materials for the production of new varieties by a plant breeder is not considered an infringement to PBRs as long as such actions are carried out for non-

³ Section 3 of the 1975 Seed and Plant Varieties Act

⁴ Section 11 and 12 of the 1975 Seed and Plant Varieties Act

⁵ Section 18(2) of the 1975 Seed and Plant Varieties Act

⁶ Section 19 of the 1975 Seed and Plant Varieties Act

commercial purposes. However, the Seed Act has made provisions for some consideration to be made in relation to the damages to be paid to the rights holder in the event of infringement. In this connection, Section 20(3) (a) stipulates that there should be no right to damages if the person infringing the rights was not aware, and had no reasonable grounds for suspecting, that the plant variety in question was the subject of such rights. One key issue that the 1975 Seeds and Plant varieties Act appears to have been silent about relates to the issue of farmers' privileges to save, exchange and sell seeds from proprietary varieties. Failure to address farmer's privileges can however be interpreted differently, one meaning associated to it being that the exercise of farmers' privileges by farmers cannot be interpreted as a violation of the Act.

Since the creation of the Plant Variety Protection Office in 1997 and the subsequent accession of Kenya to UPOV based on its 1978 Act, there has been a significant level of activity at the PVP office in respect of PVP applications and the grants of PVP certificates over various crops. As compared to the other countries selected for this study and indeed of the East African Sub region, the level of activity at the Kenyan PVO office is an indicator of the on-going growth of the breeding sector in Kenya, the interest of foreign actors in the Kenyan seed sector which, with the country's accession to UPOV, may be associated to their trust in Kenya as a country where their interests are protected. Also the level of activity at the PVP office may be an indicator of the increasing role of Kenya as a seed and agricultural export power in the sub region. Based on information gathered in August 2012, it is estimated that 415 PVP certificates have been issued by the Kenyan PVP Office during the period 1997 to 2012.⁷ However, table 1 and table 2 below respectively provide the number of PVPs applications received at the PVP office for the period 1997 to 2012 with breakdown on the number of foreign and local applications per crop on the one hand and the number of PVP applications specifically for each crop but for the period 1997 to 2008.

Table 1: PVP applications in Kenya from 1997 to 2012

Crops	Local applications	Foreign applications	Total
Cut flowers	6	573	579
Maize	125	7	132
wheat	33	0	33
French beans	0	20	20
Rape seed	0	14	14
Sorghum	9	0	9
Cassava	6	0	6
Irish potato	4	0	4
Sweet potato	0	1	1
tomato	1	0	1
Grand Total			799

Information sourced from KEPHIS reports and provided by Peter Munyi

Table 2: Crop-specific PVP applications between 1997 and 2008

	Crop species	Number of applications from 1997 to 2008
1	Rose	460
2	Maize	132
3	Tea	39
4	Wheat	32

⁷ Information sourced from KEPHIS reports and provided by Peter Munyi. At the time this information was accessed, the breakdown in terms the specific crops over which PVP certificates were issued and the grantees was not available.

5	Alstroemeria	31
6	Limonium	24
7	Pyrethrum	23
8	French Beans	20
9	Chrysanthemum	19
10	Calla lilies	15

Sourced from KEPHIS by Dr. Sikinyi of the Seed Trade Association of Kenya and presented at the Workshop in Nairobi on 04 October 2012.

Kenya is currently in the process of amending its Seed and Plant Varieties Act in order to bring its legislation in line with the 1991 UPOV Act. The Seed and Plant Varieties Bill 2011, now before parliament awaiting formal adoption has expanded on some areas which the seed industry had considered the 1975 Seed and Plant Variety Act weak. Unlike the 1975 Seed Act, the 2011 Bill defines a plant variety as: ‘a plant grouping within a single botanical taxon of the lowest known rank, defined by the expression of the characteristics resulting from a given genotype or combination of genotypes distinguished from any other plant grouping by the expression of at least one of the said characteristics and considered as a unit with regard to its suitability for being propagated unchanged’. The new definition is attuned to UPOV 1991, shutting down the possibility that the 1975 Seed Act offered for a potential consideration to be made to farmers varieties as plant varieties. With this new definition a plant variety can only be viewed as such if it is produced by a professional plant breeder.. With regards to plant breeders’ rights, the period these rights can be exercised has been increased in the 2011 Bill to 20 years from the date of grant for any other crop, but 25 years in respect of trees and vines. The 2011 Seed and Plant Varieties Bill proposes an expanded list of doings in relation to plant varieties over which the authorisation of the holder of PBRs is required. These doings include: production or reproduction; conditioning for the purpose of Propagation; offering for sale; selling or other marketing; exporting; importing, or stocking for any of the purpose set out in the foregoing paragraphs. Crucially, the 2011 Bill has introduced the dimension PBRs over what is called Essentially Derived Varieties (EDV) by adding to the list of actions to be authorised by plant breeders those ‘in respect of harvested material, including entire plants and parts of plants, obtained through the unauthorized use of propagating material of the protected variety shall require the permission of the breeder, unless the breeder has had reasonable opportunity to exercise his right in relation to that propagating material’. This is in line with the 1991 UPOV Act and is viewed not only as strengthening the rights of plant breeders, but also as potentially contributing to the real improvements in the production of new varieties of plants by curbing what is known as cosmetic or minor improvements over which PBRs may be claimed.

While addressing the interest of the breeding industry, the 2011 Bill has accommodated some elements of farmers’ privileges. Indeed in amending section 20(1) of the 1975 Seed and Plant Varieties Act, clause 17(d) of the 2011 Bill provides for farmers’ privileges to use farm saved seeds on their own holdings in addition to requiring the Minister to make regulations governing farmers’ privileges in the use of protected varieties. Although the 2011 Bill does not accommodate farmers’ rights as promoted by the Article 9 of the FAO plant Treaty, its inclusion of UPOV based farmers’ privileges demonstrates that there is some degree of consideration to farmers’ interests in relation to the use of improved seeds in Kenya. Overall it is hoped that if adopted, the proposed Bill will enhance competitiveness in seed production in Kenya to the benefit of the Kenyan Agricultural sector.

The Seeds and Plant Varieties (National Performance Trials-NPT) Regulations, 2009.

The 2009 Seeds and Plant varieties (National Performance Trials-NPT) Regulations⁸ were adopted with the aim of guiding the implementation of two sections of the Seed and Plant Varieties Act 1975 notably section 3 and section 9 dealing respectively with Seed regulations on the one hand and

⁸ Seeds and Plant Varieties (National Performance Trials) Regulations, 2009, Legal Notice No25, Kenya Gazette Supplement No12.

performance trials and reports on the other. Regulations 3(1) and 3(2) require any person intending to commercialize new varieties of plant of crops considered under Schedule 2 of the Act to submit such varieties to National Performance Trials. Regulation 3 goes on to specify the periods when NPT applications are to be lodged which are suggested to be between the 1st December and 15 February for long rain seasons or between 15 July and 31 August for the short rain seasons. Regulation 7 establishes a National Performance Trials Committee which is composed of key actors in the agricultural sector in Kenya, although while the plant breeders' association is member, farmers' groups are notable absentees of the NPT committee. The responsibilities of the NPT committee are listed under Regulations 8 and they include among others: to oversee the conduct of NPT; to evaluate the performance trials reports and make recommendations to the Variety Release Committee; to provide feedback to the applications on performance of their entries in the performance trials. Regulation 10 contemplates that all varieties submitted for the performance trials must undergo testing for at least two seasons. However, there is a flexible approach on testing for varieties that have been released in any one of the East African Community (EAC) countries. For such varieties, performance trials and testing for DUS are required for one season only, provided the applicant for performance trials has provided data used for the release of that variety in the other country. Regulation 12 provides for the establishment of the National Variety Released Committee (NVRC). Among other key prerogatives of the National Variety Released Committee are the review and consideration of the NPT committee and its recommendations; the consideration of the DUS report; the approval for the release of qualifying varieties and the preparation of the list of approved and released varieties and forward this list to the authorised officer for Gazettement.

In providing further guidance clarifying the implementation of the provisions on seed regulations and performance trials, it is hoped that compliance with these regulations will contribute to increasing the pool of improved seeds to the benefit of the agricultural sector in Kenya. These regulations are nonetheless heavily skewed towards the promotion of the formal seed sector, leaving the informal sector with very minimal to no consideration.

The Kenya Plant Inspectorate Service Bill 2011

Central to the implementation of key regulations in the agricultural sector and specifically the seed sector in Kenya is the Kenya Plant Health Inspectorate Service (KEPHIS) that was established under paragraph 3 of the Kenya Plant Health Inspectorate Order of 1996. With the on-going amendment of the Seed and Plant Variety Act with its alignment to the UPOV 1991, which paves the way to Kenya's joining UPOV 1991, there appeared the need to strengthen the role of KEPHIS in relation to the administration and implementation of the forthcoming Seed Act. Section 30 of the 2011 Kenya Plant Health Inspectorate Bill therefore provides for the revocation of the former KEPHIS established under the 1996 Kenya Plant Health Inspectorate order. In replacing the former service, the Service established under section 3 of the 2011 KEPHIS bill shall perform all the functions provided under section 5 of the 2011 KEPHIS bill which range from administering the regulation of matters relating to plant protection, seeds and plant varieties to undertaking plant variety testing and description, seed certification and plants quarantine control.⁹ Keeping with the trend of liberalization of the agricultural sector in Kenya, with the prospect of more private sector involvement, one of the innovative approaches in the 2011 KEPHIS Bill is its contention to contract out some of the functions assigned to KEPHIS to other actors. This approach is encapsulated in section 26(1) of the 2011 Bill which stipulates that the Service may authorise or contract out any of its services, duties and functions to any appropriately qualified or private person or institution who or which shall perform such duties under the supervision of the Service. This approach will obviously open the course for private certification and other testing in relation to new plant varieties to be released and commercialised in Kenya. According to one commentator at KEPHIS, this approach does not mean KEPHIS giving up its functions to the private sector, but it simply means more options available to seed actors for seed testing and certification, which will be performed by the private sector on behalf of KEPHIS and

⁹ For the full list of functions of the Service, see section 5 of the Kenya Plant Inspectorate Service Bill 2011

following the guidelines developed by KEPHIS. The ultimate effect should be quicker release of new plant varieties that should be available for multiplication as seeds and commercialisation in Kenya, in the East African Community Region and beyond.

Actors involved in the seed sector in Kenya strongly recognise that the regulatory framework as it stands is more in favour of the interests of the formal than of informal seed sector. Proponents of stronger regulatory regimes addressing the interest of the seed industry are of view that it is a good thing, because if the interests of the seed industry and plant breeders are secured, then they will be incentivised to invest more in the production of improved varieties and in quantity that are required in the country. At the other end, supporters of farmers' interests are of the view that, if the implication of a regulatory regime is to undermine farmers' informal seed systems, the impact will be felt in food production by small holder farmers because access to seeds will be further diminished. One suggestion put forward is that the regulatory regime on seeds and plant breeders' rights in Kenya should strive to redefine the food security crops over which farmers' privileges should be fully implemented.

Burkina Faso

In Burkina Faso, there are two main instruments governing the production, processing, commercialisation and utilisation of seeds and the rights afforded to the producers of new varieties of plants. These instruments are:

- Law No 010-2006/AN on the Regulation of Plants Seeds in Burkina Faso
- Annex X of the 1999 Revised Bangui Agreement on the Plant Breeder's Rights

Annex X of the 1999 Revised Bangui Agreement on Plant Breeders' Rights

Annex X of the 1999 Revised Bangui Agreement, dealing with the protection of the rights of plant breeders over new varieties of plant, is the national PVP regime of each of the sixteen members of OAPI, including Burkina Faso. As such the brief description of annex X carried out earlier under OAPI above applies to Burkina Faso and shall not be repeated here. However, one major criticism to the Bangui Agreement and its annexes such as Annex X is that, it is expected to be implemented by LDCs OAPI members, this regardless of their low technological capacities in the production of improved varieties and of the fact that LDCs are not expected to apply such a stringent IP tools until July 2013, based on the December 2005 Declaration of the TRIPS council that extended the transition period for TRIP compliance to LDCs. Although at the OAPI, there is a recognition and awareness of the extended transition period for TRIPS implementation by LDCs, it is explained that the development of this PVP regime which is UPOV compliant (despite OAPI not being a UPOV member), was meant to first send a signal to potential investors in the seed industry that OAPI members have a PVP law they can trust. Also, adopting a UPOV compliant PVP regime was meant to pave the way for eventually OAPI joining UPOV as a full member. Very broad data gleaned during field work suggest that, since the entry into force of Annex X of the Bangui Agreement in 2006, only twelve (12) plant variety protection certificates have been granted so far. All these certificates have been granted to national/public agricultural research institutions, none to an overseas actor and none to a national private or small and medium enterprise. Of the twelve PVP certificates, two (2) have been issued of agricultural crops and ten (10) on trees. There is no indication whether these PVPs certificates have actually been worked by the rights holders to the benefit of the agricultural or forestry sector of the member countries. With this rather low utilisation of the law by national and international actors, it is hardly convincing that the incentivising goal in for the investment in plant breeding by a UPOV based PVP regime in the OAPI member countries is working.

The Seed Act 2006 of Burkina Faso

The law governing the production, processing and commercialisation of plants seeds in Burkina Faso is Law No 010-2006/AN. This law applies to all agricultural and forestry seeds deriving from

improved or traditional varieties, but does not apply to grains, the utilisation of which is free, pending the promulgation of specific regulations.¹⁰ What transpires from this provision of the seed Act is the legal recognition of traditional varieties in Burkina Faso, which can therefore be used in the production of agricultural seeds that may be legally commercialised in the country. Indeed, the Seed Act 2006 stresses the difference between traditional varieties which are said to be part of the national patrimony and shall therefore be managed in the national interest¹¹ and the improved varieties that are the property of those who produce them.¹² Some policy actors and researchers in Burkina Faso have seen in this approach a strong recognition of the informal seed system in Burkina Faso and its role in agricultural production and food security.

The broader aim of the Seed Act is to regulate all activities associated with seeds in the country. In this respect, the Act intends to create conditions that promote quality, production, commercialisation and utilisation of seeds in order to contribute to the modernisation of agricultural production in Burkina Faso and therefore contributing to the country's efforts in addressing food security.¹³ An important exclusion of the Act is that it does not apply to biotechnologically produced plant varieties.¹⁴ Considering the increased interest and engagement of researchers in biotechnology based plant breeding and the potential for the biotechnology sector to produce varieties that can address such challenges as climate change, it is hard to see how important investors in plant breeding will be encouraged to engage with Burkina Faso, if the Seed Act does not regulate biotechnologically produced new plant varieties.

Plant breeding for the production of new varieties of plants is carried out by the State's agricultural or forestry research institute, or any other research entity so authorised by the State. The varieties bred by these institutions are released, homologated and included in the national catalogue and then made available to commercial seed producers who will produce certified seeds under the control of the ministries of agriculture and forestry.¹⁵ The protection of new plant varieties through the granting of a plant variety certificate to the breeder is regulated under Article 11 of the Seed Act.¹⁶ However, with regards to farmers' privilege and breeders' exemption, the Act provides that the rights afforded by the PVP certificate to the plant breeder shall not prevent farmers' from using proprietary varieties in their own holdings and plant breeders' rights shall not prevent other breeders from using those proprietary varieties for further breeding.¹⁷

As indicated earlier, the seed Act provides for the regulation of traditional varieties, which are considered to be part of the national patrimony. As such, traditional varieties cannot be exported without special authorisation and if they have to be exported, such activities shall conform to relevant international law and protocols. The Act stipulates that any advantage deriving from the utilization of traditional varieties shall benefit local communities that are the traditional guardians of those varieties. By advantage deriving from the utilisation of traditional varieties, one seed specialist in Burkina Faso states that such advantage shall include the sharing with local communities in the form of low cost seeds or seed donations, of improved varieties produced by research on the basis of traditional varieties from Burkina Faso.

¹⁰ Article 2 of the Seed Act 2006

¹¹ An important development in the institutional framework pertaining to the management of plant genetic resources in Burkina Faso is the establishment in 2009 of a national commission for the management of Plant Genetic Resources called CONAGREP (Commission Nationale de Gestion des Ressources Phytogenetiques). One of the roles of this commission is to promote the implementation of the International Treaty on Plant Genetic Resources of the FAO, the Convention on Biological Diversity and other international treaties pertaining to plant genetic resources. One of such treaties in the portfolio of CONAGREP, as mentioned by the new executive secretary of CONAGREP is the UPOV Convention, the 1991 Act.

¹² Article 3 of the Seed Act 2006

¹³ Article 1 of the Seed Act 2006

¹⁴ Article 4 of the Seed Act 2006

¹⁵ Article 6 to 10 of the Seed Act 2006

¹⁶ The protection referred to here is afforded by Annex X of the OAPI 1999 Revised Bangui Agreement

¹⁷ Article 12 of the Seed Act 2006

The Seed Act provides that, any physical or moral person can engage in the activity of seed production or multiplication, by registering as a seed producer. Upon registration and payment of the required fee, the seed producer is included in the national register of seed producers which is held and managed by the National Seed Service at the Ministry of Agriculture. In practice, small holder farmers and individual actors have not taken full advantage of this provision in becoming more involved in seed production in Burkina Faso. It is not clear if this lack of involvement of this category of actors in seed production is due to lack of interest, ignorance of the lack of or lack capacities including technical and financial to engage in the seed production business. In the same vein, the commercialisation of seeds depends on the issuance of a licence by the ministry of commerce upon consultation with the ministry of agriculture and forestry. Seed import and export is also permitted by the Act, but must be carried out under strict respect of the phytosanitary measures in force in the country. Actors willing to engage in the importation or exportation of seeds must apply for and be granted a special licence by the ministry of commerce upon consultation with the ministries of agriculture and forestry.

Quality control for the purpose of certification is a core area of the 2006 seed Act. The Act provides that, quality control for the purpose of certification shall be carried out on farm and in a laboratory. Quality control activities, which shall be specified by a special decree pursuant to Article 17 of the Act, will be carried out by special and qualified agents appointed by the ministries of agriculture and forestry.¹⁸ Importantly, the Act provides for the creation of a national seed committee, which is charged with the overarching role of promotion of the seed sector in Burkina Faso.¹⁹ The National Seed Committee is divided into two sub committees: the subcommittee in charge of the homologation and release of Agricultural seeds and the subcommittee in charge of the homologation and release of forestry seeds.²⁰

Since the promulgation of the Seed Act in 2006, it is only in August 2012 that the National Seed Committee and its two sub committees were setup. These entities are not even fully operational yet, because the implementing regulations that are expected to accommodate the procedures for homologation, variety release and seed certification are not yet in place. The roles and prerogatives of the quality control agents to be appointed by the ministries of agriculture and forestry are still being defined. Thus currently, variety homologation and release are basically carried out by the research institutions undertaking the breeding activities themselves. With regards to quality control, the National Seed Service has regional representations with staff visiting seed production farms for the verification of DUS criteria. Through its four regional laboratories, the National Seed Service also undertakes quality control tests looking at seeds health, purity and germination vigor.

The seed law Burkina Faso entered into force in 2006, but there is still a lot to do in order to make Act fully operational. Until it is effectively operational, it is hard to assess the impact of the Act in ensuring the delivery and availability of seeds for the benefit of the agricultural sector of the country.

Rwanda

The regulatory framework pertaining to the production of improved varieties, the processing and commercialisation of quality seeds in Rwanda does not include a Plant Variety Protection (PVP) legislation. Nonetheless, the two key instruments briefly described below, very relevant to the seed sector in Rwanda are: Law No 14/2003 of 23/05/2003 on production, quality control and commercialisation of plant quality seeds (the Rwandan Seeds law) and the national seed policy of 2007.

¹⁸ Article 29 and 30 of the Seed Act 2006

¹⁹ Article 32 of the seed Act 2006

²⁰ Id.

The Rwandan Seeds Law of 2003

The seeds legislation currently in force in Rwanda is Law No 14/2003 to regulate the production, quality control and commercialisation of plant quality seeds in Rwanda. This law distinguishes between ‘seeds’ broadly stated and ‘quality seeds’ as the category of seeds to which the law applies. In the law, ‘Seeds’ is defined as every grain, plant or part of a plant intended for the plant multiplication in general. However, by adding an element of quality control in the production process, the law defines ‘quality seeds’ as seeds produced, controlled, processed and labelled according to modalities prescribed by law. The 2003 Seed Law of Rwanda applies specifically to quality seeds by regulating their production, processing and marketing. It should be noted that there is a clear mention in the law that it does not apply to the farm saved seeds which are distributed and exchanged by farmers through the informal system.²¹ Actors in the seed sector in Rwanda have different views concerning the silence of the Seed Act on farm saved seeds. According to some actors, this omission of farm saved seeds from the scope of the law should be interpreted to imply that farmers’ are implicitly allowed to save, exchange and distribute seeds among themselves. However, by failing to specifically accommodate this element in the seed Act, according to some actors, this signifies that farmers are not legally to use the practice of informal exchange of farm saved seed among farmers.

Seeds production may be carried out by any moral or physical person. However every seeds’ producer has to be registered in the national register that is kept by the minister having agriculture in his/her portfolio.²² Seeds produced must conform to the quality standards provided by a ministerial decree.²³ In order to ensure that the seeds so produced are of the required quality before release, the law provides for the creation of a Variety Release Committee to be appointed by the minister in charge of agriculture.²⁴ In addition, the Seeds law provides for the establishment of a National Seed Service under the ministry of Agriculture stating that a prime ministerial decree will define the responsibilities, organisation and functions of that Service.²⁵ Concerning the commercialisation of seeds in Rwanda including the importation into Rwanda of quality seeds produced overseas, every moral or physical person can engage in the marketing of seeds provided that this person registers in the national register that is kept by the minister in charge of agriculture. Seeds that are to be imported into Rwanda must conform to the established norm of quality for seeds produced in Rwanda. Although the law fails to provide details on the processes to be applied in quality control, the main institution responsible for seed certification and the role of seed inspectors, the law broadly states that seeds produced and marketed in Rwanda must undergo quality control.²⁶ One of the prerogatives of the National Seed Service is to ensure that, seeds imported into Rwanda are kept in quarantine and inspected in order to establish that they are disease free. But, what appears to be happening in practice is that the National Seed Service does not have sufficient means (e.g. lack of trained seed inspectors) and power to undertake its tasks meaning that seeds imported into Rwanda generally end up in the markets with no proper control. An important development in the implementation some aspects of the 2003 Seed Act occurred in 2010 with the promulgation by the minister of agriculture of a number of ministerial orders including: A ministerial order setting conditions required for marketing quality seeds; A ministerial order determining regulations on quality seeds production and quality control of seeds; A ministerial order appointing the Variety Release Committee; A ministerial order determining prices for services rendered in seed quality control

Since the promulgation of these ministerial orders in 2010, the Variety Release Committee has not really been operational. This means that there are no guidelines or procedures for quality control and variety release in Rwanda. Consequently, once a variety is bred in Rwanda or imported into the country, it is in effect directly released and made available for seed multiplication. Until when an

²¹ Article 2 of the Seed Law 2003

²² Article 4 of the Seed Law 2003

²³ Article 5 of the seed Law 2003

²⁴ Article 3 of the Seed Law 2003

²⁵ Article 6 of the Seed Law 2003

²⁶ Article 11 to 13 of the Seed Law 2003

independent seed certification agency is established, the Rwandan Agricultural Board (RAB) is the country's agency that undertakes field inspection of seed multiplication farms, collecting samples that will be tested in the National Seed Laboratory. By and large, with the lack quality control standards and guidelines, seeds produced by registered farms controlled by RAB inspectors are effectively considered quality seeds and are therefore packaged and marketed.

The National Seed Policy 2007

In 2007, Rwanda developed a National Seed Policy, setting out the country long term vision and comprehensive national objectives in relation to seeds. The vision of the 2007 National Seed Policy is:

“An organized and high performing seed commodity chain, which contributes to increasing agricultural production and productivity growth resulting from a coordinated and complementary action of its public and private stakeholders who can interact to produce and put at the disposal of agricultural farmers quality seeds, in due course, which are in adequate quantity and adapted to different agro-bio-climatic conditions in Rwanda”

Supporting this ambitious vision, the comprehensive objective of the National Seed Policy is to:

- Promote the collaboration of public services and private sector in order to ensure adequate production and supply of quality seeds, and a strong awareness of farmers about the crucial importance of quality seeds in agricultural production

More specifically, the 2007 National Seed Policy intends to:

- Promote regular introduction of high performing and adapted varieties in the seed commodity chain through national capacity building in relation to variety development and regional cooperation in this domain;
- Promote the central role of the private sector in the production and adequate supply of quality seeds to agricultural farmers;
- Build national capacity related to seed commodity chain coordination, seed quality control and certification.

The 2007 National Seed Policy is structured around the main components of the chain of production, commercialisation and distribution of quality seeds including variety research and development, seed production and conditioning, strategic seed security stock and marketing, seed use promotion, seed quality control, seed import and export, the financing of the seed sector and the coordination and implementation of the seed policy. Under the component ‘variety research and development’, the following is the approach of the National Seed Policy on intellectual property rights over plant varieties in Rwanda:

- Crop varieties developed by public research institutions remain the property of the particular performing institution and shall be used by seed producers free of charge with regard to intellectual property rights issues.
- The Government shall adopt appropriate legislation on intellectual property rights concerning variety breeders' rights as well as conditions of the use of public obtainments by the private sector.

This registration shall have the following objectives:

- Give variety breeders, whether public or private, the opportunity to be compensated for the efforts and means invested in developing that seed variety through an intellectual property rights sharing system;
- Constitute a motivation for sustained investment in activities of developing seed varieties;

- Encourage the private sector to invest in the production of basic and certified seeds;
- Encourage and reinforce a public variety development programme through payment mechanisms of public seed breeders whose varieties are used by the private sector.
- Seed varieties developed by individuals or private companies shall remain the property of those who developed them.

Despite the adoption of law No 31/2009 of 26/10/2009 on the protection of intellectual property rights in Rwanda in 2009 which broadly mentions the need to protect discoveries of plants, genetic resources, traditional knowledge and folklore, there is no specific law in Rwanda on the protection of breeders' rights over new varieties of plants. As a member of the African Regional Intellectual Property Organisation (ARIPO), Rwanda will be bound by the ARIPO framework for the protection of new varieties of plants if adopted and may be inspired from that framework in an endeavour to establish its own national PVP regime.

The lack of specific plant breeders' right legislation is an issue of concern to breeders who are employed by the Rwandan Agricultural Board. Some breeders stressed that they are monitoring very carefully the development of the ARIPO legal framework and will be looking at getting legal advice in order to use that framework for the protection of their rights, if it is adopted by ARIPO. On the other hand, significant responsibilities have been placed on the Variety Released Committee that is yet to be effectively operational. Some actors in the seed sector in Rwanda stress that, until this Committee develops the various tools that are expected from it and until those tools start being implemented, the aims of the Seed Act will be difficult to be realised.

Tanzania

There are two main instruments governing the production, processing and commercialisation of new varieties of plants and for the protection of the rights of plant breeders in Tanzania. This section provides a very brief overview of these two instruments, stressing their roles in ensuring the availability of quality seeds in Tanzania and in addressing the interests of both farmers and plant breeders.

The Seed Act No18, 2003

The Seed Act No18 of 2003 of the United Republic of Tanzania was enacted by parliament to 'make provisions for the control and regulation for the standards for agricultural seeds and incidental matters'. Key elements of the 2003 Act include its provisions on the establishment of the National Seed Committee and the establishment of the Tanzanian Official Seed Certification Institute (TOSCI) whose role is broadly to ensure that only quality seeds are released and available in the market. Furthermore the Act makes provisions for the production and commercialisation of Quality Declared Seeds (QDS) based on the standards of quality control that are less stringent than those applied for the release of certified seeds. Other critical areas of the 2003 Seed Act are its provisions on the registration of seeds' dealers, on the roles of seed inspectors and seed analysts and on measures applied in dealing with acts carried out in violation of the seed Act.

A technical committee named the National Seeds Committee is established under section 3 of the 2003 Seed Act. With broad representation from various agencies involved in the seed sector, this committee is chaired by the Permanent Secretary to the ministry responsible for agriculture. The role of the committee is to act as a stakeholders' forum with the core responsibility to advise the government on all matters related to the development of the Tanzanian seed industry.²⁷ Specifically the committee is responsible for advising the ministry on formulation and implementation of the seed industry policy and implementation of guidelines; to give the ministry advice on the implementation and amendment of the seeds legislation and not least to advise the minister on the approval of plant

²⁷ Section 5 of the Tanzanian Seed Act 2003

varieties. In order to ensure that the new varieties of plants that are approved and released are of quality e.g. with regards to their purity and germination, the Act empowers the minister to appoint or designate from time to time qualified persons to be inspectors or analysts who shall have and exercise the powers generally respecting seeds in accordance with the provisions of the Act.²⁸ The duties of qualified seeds inspectors and seeds analysts of the Tanzanian Official Seed Certification Institute (TOSCI) as provided by the Seed Act range from the conduct of field inspections to undertaking pre and post-harvest seed control.

Alongside certified seeds that are in theory seeds of superior quality, the 2003 Act has introduced the category of Quality Declared Seeds (QDS).²⁹ QDS are meant for small holder farmers who for various reasons do not have access to certified seeds including due to lack of financial means to purchase certified seeds or because certified seeds is not delivered in their areas. The Act defines QDS as ‘seeds produced by a registered small holder farmer which conforms to the specified standards for crop species concerned and which has been subject to the quality control measures prescribed in the regulations made under the Act’. In order to be approved and released as certified seeds, there are various quality control tasks that must be carried out including field inspection, seed processing and storage, seed marking and labelling, tagging and seals and seed sampling and testing. While all these tasks are expected to be rigorously carried out in respect of fully certified seeds, some of these tasks are either less rigorous on QDS or totally withdrawn from QDS production.³⁰

In order to operate as a seed dealer including as a seed producer, importer, exporter, distributor or seller, any interested person or agency must go through a registration process provided under section 15 of the seed Act 2003. This registration scheme equally applies for any facility such as a processing factory or a seed testing laboratory. There shall be a certificate of registration to be granted by the minister attesting that the person or the facility is legally authorised to operate in the country according to the terms of the certificate of registration.³¹ The Seed Act 2003 has provisions pertaining to offences and penalties. Any offender shall be liable on conviction of offence of a fine of not less than one million Tanzanian shillings but not exceeding 5 million shillings or an imprisonment for a term not exceeding one year or to both such fine and imprisonment. Furthermore, under the Act, ‘the court may in addition order any article in respect of which such offence has been committed or which has been used for the commission of such offence to be forfeited’.³²

While setting out a stringent approach pertaining to the production or certified seeds, an important dimension of the Tanzanian Seed Act 2003 is its recognition and regulation of QDS aimed at small holder farmers.

The Plant Breeders Rights Act 2002

The Plant Variety Protection regime currently in force in Tanzania is the Plant Breeders’ Rights (PBRs) Act that was passed by parliament on 07 November 2002. By a ministerial order, the 2002 PBRs Act was declared officially operational in February 2004. But it is only until 2005, that the 2002 PBRs Act became effectively operational. This was made possible through the creation of the Plant Breeders’ Rights Office (PBRO) and the appointment of the Registrar of plant breeders’ rights in 2005.

²⁸ Section 8 of the Tanzanian Seed Act 2003

²⁹ Section 19.2 of the seed Act 2003

³⁰ It is suggested that only ten percent of QDS field production is inspected by TOSCI qualified and trained inspectors. On the other hand, seed processing and treatment by certain chemical products is not compulsory on QDS.

³¹ Section 16 of the Seed Act 2003

³² Section 26.2 of the 2003 seed Act of Tanzania

Like most PBRs regimes, section 14 of the Tanzanian 2002 PBR Act provides that for a variety of plant to be protected, it has to be new,³³ distinct,³⁴ uniform³⁵ and stable.³⁶ In addition to these criteria, the variety should have a denomination and the applicant must pay the required fees. In order to assist the plant breeders' rights office in the examination process, the applicant for PBRs is required to describe the characteristics of the variety and shall provide samples of the variety and indicate all the countries where similar protection has been applied for. One area of collaboration between the PBRO and Tanzanian Official Seed Certification Institute (TOSCI) in the context of the examination of the PBR application is in relation to the examination of the DUS criteria. It has been suggested that for the purpose of the examination of the DUS criteria for a PBR application, rather than going through the entire process for a DUS test, the office of the registrar generally requires and uses the results of the DUS test of TOSCI gathered during the variety approval and seed certification process. Assuming the PBRs is successful, for a period of 25 years for trees and vines, 20 years for other crops renewable every five years, the Act affords a set of rights to the rights' holder including the sole rights to sell, produce, reproduce and multiply propagating materials of the variety or to stock the variety for any of these purposes.³⁷

Alongside the rights afforded to plant breeders' rights holder under the Act, the 2002 PBRs regime has made provisions useful for the promotion of further breeding on the one hand and addressing the interests of farmers on the other. Under the exceptions to plant breeders' rights, there are a number of acts that can be performed without being characterised as infringements to PBRs including:³⁸

- Acts done privately for non-commercial purposes
- Acts done for the purpose of further breeding
- acts done by farmers with the Purposes of propagating, on their own holdings, the product of the harvest which they have obtained by Planting the Protected variety or a variety to which section 33 applies

Another dimension of the 2002 Act that is viewed to be in the interests of farmers is encapsulated in Section 57 which empowers the minister to set aside part of the fees paid to the registrar to be used for the benefit of traditional farmers and the conservation of traditional varieties. It is however not clear to what extent this provision has been implemented to the benefit of small farmers and the conservation of farmers' traditional varieties.

With regards to promoting compliance with the Act, section 51 makes provisions on offences and penalties on conviction of any activity carried out in violation of the Act. A number of offences are recognised under the Act including but not limited to making false entries or declarations, obstructing the registrar or his officers from conducting their duties, selling a variety using a wrong denomination. Anybody convicted of such offences is liable for a fine not exceeding five million Tanzanian shillings or one year of imprisonment or both.

Since its adoption in 2002 and effective entry into operation in 2005, it is reported that 51 applications for PBRs have received among which 38 have been granted and 13 are still being examined. Below is the list of applications received so far:

³³ section 15 of the Act

³⁴ section 18 of the Act

³⁵ section 20 of the Act

³⁶ section 19 of the Act

³⁷ Section 31 of the 2002 PBR Act of Tanzania

³⁸ Section 34 of the 2002 PBR Act of Tanzania

Table 1: PBRs application received by the Tanzanian PVP Office since 2005

Crops	Number of applications
Maize	5
Coffee	18
Beans	5
Sesame	2
Cashew	16
Cotton	2
Groundnut	1
Tomato	2
Total	51

It must be stressed that, the parliament of the United Republic of Tanzania has recently passed the 2012 Plant Variety Protection Bill³⁹ which has been developed to comply with the 1991 Act of the UPOV convention.⁴⁰ According to the minister of Agriculture who defended the bill in parliament, the new instrument will stimulate, facilitate and improve agricultural research in the country through grant and regulations of plant breeders' rights, the establishment of plant breeders' rights office and entrusting with the office functions of granting plant breeders' rights. To become Act, this new instrument awaiting the president assent and once this is achieved, the new PBRs Act will pave the way for Tanzania joining UPOV 1991 Act as a full member.

Both the seed Act and the plant variety protection law of Tanzania appear to have addressed the interests of farmers on the one hand and the breeding industry on the other. The inclusion of a legal recognition of QDS is, according to some actors in the Tanzanian seed sector, a very useful option to make improved seeds available to farmers in remote areas where certified seeds are difficult to access.

Uganda

There are two key instruments governing on the one hand the production, processing and commercialisation of seeds and on the other hand the protection of the rights of breeders of new plant varieties. These are: The Seeds and Plant Act 2006 and its draft implementing regulations of 2011; The 2010 Plant Variety Protection Bill

The Seeds and Plant Act 2006 and the 2011 Draft Implementing Regulations

The Seed law currently in force in Uganda is the Seeds and Plant Act 2006, which was adopted with the aim to promote, regulate and control plant breeding and variety release, multiplication, conditioning, marketing, importing and quality assurance of seeds and other plant materials and for other related matters.⁴¹ The broader responsibility for driving the implementation of the Seed Act is assigned to the National Seed Board, which is established under the ministry of agriculture. Its functions range from advising the minister on the National Seed Policy to formulating and advising the Minister on the regulations and standards controlling the development of the seed in distinctness, uniformity and stability.⁴²

³⁹ <http://allafrica.com/stories/201211130270.html>

⁴⁰ Doc TWA/41/31 prov., Reports on Development in Plant Variety Protection from Members and Observers, International Union for the Protection of New Varieties of Plants, Technical Working Party for Agricultural Crops, Forty First Session, Angers, France, May 21 to 25, 2012.

⁴¹ Acts Supplement No.3, the Seeds and Plants Act 2006, the Ugandan Gazette No.32 volume C, dated 29th June 2007

⁴² Section 4 of the Seeds and Plant Act, 2006

Key to ensuring that quality/improved seeds are produced according to the standards, approved and eventually released, the Seed Act 2006 provides for the establishment of a technical committee known as Variety Release Committee that will be chaired by a committee member appointed by the Board.⁴³ The functions of the technical committee are to maintain the national variety list and approve new varieties. Furthermore, the committee will approve and release new varieties and ensure their entry into the seed multiplication programme.⁴⁴ Another core entity with a critical role in ensuring quality control and enforcement of seeds production standards established by the Act is the National Seed Certification Service of the ministry of agriculture.⁴⁵ This service has the primary responsibility for the design, establishment and enforcement of seeds certification standards. The specific responsibilities of this service range from the provision of advice to the Board on modifications to seeds standards and providing the board with information on any technical aspects affecting seed quality; to establishing standards for varieties performance trials and DUS tests and carrying out field inspection, testing, labelling, sealing and eventual certification.⁴⁶ Furthermore, the Act provides that National Performance Trials must be carried out on new varieties of plant including varieties bred in Uganda and varieties imported into Uganda. For imported varieties, performance trials test must be carried out on varieties for at least two main growing seasons before their release.⁴⁷ However, there should be specific regulations to be promulgated by the minister with the aim of establishing clear guidelines and standards for the control of plant breeding, seed multiplication and marketing, certification of seeds and generally for the better implementation of the provisions of the Act.⁴⁸ The Seeds and Plant Act, 2006 has made provisions on some offences including the sale of prescribed seeds under a different name,⁴⁹ tempering with seed samples,⁵⁰ altering official records,⁵¹ altering documents and marks⁵² and secrecy.⁵³ On conviction for committing any of the offences under this Act, any offender is liable for a penalty in the form of a fine not exceeding ninety six currency points or to imprisonment for a term not exceeding four years or both.⁵⁴

To aid the implementation of the Act, Draft Seed Regulations under Section 28 of the Seeds and Plant Act, 2006 entitled the Seeds and Plant Regulations 2011, have been developed and are being discussed by stakeholders in the seed sector in Uganda. The objectives of these regulations are to promote, regulate and control plant breeding, variety release, multiplication, conditioning, marketing, importing and quality assurance of seeds and other planting materials. When adopted, it is hoped that the implementation of the Seeds and Plant Regulations will constitute an important step towards elevating Uganda as an elite in quality seed production for the benefit of its agricultural system and of the East African sub region.

The 2010 Plant Variety Protection Bill

Currently, there is no specific Plant Variety Protection (PVP) legislation in Uganda. On the recommendation of the Variety Release Committee, the responsibility to grant plant breeders' rights over new varieties of plant rests with the National Seed Board (NSB) an agency established under the 2006 Seeds and Plant Act, within the Ministry of Agriculture Animal Industry and Fisheries (MAIF). However the country is in a process of establishing its PVP regime, with the 2010 Plant Variety Protection Bill going through parliament. The object of the PVP bill is to provide for the promotion of the development of new plant varieties and their protection as a means of enhancing breeders'

⁴³ Section 6 of the Seeds and Plant Act, 2006

⁴⁴ Section 7 of the Seeds and Plants Act, 2006

⁴⁵ Section 8 of the Seeds and Plant Act, 2006

⁴⁶ Id.

⁴⁷ Section 9 of Seeds and Plant Act, 2006

⁴⁸ Section 28 of the Seeds and Plant Act, 2006

⁴⁹ Section 19 and 20 of the Seeds and Plant Act, 2006

⁵⁰ Section 21 of Seeds and Plant Act, 2006

⁵¹ Section 22 of Seeds and Plant Act, 2006

⁵² Section 23 of Seeds and Plant Act, 2006

⁵³ Section 24 of Seeds and Plant Act, 2006

⁵⁴ Section 25 of Seeds and Plant Act, 2006

innovations and rewards through granting of breeders' rights.⁵⁵ The purpose of the prospective PVP Act is multifaceted ranging from the recognition and protection of the rights of breeders' over the varieties developed by them; the promotion of appropriate mechanisms for a fair and equitable sharing of benefits arising from the use of plant varieties, knowledge and technologies to the promotion of the supply of good quality seeds or planting materials to farmers in order to strengthen the food security of the nation.⁵⁶

To achieve this multifaceted purpose, the PVP bill provides for the establishment of two important agencies: the Plant Variety Protection Office (PVPO) and the Plant Variety Protection Committee (PVPC). The PVPO, to be established under the Ministry of Agriculture Animal Industry and Fisheries, shall be headed by a PVP registrar who will be responsible for the day to day management and administration of the Office. The specific functions of the PVPO include among others the reception and examination of applications for the registration of PBRs, the issuance of PBRs certificates and the maintenance of the register of PBRs.⁵⁷

Furthermore, a Plant Variety Protection Committee shall be established with broader representation from various segments of the agricultural sector in Uganda.⁵⁸ The PVP committee shall perform among other functions: the provision of advice to the Minister on policies relating to plant varieties; the approval of plant varieties to be registered and the provision of recommendations and review of the policy of the PVP office

Like most PVP regimes, the 2010 PVP bill of Uganda provides that for a new plant variety to be protected, it has to conform to the basic requirements of Distinctness, Uniformity and Stability (DUS). In addition, the variety has to be named and the variety denomination needs the approval of the Plant Variety Protection Committee.⁵⁹ If the application for PBRs is accepted by the registrar, it shall be presented to the PVP committee within six months and the PVP committee shall make a decision within six months. The 2010 PVP bill provides for a term of protection of twenty years in the case of annual crops or twenty five years in the case of trees, vines and other perennial crops on the day of filing of the application. During this period, the breeder shall have the exclusive right to sell, including the right to licence other persons to sell and export plant varieties and reproductive material of plants of that variety; and the exclusive right to produce, including the right to license other persons to produce, reproductive material of plants of that variety.⁶⁰ Crucially, the PVP bill has made provisions for the protection of the rights of the breeder over what it calls dependant varieties, which are varieties that are considered to be essentially derived from a protected variety.⁶¹ This provision is meant to prevent cosmetic breeding and the claiming of PBRs over minor modifications from a protected variety.

There are exemptions and restrictions to the rights of plant breeders as provided by the Bill. On the exemptions to PBRs, the bill provides that despite the validity of PBRs over a given variety, any person may propagate, grow and use parts of the variety for purposes other than commerce; any person may sell plants, seed or propagating materials of plants of that variety as food or for another use that does not involve growing of the plants or the production of plants of that variety and any person may use a protected variety in further breeding, research or education for non-commercial purposes.⁶² Further exemptions include the possibility given to a farmer to exchange, seed, plants or propagating material of plants of that variety with another farmer for purposes other than commerce. Although this specific exemption falls short to reflect the full breath of the farmer's rights concept

⁵⁵ Bill No.2, Plant Variety Protection Bill, the Uganda Gazette No 12 Volume CIII dated 22nd February, 2010

⁵⁶ Article 2 of the 2010 PVP Bill

⁵⁷ Article 6 of the 2010 PVP Bill

⁵⁸ Article 8 of the 2010 PVP Bill

⁵⁹ Article 21 of the 2010 PVP Bill

⁶⁰ Article 13 of the 2010 PVP bill

⁶¹ Article 14 of the 2010 PVP Bill

⁶² Article 15 of the 2010 PVP Bill

which NGOs are still campaigning for in relation to the PVP bill, it nevertheless makes the bill to take into account an important aspect of farmer informal approach in exchanging seeds and other planting materials. With regards to the restrictions to PBRs, the bill empowers the Minister, under certain conditions to take certain actions when he/she considers that the exercise of PBRs may not be in the public interest. For example, where a high proportion of the plant variety offered for sale is imported, the Minister may licence the rights to an actor to produce the plant variety domestically subject to some compensation to be awarded to the right holder.

The PVP Bill has been drafted with the ambition of joining UPOV in the minds of Ugandan policy makers. The key now for the bill is to be passed into law, which seems a serious challenge considering the heated debate on the bill within the parliament with some many members of parliament still to be convinced that the UPOV membership is in the Interest of the Ugandan agricultural sector.

Patent protection over plant varieties in the study countries

The African group of negotiators to the WTO TRIPS council has been at the forefront of the agitation concerning patents on life forms clearly stating its opposition on the patenting of micro-organisms and microbiological processes within the framework of the review of Article 27(3) (b) of TRIPS. On the basis of TRIPS article 27(3)(b), plants and animals and essentially biological processes for the production of plants and animals may be excluded from patentability. However, micro-organisms and microbiological processes may not be excluded from patentability. Based on the TRIPS approach therefore, biotechnological processes using a micro-organism as vector for the production of a genetically modified new variety of plant may be patented, provided the said process conforms with the basic criteria for patentability. In a joint position of the African Group in preparation to the 1999 ministerial conference of TRIPS, Kenya, on behalf of the Africa stressed the African opposition to the patenting of life forms, criticising what it called ‘artificial distinctions between biological and microbiological organisms and processes’.⁶³ The 1999 African submission states as follows:

‘By stipulating compulsory patenting of micro-organisms (which are natural living things) and microbiological processes (which are natural processes), the provisions of Article 27.3 contravene the basic tenets on which patent laws are based: that substances and processes that exist in nature are a discovery and not an invention and thus are not patentable. Moreover, by giving Members the option whether or not to exclude the patentability of plants and animals, Article 27.3(b) allows for life forms to be patented’.

Considering that the Review of Article 27(3)(b) is still a pending issue within the TRIPS council, it is evident that the African Group has not yet managed to get its views widely accepted by the WTO members meaning that like any other WTO member and based on its flexible approach, African countries are legally expected to frame their domestic patenting rules in compliance with current reading of the article. That is arguably why the patent regimes of all the five countries are framed to reflect the current reading of TRIPS Article 27(3) (b), however clearly excluding plants, animals and plant varieties from patentability. But an option available under TRIPS that can be exploited by African countries in order to exclude patenting of biotechnologically produced plant varieties is the use of the flexibility under article 27(2) if they can prove that such exclusion is to prevent the commercialisation within the territory of inventions that are contrary to public order or morality.

Practically speaking, with the exception of Kenya, there has so far been no patent application or grant on biotechnologically produced plant varieties in the countries surveyed either through the national IP office or the regional organisations to which they are affiliated. With regards to the legal frameworks, the patent Act 1987 of Tanzania provides that, plants or animal varieties or essentially biological

⁶³ See, ‘Preparations for the 1999 ministerial Conference: The TRIPS Agreement. Communication of Kenya on behalf of the African Group’. The African Group at the WTO, WT/GC/W/302, 06 August 1999.

processes for the production of plants or animals are not considered to be inventions.⁶⁴ However microbiological processes or the products of such processes can be considered inventions and may therefore be patented. Furthermore, patent may not be obtained in respect of inventions, the exploitation of which is against public order or morality.⁶⁵ Despite this position of the legal framework and the fact there has so far been no patent on GMOs in Tanzania, there is a view at the Tanzanian Business Registration and Licensing Agency (BRELA), that in order to transform the agricultural sector in Tanzania, the country shall start thinking about GMOs production and patenting.

With regards to Kenya, the legal framework regulating the protection of industrial property permits the patenting of biotechnologically produced plant varieties as genetically modified organisms, but excludes the protection of new varieties of plants. Under the exclusions from patentability, plant varieties as provided under the Seeds and Plant Varieties Act shall not be patentable. However parts of such plant varieties or products from biotechnological processes shall be patentable. Also, excluded from patentability, are inventions which are contrary to public order, morality, health and safety and principles of humanity and environmental conservation.⁶⁶ While the legal framework is in favour for the patenting of genetically modified organisms, it appears that the absence of the biosafety regulation made the biotechnology actors to be reluctant in filing biotech based agricultural inventions due to lack of clarity of the regulatory framework on such issues as biosafety, public order and morality. However, despite the enactment of the biosafety law in 2009, there have been very few GMOs based patent applications from national actors, most of the applications received so far coming from international actors, essentially multinational seed companies. At the time this survey was carried out in Kenya, it was suggested that less than 20 GMOs based patent applications were filed in Kenya most of which were concerned with biotech Maize, cotton and soya.

In respect of Uganda, the 1993 Patent Act which was amended in 2002 in order to bring the Patent Cooperation Treaty into domestic law, provides that, as a member of the African Regional Intellectual Property Organisation (ARIPO), patent applications aimed at Uganda filed, examined and granted by the ARIPO patent office will be registered by the Ugandan patent office with very little to no further examination. In practice, with lack of expertise in patent examination at the Uganda Services Registration Bureau (USRB) which is the agency responsible for the administration of industrial property protection in Uganda, all patent applications received in Kampala are channelled to ARIPO where they are examined. The 1993 Act excludes from the definition of inventions, 'plant or animal varieties or essentially biological processes for the production of plants or animals, other than biological processes and the products of those processes'.⁶⁷ Clearly, similar to other countries like Kenya, by providing that biological processes and the products of those processes as biotechnologically engineered plant varieties may be patented clearly demonstrate that legally speaking GMOs may be patented in Uganda. Practically speaking, there is a significant push from known multinational seed companies like Dupont (US), Monsanto (US) and Syngenta (Switzerland) for farm testing of genetically engineered varieties maize, cotton and soya in Uganda. However, it should be stressed that there has so far not been a case of GMOs based patent application in Uganda, despite indications at USRB that enquiries for the filing of biotechnology based agricultural inventions have been made by both national and international actors.

With regards to Rwanda, the intellectual property law currently in force is law No 31/2009 of 26/10/2009 on the Protection of Intellectual Property. The Rwandan regime stipulates that, what shall be excluded from patent protection even if they are considered inventions are 'animal and plant varieties', then, 'plants and animals, including their parts, other than micro-organisms and essentially biological processes for the production of plants or animals and their parts, other than non-biological and microbiological processes and products obtained from those processes'.⁶⁸ Again, similar to the

⁶⁴ Article 7(2) of the Patent Acts of Tanzania 1987

⁶⁵ Article 12 of the Patent Act of Tanzania 1987

⁶⁶ Article 26 of the Kenya Industrial Property Act, 2001

⁶⁷ Article 7(2)(b) of the 1993 Patent Act Uganda

⁶⁸ Article 18(6) and 18(7) of the 2009 Intellectual property law of Rwanda

other countries and in line with TRIPS, legally speaking, genetically engineered plants such as GMOs may be patented under Rwandan law. However, practically speaking, there has not been any GMOs based patent application so far in Rwanda, according to the office of registrar general of intellectual property rights, based at the Rwandan Development Board (RDB).

The situation in Burkina Faso follows the trend of the other countries in relation to the legal framework on the protection of biotechnologically engineered plant varieties through the patent system. Serving as the national industrial property office of each of its member states, all patent applications filed either with the national liaison office or with the headquarter of OAPI in Yaoundé, Cameroon, are examined and granted by the regional office provided the claimed invention complies with the core patentability requirements. Under the exclusions of patentable subject matters, the 1999 Revised Bangui agreement provides that 'inventions the exploitation of which is contrary to public policy or morality, provided that the exploitation of the invention shall not be considered contrary to public policy or morality merely because it is prohibited by law or regulation'.⁶⁹ Furthermore, inventions having as their subject matter plant varieties, animal species and essentially biological processes for the breeding of plants or animals other than microbiological processes and the products of such processes'.⁷⁰ Despite the fact that there has so far been no patent granted on a biotechnologically engineered plant variety in the form of a GMO by OAPI, enquiries have been made in that respect largely by international actors, but OAPI is reluctant to practically engage with patenting on biotechnology inventions due to lack of expert examiners in such a complex technical area.

⁶⁹ Article 6(a), Annex I on Patents of the 1999 Revised Bangui Agreement

⁷⁰ Article 6(c), Annex I on Patents of the 1999 Revised Bangui Agreement

Chapter four: Typology of Seed Systems

Peter Munyi

Seed is a basic farm input. To obtain higher crop yields and sustainable agricultural production, timely availability of seed in the right quality and quantity is critical. A number of factors influence availability of seed. Seed quality is generally determined by availability of the right germplasm coupled by the right plant breeding skills with a view to develop seed material suitable for the target agro ecological condition. Even where the right germplasm and plant breeding skills are available, other factors come to play. These include the availability of seed multiplication and quality certification systems to ensure that the seed produced is of the right quality.

The seed must thereafter reach the farmer, at the right time and at an affordable price. According to the FAO, the importance of price varies from one market to another and between different segments of the same market. For example, non-hybrid seed is usually more price sensitive than hybrid seed since farmers tend to save non-hybrid seed more than hybrid seed. In marginal farming areas where spending power is low, price is more a critical factor, but less important where high yields can be obtained and farm produce sold profitably. While this does not sum up all the factors that determine the availability of seed, it serves to demonstrate the complex environment in which seed availability operates.

The commercial world seed market is assessed at approximately USD 45 billion, with Kenya, Uganda and Tanzania accounting for less than 0.001% of this value.

¹ Yet FAO estimates that 85% of global seed requirements come from informal seed sources. Given that most seed from informal sources does not enter into commercial channels, estimating its value is difficult. Regardless, the importance of informal seed sources cannot be underestimated. In most sub-Saharan African countries, seed demand is mostly fulfilled by the informal seed system for most crops. While there are many reasons why this is the case, one of these is that seed demand is too high to be met by the formal seed sector. As such, informal seed systems are extensive in most countries in sub-Saharan Africa and will continue to be so for years to come. However, it is also important to note that the commercial seed market are also on the rise, albeit slowly, due to persistent presence of and need for informal seed systems. Drought and climate uncertainties invite relief seed while weak and unenforced laws contribute to quality compromise of available commercial seed. Regardless, farmers are increasingly realizing the importance of improved seed particularly in hybrid crops. Recognition of the co-existence of these broad seed systems and the need to strengthen their roles in the sub-Saharan agricultural sector is, therefore, strongly recommendable.

Seed Systems

For many years, seed systems have been described as either formal or informal. Informal seed systems cover methods of seed selection, production, and diffusion by farmers, including the exchange of seed. Informal seed systems are also referred to as farmer-managed seed systems,² traditional seed systems,³ and local seed systems.⁴ They also include others such as communal based seed systems and seed relief systems: those that are not recognized by formal policies and laws. One of the key features of the informal seed system is saving, re-using or exchanging seed by farmers. On the other hand, the formal seed system is more linearly structured: from plant breeding, seed production, multiplication and distribution of seed to farmers. It is also officially recognized and

¹ International Seed Federation, 2012.

² Bal, S.S., and J.E. Douglas. 1992. Designing successful farmer-managed seed systems. Development Studies Paper Series. Morrilton, AK: Winrock International Institute for Agricultural development.

³ Cromwell, E., E. Friss-Hansen and M. Turner. 1992. The seed sector in developing countries: A framework for performance analysis. London, UK: Overseas Development Institute.

⁴ Almekinders, C.J.M., N.P. Louwaars and G.H. de Bruijn. 1994. Local seed systems and their importance for an improved seed supply in developing countries. *Euphytica* 78:207-216.

mostly supported. The structure of the formal seed system is guided by scientific methodologies for plant breeding and controlled multiplication operated by public and private sector specialists.⁵ Given the manner in which the formal seed system is structured, within it commercial seed production and marketing is only possible for a limited number of crops. In developing countries, the private sector's interest in the formal seed system lies on hybrids and high-value horticultural crops that can offer some profit, with the public sector offering plant breeding and varietal development support. In this scenario, the formal seed system offers little or no support to crops and varieties that are of low commercial value.

Each of these two systems has its own limitations. In the informal seed systems, the most common limitation is the assumption that seed is usually readily available and in such situations farmers are not well prepared when facing shortages, which can be acute.⁶ Another limitation that has been observed in informal systems is that because of the anti-cyclical nature of seed supply for major crops, seed demand is low after high productive seasons and vice versa.⁷ With regard to the formal system, its limitations lie within its components and the links between them.⁸ Each component is causally related to the other, with the behaviour of each component having an effect on the other. The level of dependency between each component of the seed supply chain, including the links between them means that when seed production is poorly organized and seed quality low, then the seed does not reach the farmers at the right quality, price and time.⁹ Nonetheless, the informal seed system is structured in a manner that is quicker to respond to external stress than the formal seed system without prejudice to the quality of the material it provides. Thus, when the formal seed system fails to fulfil seed demand, the informal seed system often makes up for the balance. However, this does not mean that seed insecurity is not a constant presence since as the formal and informal seed systems interact rather poorly.

Notwithstanding budgetary and institutional support given to the formal seed system in many African countries, more than 80% of the seed planted by many smallholder African farmers remains to originate from informal systems¹⁰. Regardless of whether farmers cultivate local or modern varieties, they rely on informal seed sources for planting material due to a number of reasons:

- Inadequate access to markets;
- The structure and functioning of market channels often unfavourable to those farmers living in remote areas;
- Limited access to financial resources or credit to buy or produce seed;
- The limited effectiveness of the formal system in providing timely and adequate access to quality seed of improved varieties; and
- The lack of interest or capacity of the research system for developing genotypes that are specifically adapted to their production environment, owing to economic and organizational considerations.^{11 12 13 14}

⁵ Niels P. Louwaars and Walter Simon De Boef. 2012. Integrated Seed Sector Development in Africa: A conceptual Framework for creating coherence between practices, programs and policies. *Journal of Crop Improvement*, 26:39-59, 2012.

⁶ Sperling, L., H.D. Cooper and T. Remington. 2008. Moving towards more effective seed aid. *J. Develop. Stud.* 44(4): 586-612.

⁷ Id, note 5.

⁸ Id, note 5.

⁹ Gregg, B.R., and A.J.G. van Gastel. 1997. *Managing seed marketing*. Ibadan, Nigeria: IITA/GTZ/CRI.

¹⁰ N. Minot, M. Smale, C. Eicher, T. Jayne, J. Kling, D. Horna and R. Myers. 2007. *Seed development programs in sub-Saharan Africa: a review of experiences*. Rockefeller Foundation, Nairobi.

¹¹ Lipton, M., and R. Longhurst. 1989. *New seeds and poor people*. London, UK: unwin Hyman.

¹² Tripp, R. 2001. *Seed provision and agriculture development. The institutions of rural change*. Oxford, UK: James Currey.

¹³ De Boef, W.S., H. Dempewolf, J.M. Byakweli and J.M.M. Engels. 2010. Integrating genetic resource conservaton and sustainable development into strategies to increase the robustness of seed systems. *J. Sustain. Agric.* 34: 504-531

The above scenario means that the informal seed system particularly farm seed-saving will remain the main source of planting material for African farmers for years to come. To this extent therefore, existing policy and regulatory frameworks should no longer ignore the value of the informal systems and should in fact support, strengthen and recognize these systems in their policies as much as they support formal systems.

Supporting and strengthening informal seed systems in equal measure to the formal seed systems will promote complementarity and integration of both systems and is likely to reduce instances where farmers lack access to seed.

Emphasizing the importance of recognizing and supporting a pluralistic approach of complementary seed systems' development.

In recent years, the strengthening and integration of informal seed system with formal seed systems has been championed through the concept of integrated seed sector development (ISSD) in Africa. This concept calls for development of a twin track approach where the effectiveness of both formal and informal seed systems can be improved through a concerted effort ensuring that proper integration is promoted at every component of the seed value chain.¹⁵ Already a number of policy programmes supporting the ISSD approach are emerging in Africa. One such programme is the Africa Seed and Biotechnology Programme (ASBP).

The origins of the ASBP can be traced to the 2001 Comprehensive Africa Agricultural Development Programme (CAADP) Report. This report stated that as of 2001, about 28 million people in Africa were facing food emergencies due to droughts, floods and strife, of which some 25 million needed emergency food and agricultural assistance. The report called for urgent action to be taken to create sustainable food security in Africa. The development of the seed sector at the continental, regional and national levels was seen as an essential element of this action.

In response to the CAADP report, the African Union Heads of State during an Ordinary Session of the Assembly of the African Union (AU) in 2005 discussed the importance of improved seeds for increasing agricultural productivity and food security in the continent. In their discussions, they recognized that African governments individually cannot confront challenges represented by developments in the international seed industries and by legal and technical issues, which restrict access to genetic resources and biodiversity. The African Union Commission proposed the ASBP as the framework to provide a strategic approach for the comprehensive development of the seed sector and related biotechnology in Africa, taking into account the different needs of the countries and regions. The programme focuses on germplasm management and development, crop research and variety release, including farmer testing/selection activities, dissemination of varieties, and production and supply of seed and planting materials through informal and formal seed systems. As part of its strategy to implement ASBP, the African Union Commission adopted the ISSD approach in 2011.¹⁶

In adopting the ISSD approach, the African Union Commission observed that given that in each country different seed systems could be seen operating alongside each other, then each system requires targeted policies and programs to enable their development. Further it was observed that creating interactions between formal and informal seed systems provides opportunities to improve the effectiveness of seed provision.

¹⁴ Lipper, L., C.L. Anderson and T.J. Dalton (Eds). 2010. Seed trade in rural markets. Implications for crop diversity and agricultural development. London, UK: Earthscan.

¹⁵ Id, note 5.

¹⁶ Africa Union Commission Communique, 2011.

Cascading the ISSD approach to African countries

Using the ISSD approach, the African Union Commission in conjunction with the Centre for Development Innovation of Wageningen University and other partners¹⁷ and with support from the Government of the Netherlands has undertaken seed sector assessments in eight African countries¹⁸. Of the countries assessed, one-Uganda is part of this project. The reports arising from the seed sector assessments in these countries depict a typology of seed system extending beyond the formal and informal systems. Currently, and based on these seed sector assessment outcomes, this project is now in its second phase exploring integrated pathways to inclusive and local seed entrepreneurship.¹⁹

Typology of seed systems in the project countries

In the countries that this project focuses on-Burkina Faso, Kenya, Rwanda, Tanzania and Uganda, a number of seed systems emerge. In this section these seed systems are discussed. Due to the commonality of these seed systems and taking into account the time that was available in carrying out field research, this study, rather than presenting each country separately and the typology of seed systems in it, has chosen to take a different approach. Thus, the typology of seed systems are described and in each, examples of what is present in the project countries is given.

Farmer- based seed systems

Farmer-based seed systems are characterised by individual farmers saving seed from harvests, exchanging seed with their neighbours or purchasing grain from the local market and using the same as seed. In some cases, it also involves individual farmers selling seed to others as entrepreneurs. One common element present in the five project countries is that farmer-based seed systems provide most of the seed that farmers use.

Burkina Faso is a centre of diversification of numerous species such as millet, sorghum, niebe, voandzou, igname local, rice glaberrima, fonio, among others. With 87% of agriculture being subsistence based, modern varieties of sorghum, millet and other crops have a very low adoption rate of 8%.²⁰ Further, the average need for improved seed is also low at 8.4% and it presents significant disparities.²¹ These two factors imply that even when new varieties are released, farmers prefer to save and exchange seeds for subsequent planting seasons from harvests.

In Kenya it is estimated that approximately 78% of all seed used comes from informal seed sources, the bulk of which is saved by farmers from their own farms, exchanged with neighbours or purchased as grain from the local market.²² The bulk of seed and planting material for vegetatively propagated crops- sweet potato (96%), cassava (93) and bananas (80%) is mostly obtained from farm-saved sources. For legumes the scenario is similar as 80% of bean seed, 75% of cowpea seed, 90% of millet

¹⁷ The ISSD project is coordinated by the Centre for Development Innovation of Wageningen University and Research Centre(CDI) in the Netherlands. The programme's international partners are the Government of the Netherlands, through its Ministry of Economic Affairs, Agriculture and Innovation (ELI) and the Directorate of International Cooperation (DGIS), Wageningen University Law and Governance Group, Self Help Africa (SHA), IFDC (Eastern and West Africa Programmes), the Royal Tropical Institute (KIT), the Future Agricultures Consortium, Agri-ProFocus, and the Technical Centre for Agricultural and Rural Cooperation (CTA).

¹⁸ Burundi, Ethiopia, Ghana, Mali, Malawi, Mozambique, Uganda and Zambia.

¹⁹ <http://www.wageningenur.nl/en/show/Integrated-Seed-Sector-Development-in-Africa.htm>

²⁰ Balma, D. et al. 2002. La gestion de la diversitee des plantes agricoles dans les agro-ecosystemes.

²¹ Compaore, M., Naon, F and Yamanaka, K. 2008. Etude de la situation actuelle sur la production et l'utilisation des semences ameelieoes dans les provinces de IOoubritenga, du Passoree, du Seeo, du Honet et du Boulgou du Burkina Faso.

²² Ayieko, M.W. & Tschirley, D.L. Enhancing Access and Utilization of Quality Seed for improved Food Security in Kenya. Tegemeo Institute of Agricultural Policy and Development. Working Paper No. 27/2006

seed and 87% sorghum seed is obtained from farm-saved sources. Maize is the least, with only 15% of seed being farm-saved.²³

In Tanzania, farmers have identified home saved seed as their most important source of seed and with respect to beans, it has been found that farmers recycle their varieties six times (FAO, 2006).²⁴ It has also been found that in some parts of Tanzania, 71% of farmers who started growing different bean varieties acquired seed from their relatives or neighbours.²⁵ According to 2006 SADC seed production projections, farm-saved seed supplied over 3 times for maize and over 5 times for rice than certified or quality declared seed (QDS).²⁶

Rwandan agriculture is characterised by one of the lowest rates of use of modern inputs in Africa and in the world. The National Seed Policy (2007) recognizes the informal seed system as being the most important. Farmer activities, such as selection and saving a portion of their production as seed for the next season is the main characteristic of this system. It is also characterised by multiple transactions and exchanges between farmers themselves, or through traders from whom farmers can also purchase food commodities some of which are sorted to be used as seeds.²⁷ Further, 60% of farmers acquire bean seed on-farm that is, from their own savings or by exchanging with their neighbours.²⁸ This has been confirmed by observations that all planting material originates almost entirely within farming community with only occasional formal distributions for disaster relief and of new varieties.²⁹

In Uganda, 80%-85% of the seed farmers use is produced in their own farms.³⁰ Seeds of local varieties of traditional and subsistence crops-legumes, banana, sweet potato and cassava as well as indigenous vegetables, are accessed in this manner. Farmer-based seed systems are a convenient form of providing planting material for vegetative propagated crops such as banana, sweet potato and cassava as they are bulky and perishable.

Community-based seed systems

Community-based seed systems involve association of individuals, often organized as a group or cooperative through the support of non-governmental organizations that help them in entrepreneurial forms of seed multiplication and the marketing of seed crops and food crops. These seed systems are established on the premise that the potential use of formal seed has limited adaptability under the prevailing conditions resulting from climate change, and that the economic value given to modern agricultural crop productivity has, for the most part, neglected the important contributions made by traditional crop improvement and seed supply system.³¹

A key feature of community-based seed systems is the community seed bank. Community seed banks are often understood as community-based stores used for the distribution of seed and grain to the local communities on a loan basis. In some cases, they are designed as income generating operations where high external input seeds with chemical packages are distributed to the farming community.³² This

²³ Id.

²⁴ Kasambala, S.; Rubyogo J.C.; Ngulu F.; Massawe K. and Peter .X. Assessment of bean seed dissemination channels in Babati district, Tanzania, In "Farmers' Seeds and Varieties: Supporting Informal Seed Supply in Africa"

²⁵ Id.

²⁶ SADC. Seed News Update, Issue No. 3. 2006.

²⁷ National Seed Policy, 2007.

²⁸ Sperling, L., T. Osborn and D. Cooper. 2003. Towards effective and sustainable seed relief activities: report of the workshop on effective and sustainable seed relief activities. FAO, Rome. Italy.

²⁹ Sam Namanda, Richard Gibson and Kirimi Sindi, Sweet potato Seed Systems in Uganda, Tanzania and Rwanda. *Journal of Sustainable Agriculture*, 35:870-884, 2011.

³⁰ Integrated Seed Sector Development II. Uganda Country Report, 2012.

³¹ Lim Li Ching, Sue Edwards and Nadia El-Hage Scialabba. 2011. Climate Change and Food Systems Resilience in Sub-Saharan Africa, FAO. Rome, Italy.

³² Id.

notwithstanding, a community seed bank system is and remains a part of a community-managed genetic resources conservation and utilization practice.³³

Community –based seed systems are often established either to support a fragile formal system recovering from systemic stress such as drought, pests or diseases or to strengthen an informal/farmer-based system. Hence, these seed systems operate only within niche areas and for a specific period of time. Regardless, they offer critical support to existing seed systems inasmuch as they are not formally recognized in existing policy structures. Each of the project countries has community-based seed systems supplying seed albeit to a small extent.

One well documented case is that of cassava, where in recent years, Catholic Relief Services (CRS) through its Great Lakes Cassava Initiative (GLCI) organizes farmers to produce and distribute Cassava Brown Streak Disease (CBSD) and Cassava Mosaic Disease (CMD)-free cassava planting material to other small-holder farmers, in the Great Lakes region which includes Kenya, Rwanda, Tanzania and Uganda.³⁴ By the end of the project in 2011, GLCI had generated new knowledge on CBSD diagnostics and disease epidemiology as well as completed discover of a complete cassava genetic code which led to rapid improvement in molecular diagnostic methods³⁵

In Tanzania, the Christian Council of Tanzania (CCT) and the Diocese of Central Tanganyika (DCT) have mobilized groups of farmers and assisted them to register as seed associations.³⁶ The DCT operates only in the Dodoma region, but the CCT operates nation-wide and has facilitated registration of 11 farmer seed associations. The CCT supports these associations to produce improved seed of sorghum, pearl millet and maize OPVs for commercial sale. These associations rely partly on the local community but mostly on their affiliated churches to provide markets for the seed produced. Similarly, to assist in the production and dissemination of improved sorghum and millet varieties ICRISAT organizes communities through local primary schools in the seed multiplication process.³⁷

In Burkina Faso, community seed systems have been instrumental in the production of certified cowpea seed. Under an USAID funded Dry Grain Pulses Collaborative Research Support Programme, over 50 farmers' organization, some which are women groups are now producers of certified cowpea seed. As a result, the Burkina Faso National Seed Service estimates that cowpea seeds production has increased from 37.8 tonnes in 2001 to 924.6 tonnes in 2011.³⁸

Public formal seed systems:

Formal seed systems are deliberately regulated and linearly structured, from plant breeding to seed production and multiplication to distribution. In sub-Saharan Africa, the public sector is involved in most if not all activities undertaken in the formal seed system. In our analysis of the typology of seed systems in the project countries, we disaggregate the formal seed system depending on the level and extent of involvement of the public sector. Thus, public formal seed system refers to a formal seed system wherein the public sector undertakes all the activities in the seed value chain. This happens to be case in the five project countries, at least for some crops.

³³ Id.

³⁴ Partnership for success: Stories from the Great Lakes Cassava Initiative, Catholic Relief Services, 2011.

³⁵ S. Walsh, P. Phezo, E. Marandu, J. Smith, D. Peters and M. Potts. Seed System Innovations in the Great Lakes Cassava Initiative. 2012.

³⁶ Setimela, P.S., E.Monyo, and M. Banzinger (eds). 2004. Successful Community-Based Seed Production Strategies. Mexico, D.F.: CIMMYT.

³⁷ Id

³⁸ Cisse, N., I. Drabo, I. Baoua, M. Toure, Jeff Ehlers and Philip Roberts. Cowpea Seed Systems and Dissemination of Seed of Improved Varieties in West Africa.. 2012 Global Pulse Research Meeting, Feb. 12-14, Kigali, Rwanda.

In Kenya, plant breeding is an activity undertaken mostly by the public sector, through the Kenya Agricultural Research Institute (KARI). Besides, investing in plant breeding research, KARI also undertakes seed production, multiplication and distribution through its own KARI Seed Unit. In order to maintain variety identity and purity as well as to guarantee physical, physiological and sanitary quality, the system is governed by strict regulations. It is estimated that 15% of the total seed demand in Kenya is made available through public sector institutions, which include KARI Seed Unit and Kenya Seed Company, a seed company that also engages in plant breeding that is owned by the Government of Kenya.³⁹ Kenya Seed Company controls 80% of the formal seed maize market. The company also produces sorghum, wheat, barley, millet, sunflower and pasture seeds.

As KARI Seed Unit is not capable of satisfying national seed demand and KARI itself undertakes most of the plant breeding research, a thriving private seed multiplication and distribution enterprise has emerged, it being fed with basic seed for multiplication from KARI.

In Uganda, public sector programmes are mainly concerned with major food crops, such as maize, beans and cassava, but also smallholder cash crops like cotton and coffee. The National Agricultural Research Organization (NARO) is the main public sector agency involved and runs public breeding programmes for these crops. Besides, breeding and production of breeders' seed, it does not engage in downstream activities such as multiplication and distribution. This role has been taken up by national private sector actors, almost entirely.

In Rwanda the formal seed system is rather recent. It is based on service provided by the public sector stakeholders such as The Rwanda Agricultural Research Institute (ISAR) for the production of breeder seeds; the Rwanda Agricultural Development Authority (RADA) Seed Production Unit and some agricultural development projects for direct production of basic and certified seed (Rwanda National Seed Policy). Seed production and multiplication is undertaken either by the State or its contractees, essentially registered cooperatives. Private sector involvement is nearly non-existent. RADA Seed Production Unit remains the main source of seeds, while ISAR being the only institution in-charge of variety development and maintenance ensures availability of foundation seed.⁴⁰ Other actors involved in the seed value chain are all government led-the Rwanda Bureau of Standard is presently responsible for seed certification.⁴¹

In Tanzania, the public sector is fairly involved in all stages of the formal seed system for crops such as maize, sorghum, beans, wheat and sunflower. Production of breeders' seed is undertaken by public research institutes. Production of foundation seed is carried out by the Department of Research and Development, and certified production by contract growers vested in Arusha, Morogoro, Iringa regions. TANSEED, a government parastatal created in 1973 is involved in the distribution of seeds. TANSEED only meets up to 10% of national seed requirements, and faces difficulties in distributing seed commercially beyond a few urban areas.⁴² In 2006, FAO attributed this to inefficiency within TANSEED, resulting in a relatively untapped market for improved seeds, inadequate seed quality control and ineffective application of official regulations. Besides TANSEED, the Agricultural Seed Agency (ASA) a semi-autonomous body under the Ministry of Agriculture, Food Security and Cooperatives was launched in 2006. ASA took over the responsibilities that were performed by the

³⁹ Id, note 5.

⁴⁰ Foundation seed is seed which is the progeny of breeder seed. Foundation seed is produced under procedures established by the certifying agency for the purposes of maintaining genetic purity and identity. On the other hand, breeder seed is seed which is controlled by the plant breeder. It is the source of production of foundation seed and all other type of seed.

⁴¹ It is important to note that the Rwandan Agricultural Research Institute (ISAR) and the Rwandan Agricultural Development Authority (RADA) are now part of a larger institution, the Rwandan Agricultural Board (RAB) whose mission is to develop agriculture and animal husbandry through reform and using modern methods in crop and animal production, research, agricultural extension, education and training of farmers in new technologies.

⁴² Id, note 35.

Seed Unit of the Ministry of Agriculture Food Security and Cooperatives. The aim of establishing ASA is to ensure high quality agricultural seeds are available to farmers at affordable price. The key functions of the ASA include expanding seed production and distribution networks so as to facilitate seed accessibility by farmers. It is not clear the extent to which ASA has met its obligations to date.

One peculiar feature of the Tanzanian formal seed system is the recognition of Quality Declared Seeds (QDS). Quality Declared Seeds are improved seeds essentially bred and multiplied under controlled and regulated conditions but not certified. Thus they make less demand of government resources while still providing good quality seed. With implementation support from the Danish Government, the QDS system was incorporated in the national seed legislation along with its seed rules, regulations, procedures and Guidelines for control of QDS production in 2007.

In Burkina Faso, plant breeding is undertaken by INERA and seed multiplication by the National Union of Seed Producers, a government sponsored cooperative from varieties bred by INERA. Following multiplication, the National Seed Service undertakes distribution of seed to the farmers.

Mixed public private seed systems

In all formal seed systems in the project countries, there is private seed sector participation in the seed value chains albeit to varying degrees. As plant breeding research is capital intensive and risky, most of the private sector actors in the project countries make little or no investment in this area. In Uganda, NARO a state agency is the institution that undertakes breeding research and provides foundation seed. In Kenya, this function is undertaken by KARI, by ISAR in Rwanda and by a host of public research institutes in Tanzania. In Burkina Faso, this function is carried out by the Institut National d'Etudes et de Recherche Agricole (INERA), with its research stations established across the various agro-ecological regions of the country. The fact that these state actors are limited in engaging in the whole seed chain for all crops, has created opportunities for seed multiplication and distribution entrepreneurship. To be found in this kind of systems are public plant breeding agencies specializing in specific types of cash crops such as coffee, tea, cotton, vegetables and horticulture.

While there is cooperation between the public sector researchers and private sector seed multipliers and distributors, the relationship between the two is not well defined. A clear criteria on conditions, terms and rationale for the provision of breeder seed to the private sector seed multiplication entrepreneurs appears to be unclear.

In Kenya, there are over 70 registered seed companies.⁴³ Most of these enterprises undertake seed multiplication and distribution with the main crop being maize. Of the multinationals in Kenya, only Monsanto is undertaking breeding research in maize. Local seed companies obtain breeder material for multiplication from KARI. However, criteria for distributing material between companies is not very clear. In some occasions, KARI licenses breeder seed to companies and in other occasions, it does not. This creates market asymmetries and distortions in the supply chain.

Uganda is experiencing an emerging vibrant system, with many companies focusing strongly on hybrid maize, sunflower, brewing sorghum, beans, and ground nuts. With NARO being the main source of foundation seed, there are now over fifteen seed companies operating in Uganda. Similar to Kenya, the process and manner in which NARO releases foundation seed to the enterprises for multiplication and distribution is not very clear this creating market asymmetries. Nonetheless, with the public sector not engaging in formal multiplication and distribution of seed, a private seed sector is emerging.

In Tanzania, the private sector involvement is mainly dominated by two multinationals- Cargill and Pannar with the choice crop being hybrid maize. Other companies operating in Tanzania include Seed

⁴³ 2009-2010 Annual Report of the Kenya Plant Health Inspectorate Service.

Co Tanzania and Kibo Seed (a subsidiary of a Kenya company and Kenya Seed Company) most of which specialize in maize.

Pure Private Value chains

Pure Private value chain seed systems herein refer to those seed systems that are entirely controlled by the private sector from plant breeding through to eventual distribution of seed to farmers. In these value chains, there is minimal government involvement except in seed quality control and certification. Most of the crops involved in these value chains are mainly horticultural crops (fruits), vegetable crops and flowers. Tobacco and cotton are also involved. These value chains utilize the plant breeders' rights systems already established in some of these countries, for example in Kenya.

Kenya is one of the four countries in the world accounting for the production of approximately 85% of all flowers exported around the world.⁴⁴ In this industry, the public sector is not involved in plant breeding, seed multiplication, and distribution. The whole process is controlled by the private sector except for quality control and phytosanitary issues. The flower industry in Kenya is also one of the heaviest users of the plant breeders' rights system in the country. In the 2010/2011 financial year, of the 69 applications for plant breeders' rights made in Kenya 30 were in respect of roses.⁴⁵ The vegetable sector is also another example where by multinational companies and the chief providers of seed to farmers for crops such as tomatoes and French beans.

In Tanzania, the soya industry is also under development and in some situations, the private sector is controlling the whole value chain. AgDevCo has put in place an out grower scheme and is acting as the main purchaser of the harvests for further development of soya-based products for the local market and alliums for local and export markets.⁴⁶

In Uganda, the tobacco value chain is privately controlled. All tobacco farmers have an account with British American Tobacco, Uganda which has been operating in the country since the 1950s. All farm inputs including planting materials are provided by the company and after harvests, the costs of the farms inputs are deducted with the difference being paid to farmers.

Relief seed systems

Each of the project countries has experienced drought, civil strife or both within the last 10 years. Some regions within each of these countries have experienced stress on a neat continuous basis (for example some parts of Kenya). One of the results of these stresses is that repeated 'emergency interventions' are taking the place of longer-term research and development programs.⁴⁷ Seed aid programmes have become an increasingly common form of alleviating these situations.

Relief seed programmes involve many different players: governments, donor agencies, NGOs and implementing agencies, private and parastatal seed companies, seed procurement agencies, contract seed growers, and eventually the farmer beneficiaries. This system focuses on procurement rather than marketing and what is procured depends on what is available from seed companies, procurement agencies, or international and government agencies.⁴⁸ In this system, there is no interaction between research and seed distribution and sometimes, grain and seed are inseparable.

⁴⁴ Camila dias de Sa and Maria Sylvia Macchione Saes. Intellectual Property Rights in the Flower Chain. An Analysis of the Brazilian Plant Variety Protection System (undated).

⁴⁵ 2010-2011 Annual Report of the Kenya Plant Health Inspectorate Service.

⁴⁶ Daniel Hulls, Developing Sustainable Commercial Agriculture in Tanzania (undated).

⁴⁷ Louise Sperling, 2000. Emergency Seed Aid in Kenya: A case Study of Lessons Learned.

⁴⁸ Catholic Relief Services, ICRISAT & ODI. 2002. Seed Vouchers and Fairs: a Manual for Seed-Based Agricultural Recovery after Disaster in Africa.

Louise Sperling has documented the history of seed aid in Kenya since 1992. Maize-seed aid, followed by vegetable seed aid (tomatoes, kale and onions) have dominated in recipient areas. She concludes that seed aid has been delivered on a fairly large scale about every other season, and across a large number of districts in Kenya, with the focus being heavily on maize across regions and years.

In distributing relief seed, actors involved have developed some innovative ways such as seed vouchers and seed fairs. Seed vouchers have in particular become a common form of distributing relief seed. One well documented case is the Karamojong Incursion Project of Northern Uganda wherein in 2000, Karamojong pastoralists in search of pasture displaced by force approximately 100,000 people in Lira and Kitgum Districts. In addition to assisting displaced families with shelter, clothing, and household items, CRS/Uganda developed a plan to assist 12,000 families obtain seed to plant when they returned home. A seed voucher system was developed to enable these families' access seed⁴⁹. Seed vouchers have similarly been used in the Rwanda Seeds of Hope project in distributing seeds for beans, sorghum, maize, and potato in early 2000. CRS estimates that through seed fairs and seed vouchers, over 12,000 families accessed seed in Uganda in 2000, 35, 000 in Kenya in 2000 and 2001 and 13,500 in Tanzania in 2001.⁵⁰

In Burkina Faso, the government launched a programme for donation of improved seed in 2008 following a severe drought. The programme will run until 2015 and may be extended if necessary. Seeds donated to farmers through this programme are not entirely free as farmers pay a minimal fee. These seeds are usually multiplied by the National Union of Seed Producers from varieties bred by INERA. Following multiplication, the National Seed Service undertakes distribution in the needy areas. In addition, through an FAO Technical Cooperation Programme, millet, sorghum and cowpea seeds and fertilizers were distributed in drought stricken areas in 2008.⁵¹ At the same while working closely with INERA and the national seed service, the FAO is supporting over 900 seed producers in irrigated areas in southern Burkina Faso with a view to create a sustainable seed supply systems for the whole country.

⁴⁹ Id.

⁵⁰ Id.

⁵¹ FAO, 2009.

Chapter five: Possibilities for a differentiated PVP regime

Bram De Jonge

This chapter analyses the legal space provided by the international IPR regime (particularly the TRIPs agreement and UPOV conventions) in order to investigate the possibilities for developing countries (including the five project countries) to develop and/or adapt their patent and PVP laws to fit their national priorities with respect to agriculture. Starting from the minimum requirements set by the TRIPs agreement regarding the protection of plants and plant varieties, we will discuss the flexibilities countries have with respect to patent law and the *sui generis* option for the protection of plant varieties. Special attention will go to the possibilities for, and examples of, a differentiated PVP regime –i.e. a PVP system that incorporates different levels of protection for different crops and/or with respect to different groups. For that purpose, different PVP laws from countries and regions from around the world will be explored.

Legal Space: The TRIPs Agreement

Article 27.3(b) of the TRIPs Agreement states 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.

As a consequence, countries have generally four different implementation options with respect to the protection of inventions incorporating (part of) plant and plant varieties:¹ 1) They can opt not to exclude plants and plant varieties from patentability; 2) They can decide not to exclude plants and plant varieties from patentability, and simultaneously establish a *sui generis* system for the protection of plant varieties;² 3) They can exclude only plant varieties from patentability, for which protection a *sui generis* system is developed;³ 4) They can exclude plants and plant varieties from patentability and establish a *sui generis* system for the protection of plant varieties.⁴

Developing countries have repeatedly been advised to take a very careful approach towards the options that allow for the patentability of plant varieties and/or plants under TRIPs. A UNDP report considers the TRIPs patent standards “poorly suited to developing country interests and concerns regarding small-scale breeding, traditional farming practices, indigenous peoples’ collective rights, agricultural biodiversity and food security”.⁵ Yet, in case a country may want or have⁶ to provide patents on plants it is important to point out that TRIPs provides a range of flexibilities that can be applied in order to adapt the patent system to a country’s needs. Apart from the aforementioned

¹We will refer to ‘plants’, similarly to TRIPs, but many national laws apply a more specific description and refer also to parts of plants (and animals) such as cells, cell lines, genes and genomes. See e.g. WIPO, 2009.

http://www.wipo.int/edocs/mdocs/scp/en/scp_13/scp_13_3.pdf

² This reflects the situation in the US.

³ This reflects the situation in the EU. It may well be argued that this option does not differ much from option 2 as allowing for the patenting of a plant’s component results in patent control over all the plant varieties that include the patented component.

⁴ As a bottom-line, TRIPs requires member countries to comply with the conditions of “National Treatment” (Article 3), ‘Most-Favoured-Nation Treatment’ (Article 4), and the ‘effective enforcement’ of IP rights. See D. Rangnekar, 2002. ‘Access to genetic resources, gene-based inventions and agriculture.

http://www.iprcommission.org/papers/pdfs/study_papers/sp3a_rangnekar_study.pdf

⁵ UNDP, 2008. Towards a balanced ‘*sui generis*’ plant variety regime. p. 4.

⁶ E.g. due to the signing of bilateral or regional free trade agreements or investment treaties.

exclusions to patentability,⁷ these flexibilities relate mainly to setting the conditions for patent protection and the scope of protection.

Patent law

The functioning of the patent system can strongly be influenced by adapting the conditions that an invention has to fulfil before a patent will be granted. It starts with making a clear distinction between a patentable invention and a mere discovery: Does the isolation of a gene, or the identification of its functionality, warrant patent protection? Similar consideration should be given to the standards of novelty and inventive step. It is notable that neither the TRIPS agreement, nor other international conventions on patents define novelty or inventive step. This is left to countries to decide in their national patent laws. In order to maintain access to genetic resources for further agricultural research and breeding, Correa advises developing countries to apply an “absolute concept of novelty” and “to grant patents only when the invention is not obvious for a person, or a team of persons, with high technical qualification and experience in the field.”⁸

When allowing for the patenting of genetic material, countries may want to limit the coverage of patent claims by only granting protection for the specific use or function of the genetic material as described in the patent. Otherwise, broad patent claims can cover any possible usage of the material for the lifetime of the patent. Other means that countries have to regulate the scope of protection is the application of exemptions to patent protection in their patent laws.⁹ A well-known exemption that is incorporated by many countries is the research exemption, which allows third parties to use patented subject matter freely for experimental purposes. Also here, it is up to the regulator to decide on the breadth of the exemption, with some countries applying a very narrow interpretation that only allows for scientific research on a patented invention – i.e. research on whether and how it works, and not with the invention – i.e. research that may result in a new invention or product.¹⁰

Two exemptions that are particularly relevant in the field of agriculture are the farmers’ privilege and the breeders’ exemption. These exemptions are known to be part of UPOV¹¹ but they can also be applied in patent law. For example, the EU Biotechnology Directive, which aims to harmonize the patent laws in the EU with respect to biotechnology,¹² allows for farmers to “use the product of his harvest for propagation or multiplication by him on his own farm” under the same conditions as regulated by the EU Council Regulation on Community Plant Variety Rights.¹³

With respect to the breeders’ exemption, several European countries¹⁴ have included conditions in their patent laws that come down to a restricted breeders’ exemption: An exemption that allows for

⁷ Another exclusion possibility is provided by TRIPs Article 27.2, which allows countries to exclude the patentability of certain inventions in order to “protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.” This Article, although not enforced with respect to plant patents in any national court so far, could for example be used to deny patents on inventions that may put food security or the environment at risk. See Correa, 2012. TRIPS-Related patent flexibilities and food security: Options for developing countries.

⁸ Correa, 2012, p. 10-12.

⁹ TRIPs allows member countries to “provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.” Article 30.

¹⁰ Correa, 2005. International dimensions of the research exemption. SIPPI Project, AAAS, Washington D.C..

¹¹ Further discussed in the next section.

¹² EU Directive 98/44/EC, 1998. http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=31998L0044&model=guichett

¹³ Regulation (EC) No 2100/94, Article 14.

<http://www.cpvo.europa.eu/documents/lex/394R2100/EN394R2100.pdf>. See next section.

¹⁴ E.g. France, Germany, Swiss and the Netherlands.

the use of patented material for developing other plant varieties but not for the commercialisation of such varieties if they carry the patented trait. The Dutch association for the plant reproduction material sector (Plantum NL) advocates a full breeders' exemption –i.e. one that also allows for the commercialisation of the new varieties, to be included in patent law.¹⁵ The compatibility of such an exemption with TRIPs has, however, not been tested yet.¹⁶

Another exemption that can be relevant for agriculture relates to TRIPs Article 44.1, which allows countries to exclude liability in case of unintentional infringement. The Swiss patent law, for example, specifies that patent protection does not extend to biological material that was obtained by change or when it is technically inevitable.¹⁷ This is especially relevant with respect to the natural spread of seed containing patented traits into neighbouring farmer fields.

Finally, member countries under TRIPs have the possibility to grant compulsory licenses to (have a third party) use a patent without the authorization of the right holder. This option is particularly (but not exclusively) applicable in cases of a “national emergency or other circumstances of extreme urgency or in cases of public non-commercial use” or “to correct anti-competitive practices”.¹⁸ The EU Biotechnology Directive, for example, provides for the possibility of a compulsory cross-license in case the holder of either a patent or PVP cannot exploit this right without infringing on a prior PVP or patent.¹⁹ Yet, the conditions set for authorization of such a compulsory license is said to make effective use very difficult,²⁰ but these could be made less stringent.

Altogether one can conclude that countries that want or need to allow patents on plants, genetic material and/or plant varieties can still make use of several flexibilities and exemptions under the TRIPs agreement in order to align the patent law to their national needs and objectives.

***Sui Generis* systems for the protection of plant varieties**

TRIPs allows member countries to (only) provide for a *sui generis* system for the protection of plant varieties. This option gives considerable flexibility to countries, also and especially because TRIPs does not define what components of such system “of its own kind” should be composed of: It does not define the subject matter of protection (i.e. what is a plant variety), the requirements for protection (such as novelty, distinctness etc.), the scope of protection (e.g. whether harvested materials are included), nor the duration of protection.

Obviously, UPOV provides a ready-made *sui generis* system for the protection of plant varieties in which all rights and obligations are carefully spelled out. TRIPs does, however, not make any reference to the UPOV system and, thus, does not require member countries to become a member of UPOV. Still, since the enactment of the TRIPs agreement many developing countries have joined UPOV, now amounting to 23 of the 70 member countries. Where some attribute this to the merits of the UPOV system and/or the convenience of having access to a ready-made system, others point to obligations flowing from trade agreements with industrialized countries and/or the “relentless pressure from the UPOV Secretariat (implicit or explicit) [to move] countries down the UPOV path”.²¹

¹⁵ See <http://www.plantum.nl/hoofdnavigatie/over-plantum/standpunten/>

¹⁶ Correa, 2012 ; Louwaars et al., 2009. Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights. Wageningen: Centre for Genetic Resources, the Netherlands (CGN). <http://documents.plant.wur.nl/cgn/literature/reports/BreedingBusiness.pdf>

¹⁷ Swiss patent law, Article 9(f). Information derived from Correa, 2012.

¹⁸ TRIPs, Article 31(b). However, very few developing countries have made use of this option for several reasons.

¹⁹ Directive 98/44/EC, Article 12.

²⁰ Louwaars et al., 2009.

²¹ Dutfield, 2011. The Role of the International Union for the Protection of New Varieties of Plants (UPOV). Global Economic Issue Publications, Intellectual Property Issue Paper No. 9, p. 11. QUNO. http://www.quno.org/geneva/pdf/economic/Issues/UPOV%20study%20by%20QUNO_English.pdf.

Several critics have expressed their worries with respect to this process in the light of developing countries' development and food security needs.²² Especially the UPOV '91 convention is being criticized for not allowing (smallholder) farmers to exchange farm-saved seed and thus negatively impacting food security; for encouraging crop monocultures and thus the erosion of biodiversity; and generally for favouring commercial breeders over farmers/farmer breeders and private interests over public interests. It is therefore feared that a large number of developing countries signatories to UPOV "may well make it a de facto minimum standard having possible wide range impacts over farmers, women, food security and rural livelihoods in developing countries".²³ Yet, one may equally argue that a large number of developing country members to UPOV may open up discussions within UPOV in order to make it more compatible with the specific circumstances in the developing world.

In this section, the key components of a *sui generis* system for the protection of plant varieties will be discussed, namely: the coverage of the law, the conditions for protection and the scope of protection. Each of these subsections will briefly reflect on the legal space provided by TRIPs, and the standards set by the UPOV '78 and '91 conventions, in order to assess what flexibilities are, or could possibly be made available to help countries recognize and strengthen their different seed systems. Several countries that have enacted, or are in the process of developing, an alternative *sui generis* system will be zoomed into.

Coverage of the law

In order to create a differentiated PVP regime –i.e. to establish different levels of protection for different crops, one option would be to limit the number of plant species and genera that fall under the coverage of the PVP law. Limiting the coverage of the law could also reduce the costs of running the PVP system. UPOV '78 obliges member countries on the entry into force of their PVP law to provide protection for at least five genera or species. This number must then be gradually expanded to cover at least twenty-four genera or species within eight years.²⁴ This flexibility does not exist anymore under UPOV '91, which holds that new member countries must provide protection for at least fifteen plant genera or species upon entry and to all plant genera and species after ten years.²⁵

TRIPs does neither define what a plant variety is nor what plant species or botanical genera should be eligible for protection. Some have interpreted this to imply that TRIPs member countries must provide for the protection of plant varieties of all species and genera,²⁶ while others disagree with this interpretation and conclude that "the question of coverage remains a grey area, which might only be resolved either through a decision at the WTO's Dispute Settlement Board or an agreed interpretation at the TRIPs Council."²⁷

The TRIPs agreement does obviously not forbid member countries to define the term plant variety more specifically. Most national PVP laws derive this definition from the UPOV '91 convention,²⁸ but there are several exceptions. The Andean Community, for example, defines a variety as a "Set of cultivated botanical individuals (...)",²⁹ which by definition excludes non-cultivated plant species from protection under the respective PVP law. The Thai PVP law discerns different types of plant varieties,

²² Tansey and Rajotte, 2008. The Future Control of Food: A Guide to International Negotiations and Rules on Intellectual Property, Biodiversity and Food Security. Earthscan, IDRC; Commission on Intellectual Property Rights, 2002. Integrating Intellectual Property Rights and Development Policy. http://www.iprcommission.org/papers/pdfs/final_report/ciprfullfinal.pdf.

²³ UNDP, 2008, p. 10.

²⁴ UPOV, 1978, Article 4. <http://www.upov.int/en/publications/conventions/1978/pdf/act1978.pdf>.

²⁵ UPOV, 1991, Article 3. <http://www.upov.int/en/publications/conventions/1978/pdf/act1978.pdf>.

²⁶ Leskien and Flitner, 1997. Intellectual Property Rights and Plant Genetic Resources: Options for a *sui generis* system. IPGRI: Issues in Genetic Resources No. 6.

²⁷ Rangnekar, 2002.

²⁸ UPOV, 1991, Article 1.

²⁹ Andean Community, 1993. Decision 345: Common Provisions on the Protection of the Rights of Breeders of New Plant Varieties. Article 3. <http://www.comunidadandina.org/ingles/normativa/D345e.htm>.

namely 'local domestic plant varieties',³⁰ 'wild plant varieties',³¹ and 'general domestic plant variety',³² next to standard plant varieties,³³ in order to provide for different categories of protection. The Thailand Plant Variety Protection Act of 1999 is therefore one example of a sui generis PVP law that establishes a differentiated PVP regime (see box 1).

Finally, it has to be mentioned that TRIPs does not preclude countries to include additional subject matter, for example the protection of traditional knowledge (TK) associated with plant varieties, within the ambit of their PVP law. Several proposals for such approach can be found in the literature,³⁴ and some countries have included references to TK and/or the rights of traditional communities in their PVP laws (see box 1 and 3).

Box 1: Recognizing different types of plant varieties: the case of Thailand.

The Thai PVP act contains a separate section on the protection of local domestic plant varieties, which are held to exist only in a particular locality and which have not been registered as a new plant variety. Communities as well as farmers' groups or co-operatives can have a variety registered as local domestic plant variety by stipulating 1) that the variety was jointly conserved or developed and the method of its conservation or development, 2) the names of the members of the community, and 3) the landscape together with a concise map showing the boundary of the community and adjacent areas.³⁵ Once registered, the right holders have "the exclusive right to develop, study, conduct an experiment or research in, produce, sell, export or distribute by any means the propagating material thereof."³⁶ It is further stated that "A person who collects, procures or gathers a local domestic plant variety or any part thereof for the purposes of variety development, education, experiment or research for commercial interest shall make a profit-sharing agreement in relation to the profits derived from the use of such local domestic plant variety" with the community in question.³⁷ A similar article is included with respect to the collection and use of general domestic or wild plant varieties, but now permission and a profit-sharing agreement has to be obtained from the Ministry of Agriculture and Cooperatives.³⁸

So the fact that the law differentiates between different types of plant varieties seems mainly to capture all plant varieties within the sovereign domain and to apply different ABS provisions to them. As such, Thailand has made the protection of new varieties subject to the disclosure of origin of materials used,³⁹ it has secured sovereign rights over all domestic and wild varieties, while it allows community protection over specific local varieties. Through the latter the contributions of communities and farmers to the conservation and improvement of plant varieties are recognized. Their subsequent rights can be used defensively to exclude others, for example when a variety has

³⁰ i.e. a plant variety which exists only in a particular locality within the Kingdom and has never been registered as a new plant variety and which is registered as a local domestic plant variety under this Act. Plant Varieties Protection Act, 1999, Article 3. http://www.wipo.int/wipolex/en/text.jsp?file_id=129780#P79_9624

³¹ i.e. a plant variety which currently exists or used to exist in the natural habitat and has not been commonly cultivated. Id.

³² i.e. a plant variety originating or existing in the country and commonly exploited and shall include a plant variety which is not a new plant variety, a local domestic plant variety or a wild plant variety. Id.

³³ i.e. a plant grouping of similar or identical genetic and botanical characteristics, with particular features which are uniform, stable and distinct from other grouping in the same species of plant. Id.

³⁴ See e.g. Biotechnology and Development Monitor, No 36, 1998. <http://www.biotech-monitor.nl/index36.htm>.

³⁵ Article 44.

³⁶ Article 47, with some exemptions included.

³⁷ Article 48, with some exemptions included.

³⁸ Article 52.

³⁹ Article 19.

*special cultural or spiritual value, or they can potentially be used as a tool to broaden and increase the market value of a variety.*⁴⁰ *Though, there still remain several questions and debate on the practical value and implications of this legislation.*⁴¹

Conditions for protection

TRIPS does not define the conditions for protection with respect to a *sui generis* PVP system so most countries apply the well-known conditions set by UPOV. These standards of novelty, distinctness, uniformity⁴² and stability are discussed at length in the literature. Their appropriateness for application in developing countries has been questioned for several reasons: The novelty requirement has been criticized for exclusively focussing on commercial novelty; The criteria for distinctness for setting a very low threshold for inventiveness; The uniformity standard for leading to erosion of genetic diversity; The demand for stability for increasing the time and costs before new varieties can be made available; And overall the DUS requirements⁴³ for making it very difficult for farmer varieties to be eligible for protection.

For these reasons, several ways to amend the UPOV conditions for protection have been proposed, and some developing countries have indeed implemented alternative criteria. With respect to the distinctness requirement, for example, developing countries have been advised to increase the threshold for protection by requiring a new variety to have “truly important characteristics, i.e. traits of agronomic or nutritional value”.⁴⁴ The Plant Varieties Act of Bangladesh indeed states that “To be eligible for consideration for [commercial] privilege the New Plant Variety must meet definite and useful needs of the people of Bangladesh”, and continuous by stating that the variety will be rejected if it has “no immediate, direct and substantial benefit to the people of Bangladesh.”⁴⁵ The downside of setting new and higher standards is that the test becomes more complex and its costs may increase.⁴⁶

Some authors have proposed to replace the UPOV standards for uniformity and stability by ‘identifiability’, i.e. describing a typical combination of characteristics of the new plant variety in order to fulfil the legal need to identify the protected subject matter without prescribing the physical properties a plant variety needs to have.⁴⁷ This approach would make it possible to have protection of plant varieties or groupings that are more heterogeneous and variable, like landraces and farmer varieties. Such varieties are deemed very important for food security as it is especially because of their heterogeneous and unstable characteristics that they fit local agro-ecological conditions and can respond to changing conditions.⁴⁸ Malaysia has included ‘identifiability’ in its PVP law (see box 2).

Yet, there are also some downsides to this proposal. First and foremost it seems inevitable that by allowing for more variability and instability, the subject matter that is protected at one point will change and evolve over the period of protection, leading to potential overlap with other protected or

⁴⁰ Robinson, 2007. Exploring components and elements of *sui generis* systems for plant variety protection and traditional knowledge in Asia. ICTSD.

<http://www.iprsonline.org/unctadictsd/docs/Robinson%20Sui%20Generis%20March07.pdf>.

⁴¹ Ibid.; Lertdhamtewe claims that “it remains uncertain whether the PVP Act has been effective in catering for the specific needs of farmers and local communities, considering that no farmers have yet been able to claim the benefits of its generous provisions.” See: Lertdhamtewe, 2012. Thailand’s plant protection regime: a case study in implementing TRIPS. p. 193. <http://jiplp.oxfordjournals.org/content/7/3/186.full.pdf+html>.

⁴² ‘Homogeneity’ in UPOV ’78, Article 6.

⁴³ i.e. Distinctness, Uniformity and Stability.

⁴⁴ IPGRI, 1999, p. 14.

⁴⁵ Plant Varieties Act of Bangladesh, 1998, Article 7.

⁴⁶ Rangnekar, 2002.

⁴⁷ IPGRI, 1997. Key Questions for Decision-Makers: Protection of Plant Varieties under the WTO Agreement on Trade-Related Aspects of Intellectual property Rights; Leskien and Flitner, 1997; Rangnekar, 2002.

⁴⁸ The OAU Model Law would grant IP protection to farmers’ varieties through a variety certificate “which does not have to meet the criteria of distinction, uniformity and stability.” Article 25.

<http://www.cbd.int/doc/measures/abs/msr-abs-oau-en.pdf>.

unprotected varieties. It has also been pointed out that by strategically claiming rights over combined mixtures of heterogeneous varieties, genepools could potentially be monopolized.⁴⁹

Box 2: Creating alternative conditions for protection: The case of Malaysia.

The Malaysian PVP law aims to protect the rights of breeders, and simultaneously to “provide recognition and protection of contributions made by farmers, local communities and indigenous people towards the creation of new plant varieties.”⁵⁰ To support both objectives, the PVP law applies the standard conditions of novelty and DUS (NDUS) to most plant varieties, but in case a plant variety is “bred, or discovered and developed by a farmer, local community or indigenous people, the plant variety may be registered as a new plant variety and granted a breeder’s right if the plant variety is new, distinct and identifiable” (NDI).⁵¹ A plant variety is considered identifiable if “(i) it can be distinguished from any other plant grouping by the expression of one characteristic and that characteristic is identifiable within individual plants or within and across a group of plants; and (ii) such characteristics can be identified by any person skilled in the relevant art.”⁵² The only difference with respect to the rights attributed is the duration of protection, with the NDUS varieties having 20 years and the NDI varieties 15 years of protection, which makes sense because of the potential variability over a longer period of time.

It has to be emphasized that the DUS standards in UPOV are often more flexible than the variety registration or marketing requirements in national and international seed laws. While it is recommendable that developing countries take a careful look at the criteria they set for seed registration in order not to block the release of, for example, locally adapted but not necessarily completely uniform varieties,⁵³ it is another question whether such varieties should also be made eligible for PVP protection. Most participants of the workshop did not see the need (or questioned the appropriateness) of extending exclusive rights to farmer varieties. However, the need to recognize the contributions of farmers to the development and conservation of such varieties, and to ensure that proper access and benefit-sharing (ABS) regulations apply, was strongly emphasized.

For that purpose, some countries have included additional requirements for granting PVP protection in order to fight biopiracy and facilitate benefit-sharing. India, for example, requires applications for PVP protection to:

contain a complete passport data of the parental lines from which the variety has been derived along with the geographical location in India from where the genetic material has been taken and all such information relating to the contribution, if any, of any farmer, village community, institution or organisation in breeding, evolving or developing the variety”.⁵⁴

Upon registration of the variety, the relevant authority will invite “claims of benefit sharing” and determine the amount of benefit-sharing due.⁵⁵

Scope of protection

The scope of protection that a PVP law allows for has a direct and strong influence on the division of rights between the right holder on the one hand and farmers, breeders and other users of the protected

⁴⁹ Louwaars, 1998. Sui Generis Rights: From opposing to complementary approaches. In: Biotechnology and Development Monitor, No 36, 1998. <http://www.biotech-monitor.nl/3607.htm>.

⁵⁰ Background document on Malaysian PVP Act 2004. <http://pvpbkkt.doa.gov.my/>.

⁵¹ Malaysian Protection of New Plant Varieties Act, 2004, Article 14. <http://pvpbkkt.doa.gov.my/>.

⁵² Id.

⁵³ An interesting example in this respect is the alternative variety registration system (including lower DUS requirements) for ‘conservation varieties’ that is established by the EU. See Directive 2008/62/EC; Directive 2009/145/EC and Directive 2010/60/EU.

⁵⁴ The Protection of Plant Varieties and Farmers’ Rights Act, 2001, Article 18.

<http://www.wipo.int/wipolex/en/details.jsp?id=2401>

⁵⁵ Id., Article 26.

material on the other. The subsequent UPOV conventions are a clear example of that. Under the UPOV '78 scope of protection, for example, prior authorisation of the breeder is only required for “the production for purposes of commercial marketing, the offering for sale [and] the marketing of the reproductive or vegetative propagating material, as such, of the variety.”⁵⁶ This implies that farmers are free to use and exchange their farm saved seed.⁵⁷ The UPOV '91 convention nullifies this situation by including the “production or reproduction (multiplication)” of the protected variety within the scope of the breeder’s right.⁵⁸

With respect to farmer saved seed, the UPOV '91 convention incorporates an optional exemption which states that:

each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety (...).⁵⁹

Obviously, this implies that farmers do not have the right to share, exchange or sell farmed saved seed of a protected variety. Since many (small holder) farmers in developing countries depend on ‘over the fence’ exchange as the main source of seed to plant in the next planting season, this is one of the provisions of UPOV that has stirred much criticism.⁶⁰

Countries have implemented a wide variety of provisions to deal with this contentious issue. An interesting example comes from the EU, which Council Regulation on Community Plant Variety Rights differentiates between crops and excludes small farmers. The legislation contains a list of crops for which farmers are allowed to use their own farmer saved seed and for which they “pay an equitable remuneration” to the PVP holder,⁶¹ which is often about 50% of the commercial royalty.⁶² Small farmers, however, are exempt from such payment. A small farmer is defined in terms of the production capacity: “farmers who do not grow plants on an area bigger than the area which would be needed to produce 92 tonnes of cereals”, and in the case of other plant species, “farmers who meet comparable appropriate criteria”.⁶³

In order to also allow for the exchange of farmer saved seed of protected varieties in developing countries, several amendments to UPOV '91 have been proposed. Ghijsen, for example, proposes a separate PVP right for open pollinated food crops, with a weaker scope of protection to allow for the use and exchange of farmer saved seed. The remuneration of the breeder (i.e. in order to fulfil the obligations of UPOV '91) could be arranged by means of a central fund from which the breeder gets

⁵⁶ UPOV '78, Article 5.

⁵⁷ In the US even the sale of limited quantities of farmer saved seed (i.e. brown bagging) was allowed by the provision of a ‘crop exemption’ their former PVP law.

⁵⁸ UPOV '91, Article 14(1). In addition, protection is extended to harvested materials (and products made directly from such harvested material) that are obtained through the unauthorized use of a protected variety, and to varieties that are essentially derived from a protected variety. UPOV '91 also allows member countries to extend the scope of protection even further, and prolongs the minimal duration of protection from 15 to 20 years. See Chapter 2.

⁵⁹ Article 15(2).

⁶⁰ Crucible Group, 1994. *People, Plants and Patents: The impact of intellectual property on trade, plant biodiversity and rural society*. Ottawa: IDRC.

⁶¹ Council Regulation (EC) No 2100/94, 1994, Article 14.
<http://www.cpvo.europa.eu/documents/lex/394R2100/EN394R2100.pdf>

⁶² Ghijsen, 2007. *Plant Breeder’s Rights: a fair and balanced Intellectual Property Right for Plant Varieties. Tailoring Biotechnologies*. Vol. 3, Issue 2, pp. 79-98.

⁶³ Council Regulation (EC) No 2100/94, 1994, Article 14; E.g. 185 tons for potatoes, see Commission Regulation (EC) No 1768/95, 1995. <http://www.wipo.int/wipolex/en/details.jsp?id=6397>.

paid on the basis of the acreage of the protected variety that is grown by the farmers. The endowment for the fund could either be raised by the government or the farmers or both.⁶⁴

Another proposal relates to the existing exemptions in UPOV '91, which include “acts done privately and for non-commercial purposes”.⁶⁵ Since the sharing and bartering of farmer saved seed between resource-poor farmers in developing countries is of no commercial importance (but indeed of great importance for food security and conservation), it has been recommended to expand the private and non-commercial use exemption to all resource-poor farmers, in order to enable them to exchange seed among their peers.⁶⁶ The Dutch government has recently taken over this recommendation and states that it will:

Urge for greater scope for the ‘private and non-commercial use exemption’ in UPOV 1991 than is currently the case. This will allow small farmers that use protected varieties to trade their surpluses on the market and exchange seed among themselves.”⁶⁷

Another possibility to reach the same object would be an expansion of the farmer’s privilege to seed exchange and small, non-commercial seed trade.⁶⁸

Some developing countries have addressed the issue of resource-poor farmers’ use and exchange of farmer saved seed in their PVP law. A notable example in this regard, and in relation to some of the other issues discussed in this chapter, is provided by the African Model Legislation for the Protection of the rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources of 2000 (see box 3). Also India’s Protection of Plant Varieties and Farmers’ Rights Act of 2001 explicitly includes the right of farmers to “save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this Act”.⁶⁹ The one thing that a farmer is not allowed to do with a protected variety is to “sell branded seed”,⁷⁰ i.e. brown bagging.

Box 3: Bringing community and farmers’ rights under the scope of protection: The case of the African Model Law.

Next to its objective to “recognize and protect the rights of breeders”, the African Model Law aims to “recognize, protect and support the inalienable rights of local communities including farming communities over their biological resources, knowledge and technologies”.⁷¹ For that purpose, the model law includes several remarkable provisions. On the one hand, it explicitly excludes from the scope of the legislation “i) The traditional systems of access, use or exchange of biological resources; [and] ii) Access, use and exchange of knowledge and technologies by and between local communities”.⁷² On the other hand, it includes strict regulations on access to biological resources and benefit-sharing (part III), and describes in detail the rights of communities (part IV) and farmers (part V). Examples of these are the recognition of the customary practices and laws of the concerned

⁶⁴ Ghijsen, 1998. Plant Variety Protection in a Developing and Demanding World. In: Biotechnology and Development Monitor, No 36, 1998. <http://www.biotech-monitor.nl/3602.htm>.

⁶⁵ Article 15(1i).

⁶⁶ Genugten & Meijknecht (eds), 2011. Harnessing Intellectual Property Rights for Development Objectives. Wolf Legal Publishers. www.wolfpublishers.com/harnessingipr.

⁶⁷ Bleker (Minister for Agriculture and Foreign Trade), 13 August 2012, Reaction to study ‘Harnessing Intellectual Property Rights for Development Objectives’. Unauthorized translation, p. 5. (Dutch version: <http://www.rijksoverheid.nl/documenten-en-publicaties/verslagen/2012/09/20/vraagstelling-conclusies-en-aanbevelingen-van-het-onderzoek-harnessing-intellectual-property-rights-for-development-objectives.html>)

⁶⁸ Ghijsen, 1998.

⁶⁹ Article 39.

⁷⁰ Id.

⁷¹ African Model Law, 2000, Objectives. AFRICAN MODEL LEGISLATION FOR THE PROTECTION OF THE RIGHTS OF LOCAL COMMUNITIES, FARMERS AND BREEDERS, AND FOR THE REGULATION OF ACCESS TO BIOLOGICAL RESOURCES. Algeria. <http://www.cbd.int/doc/measures/abs/msr-abs-oau-en.pdf>.

⁷² Id., Article 2.

local (farming) communities,⁷³ including “Community Intellectual Rights”.⁷⁴ The model law also emphasizes the right to “participate in making decisions, including at the nation level, on matters related to the conservation and sustainable use of plant and animal genetic resources”.⁷⁵

With respect to the issue of farmer saved seed, the African Model Law incorporates some special features. As a bottom line, it states that farmers shall not sell farm-saved seed of a protected variety in the seed industry on a commercial scale.⁷⁶ Yet, it does allow farmers to “collectively save, use, multiply and process farm-saved seed of protected varieties”,⁷⁷ to sell plants or propagating material of (or sprout) a protected variety as food,⁷⁸ or to “sell within a farm or any other place at which plants of that [protected] variety are grown any plants or propagating material of that variety at that place.”⁷⁹ Finally, the model law allows governments to restrict the plant breeder’s rights by means of a compulsory license in such cases as:

- where food security or nutritional or health needs are adversely affected;
- where a high proportion of the plant variety offered for sale is being imported;
- where the requirements of the farming community for propagating material of a particular variety are not met; and
- where it is considered important to promote public interest for socio-economic reasons and for developing indigenous and other technologies.⁸⁰

Although some African countries have incorporated parts of the African Model Law in their (draft) PVP laws, the model legislation has mainly been ignored.

A different example is provided by the Malaysian PVP act, which aims to balance the rights of the breeder with the needs of smallholder farmers by including in its exemptions to the breeder’s right:

- (d) any act of propagation by small farmers using the harvested material of the registered plant variety planted on their own holdings;
- (e) any exchange of reasonable amounts of propagating materials among small farmers; and
- (f) the sale of farm-saved seeds in situations where a small farmer cannot make use of the farm-saved seeds on his own holding due to natural disaster or emergency or any other factor beyond the control of the small farmer, if the amount sold is not more than what is required in his own holding.⁸¹

A small farmer is defined by the minister as a “farmer with the size of land of holding for farming operations not exceeding 0.2 hectare.”⁸²

A final, interesting example comes from Ethiopia, which is currently in the process of developing a Plant Breeders’ Rights Act that is related to the aforementioned ISSD project.⁸³ Once adopted, this PVP act would create a differentiated PVP regime that discerns three levels of protection. For that purpose, it defines ‘commercial market’ in order to explicitly exclude trade between smallholder farmers. A smallholder farmer is then defined with reference to income levels, with total earnings from sales of farm-saved seed not exceeding the average household income. The draft proclamation includes a provision on Farmers’ Rights, emphasizing that smallholder farmers have the right to save, use, exchange and sell farm-saved seed of any variety on the non-commercial market. In addition, a list of crops is included for which all other farmers have (or have not) the right to save and use farm-saved seed on their own holding. In this way, three levels of rights are created: full protection without

⁷³ Id., Articles 17, 21, 23, 25, 58.

⁷⁴ Id., Article 23.

⁷⁵ Id., Article 26.

⁷⁶ Id.

⁷⁷ Id.

⁷⁸ Id., Article 31.

⁷⁹ Id.

⁸⁰ Id., Article 33.

⁸¹ Malaysian Protection of New Plant Varieties Act, 2004, Article 31.

⁸² Background document on Malaysian PVP Act 2004.

⁸³ See previous Chapter.

the right to reproduce on-farm; protection with the right to reproduce but not to exchange/sell; full right to exchange and sell (by and to smallholders).

The Ethiopian approach was thoroughly discussed during the workshop and received generally positive feedback from the participants. The issue that was considered most important to address was how to demarcate a smallholder (or resource-poor) farmer. Different approaches have different (dis)advantages. The Malaysian example that focuses on the size of a holding is relatively clear-cut and easy to administer. But farmer earnings can vary strongly depending on what crop they grow, and a farmer having 0.2 hectare of greenhouses would generally not be considered a smallholder farmer. That is why the Ethiopian draft proclamation defines a smallholder in terms of an average household income, which is considered to be more pragmatic than an absolute income standard since income levels can strongly fluctuate over time.⁸⁴

A final, well-known UPOV exemption to the breeder's right is the aforementioned breeders' exemption, which allows anyone to use a protected variety "for the purpose of breeding other varieties".⁸⁵ This exemption is considered very important for breeders and, consequently, for food security.⁸⁶ Obviously, it is through this exemption that farmer breeders are allowed to improve and adapt protected varieties to their local needs and preferences.⁸⁷ Such practices can be stimulated through, for example, participatory breeding programmes.

Altogether, we can confirm that TRIPs provides countries with considerable flexibility as to the IPR system they want to establish for the protection of inventions incorporating plants and plant varieties. Whether it is a patent-based system, a UPOV-based system, or an alternative sui generis system that they want to apply, countries have several possibilities to tailor these IPR systems to their specific needs and objectives. A home-made sui generis system provides countries with most flexibility in this respect since TRIPS does not define what components such system should be composed of. For that same reason, the options for tailoring the patent system are relatively limited but still important flexibilities exist that allow countries to adapt the conditions for, and scope of patent protection.

With respect to the legal space countries have under TRIPs and/or the UPOV conventions to establish a differentiated PVP system that creates different levels of rights for different crops, we can draw the following conclusions:

- The TRIPs agreement certainly allows for a differentiated PVP system for the protection of plants and/or plant varieties. In theory, it would be possible, for example, to establish an IPR system that provides patent protection for only a limited set of plant species, while for other plant varieties a sui generis system of protection is developed that incorporates a variable balance between breeders' rights and the right (or privilege) of farmers to save/ use/ exchange and/or sell farm-saved seed, depending on the crop concerned.
- UPOV '91 allows for a differentiated PVP system to some content. A good example of such a system that is UPOV '91 compliant is the EU Council Regulation on Community Plant Variety Rights. By including a list of crops for which the farmers' privilege applies, and by excluding small farmers from the requirement to pay a remuneration to the breeder, this PVP law creates in fact three levels of protection.
- A UPOV '78 compliant system can allow for the exchange of farm-saved seed between farmers, and the former PVP legislation in the US even permitted the sale of certain amounts of seed for particular crops by provision of a 'crop exemption'. In theory, countries under

⁸⁴ Some IP licenses that include clauses on humanitarian use have defined resource-poor farmers in terms of absolute income or turnover. The Golden Rice project, for example, defines resource-poor farmers as those that earn "less than US\$10,000 per year from farming". See http://www.goldenrice.org/Content1-Who/who4_IP.php

⁸⁵ UPOV '91, Article 15.

⁸⁶ Louwaars et al., 2009.

⁸⁷ One remark in this context is that the new, adapted variety must not be considered an EDV in case UPOV '91 applies.

UPOV '78 can exclude certain plant species from coverage under their PVP law so that no exclusive rights and consequent limitations for their use apply.

In order to accommodate the needs and traditions of resource-poor farmers, and in recognition of the importance of informal seed systems for the provision of seed and the conservation of agro biodiversity, some proposals have been made to adapt UPOV '91 in such a way that the exchange of farm-saved seed for certain crops and/or farmers is permitted. For example, by creating a separate PVP right for open pollinated food crops; by expanding the private and non-commercial use exemption to resource-poor farmers; or by broadening the farmers' privilege. Such amendments would obviously increase the legal space member countries have to establish a PVP system that recognizes and suits their different seed systems.

Some developing countries have already developed a differentiated PVP system through an alternative *sui generis* system for plant variety protection. Thailand, for example, creates three different levels of protection by discerning different types of plant varieties. Yet, this is mainly to capture all plant varieties within their sovereign domain and to ascribe different ABS obligations to them. Also the Indian PVP law and the African Model Law include ABS provisions as part of their objective to recognize and secure the full spectrum of farmers' rights and rights of traditional communities as derived from the CBD and ITPGRFA. As such, these PVP laws do not so much create different protection levels for different crops but mainly curtail the rights of breeders.

Malaysia, on the other hand, has adopted a PVP law that follows the contours of UPOV '91 but added special provisions to facilitate the protection of farmers' varieties and the needs of smallholder farmers. The Ethiopian draft PVP law is more explicit in creating different protection levels for different crops as it intends to include a list of crops by ministerial directive for which farmers have no right to reproduce seed on farm, while for all other crops they have, and smallholders are also allowed to exchange and sell farm-saved seed amongst themselves.

Chapter six: Conclusions and Recommendations

Bram De Jonge, Marcelin Tonye Mahop & Peter Munyi

This final chapter aims to bring together the findings of the previous chapters and reflect on the conclusions of the regional workshop that was held in Nairobi on 3-4 October 2012. This workshop brought together seed regulation specialists, plant breeders and IPR officials from the five target countries to share country experiences on IPR legislation and seed laws (Day 1). Furthermore, the different seed systems that exist in the countries, and the desirability and potential of implementing a differentiated PVP regime were discussed (Day 2). We conclude with recommendations for further steps to work towards the realisation of an IPR system that suits both commercial, national food security, and smallholder farmers' interests in the target countries.

First, we will briefly state the main conclusions considering the current IPR legislation regarding seed in the five target countries and the international and regional IPR framework in which they operate. This will then be related to the different seed systems that are identified to exist in the selected countries, and the perspectives on developing a differentiated PVP regime. What follows are short summaries of the remaining key issues that were discussed during the workshop, being the importance of quality seed control, biodiversity, Geographical Indications, IPR management at research institutes, and awareness raising and capacity building on matters of IPR.

IPR legislation in the target countries

Having analysed the IPR legislation regarding seed in the five target countries, only Rwanda does not have a national plant variety protection system in place or in the process of development. Uganda is in the process of setting up its PVP regime; Burkina Faso, as a member of OAPI is bound by the PVP regulations included in Annex X of the 1999 Revised Bangui Agreement, while Tanzania and Kenya already had their PVP regimes operational. For these two countries, Tanzania has recently adopted the 2012 PVP bill, amending its 2002 PVP Act, while Kenya's amendment of its current PVP regime is still on-going.

What is remarkable is that for all these countries, their PVP legislation is predominantly shaped to comply with the 1991 convention of UPOV. At this moment, only Kenya is a UPOV member and still under the 1978 UPOV Act. Yet, the on-going amendment of the Kenyan PVP system is meant to yield a UPOV 1991 compliant regime. The new Tanzanian PVP bill has specifically been developed to comply with UPOV '91, and once it has received presidential approval the new Act will pave the way for Tanzania joining UPOV 1991 as a full member. The Ugandan 2010 PVP bill, on its turn, has been drafted with the ambition of joining UPOV 1991. Yet, not all members of parliament are convinced that UPOV membership is in the interest of the nation's agricultural sector, halting the bill to be passed into law until now.

Despite Rwanda not having a domestic PVP regime or being in the process of developing one, as a member of ARIPO, the development of the prospective ARIPO Protocol for the protection of new plant varieties, which is said to be UPOV 1991 compliant is watched very closely by actors involved in plant breeding in Rwanda. The situation in Burkina Faso as a member of OAPI is that, having a PVP regime that reflects UPOV 1991, OAPI is planning to pursue the membership of UPOV. This ambition is maintained by the organisation despite not having assessed the effect of the

implementation of the UPOV compliant Annex X of the 1999 revised Bangui Agreement regarding its incentivising role to breeders or its impact in increasing investment in plant breeding in OAPI member states.

The International and regional IPR framework

The TRIPs agreement offers WTO members considerable legal space when designing their IPR regimes for the protection of plants and plant varieties. The route all the selected countries appear to have chosen is the one that excludes plants and plant varieties from patent protection, while plant varieties are protected through a sui generis system. Yet, the major sui generis system considered by the study countries is the internationally recognised UPOV system, and its 1991 convention in particular. This shows a lack of exploitation of the legal space provided by TRIPs.

There seem to be several reasons for this. Workshop participants emphasized the need and benefits of adopting a system that complies with international standards and which harmonizes domestic laws with the legislation in neighbouring countries and beyond. It was also observed that the UPOV system is strongly promoted by the UPOV secretariat and other international bodies, with the Technical Assistance Programs financed by these organizations being a major drive for policy implementation. To some these programs assist “the beneficial integration of the developing and least developed countries (LDCs) into the global economy and the multilateral trading system”.¹ Others have strongly criticized such programs, with the UPOV programs being critiqued for not taking into account the suitability of the UPOV model to local conditions and the lack of consultations with local stakeholders such as farmers’ groups, public breeding institutions or local seed businesses.²

With respect to the countries selected for this study, technical assistance programs have particularly targeted the regional IPR organisations that encompass them, OAPI and ARIPO. Together with other regional bodies as ASARECA and COMESA, which aim to stimulate agricultural research and harmonize seed trade rules, these organisations strongly promote the implementation of UPOV ‘91 based PVP systems in the region. And also here, these policy processes are receiving critical attention. The latest example being ARIPO’s draft regional framework for plant variety protection, which has been strongly criticized for not reflecting the realities of plant breeding and the seed systems of member states, and for relying almost exclusively on consultations with external parties, excluding actors from the member countries in the process.³

Multiple seed systems

The workshop participants observed that the UPOV system for the protection of new plant varieties may stimulate public and/or private sector breeding. However, it was recognized that in its current form, the UPOV system does not recognize informal seed systems. The importance of informal seed systems to many smallholder farmers in Sub-Saharan Africa for having access to seeds and planting material was strongly emphasized. For that reason, the workshop participants concluded that “UPOV

¹ See http://www.wto.org/english/thewto_e/coher_e/wto_unctad_e.htm

² Dutfield, 2011. The Role of the International Union for the Protection of New Varieties of Plants (UPOV). Global Economic Issue Publications, Intellectual Property Issue Paper No. 9, p. 11. QUNO. http://www.quno.org/geneva/pdf/economic/Issues/UPOV%20study%20by%20QUNO_English.pdf.

³ See <http://www.acbio.org.za/images/stories/dmdocuments/CSOconcernsonARIPO-PVPframework.pdf>

should open up the space for Member States to recognize the importance of informal seed systems in their IP policies and legislation in supplying seeds to farmers”⁴.

The workshop participants briefly commented on the various formal and informal seed systems that exist in their countries. Although most were common to discern merely between the formal and informal seed system, it was agreed that depending on the level of involvement of farmers, organised communities or cooperatives, and public and/or private actors in the seed sector, there are multiple seed systems to be distinguished. Overall, six different seed system were identified to exist in each of the five countries, namely: farmer based seed systems, community based seed systems, public formal seed systems, mixed public private seed systems, pure private seed systems and seed relief systems. It was also noted that it is the formal seed systems that receive most attention from policy makers. Yet, farmer based seed systems, community based seed systems and seed relief systems continue to exist and thrive due in part, to unmet demand for seed by the other seed systems. As such, informal seed systems should be recognized and supported at the policy level.

A differentiated PVP regime

In line with recognizing the different seed systems that exist on the ground, it was concluded that consideration should be made by countries to create different levels of protection for different crops and/or with respect to different groups. This is what we call a differentiated PVP regime, which aims to recognize and strengthen the various seed systems that exist and to respond to the needs and interests of the main stakeholders involved. The workshop participants emphasized that depending on the crop and farming system, the interests of the private sector may not necessarily be compromised by allowing smallholder farmers to save, exchange and sell seed. In fact, such a differentiated system could stimulate smallholder farmers to incrementally uptake improved varieties and progressively move them towards the levels of protection most favourable to the private sector.

The Ethiopian draft PVP law was particularly discussed as a possible example of a differentiated PVP regime. By defining smallholder farmers and including a list of crops for which no farmer’s privilege is granted, the Ethiopian draft proclamation creates three levels of rights: Full protection without the right to reproduce on-farm; Protection with the right to reproduce but not to exchange/sell; Full right to exchange and sell by and to smallholder farmers. The workshop participants observed that the main difficulty is in defining the different levels of protection in practical and legal terms. Whereas the Ethiopian example discerns smallholder farmers in terms of average household income, other examples have focussed on absolute income/turnover levels or farm size. The Malaysian Protection of New Plant Varieties Act of 2004, for example, defines a smallholder farmer as a “farmer with the size of land of holding for farming operations not exceeding 0.2 hectare”. The one mechanism that can most effectively administer and enforce different protection levels in a given country is likely to depend strongly on the country’s specific characteristics of its agricultural, economic, social and governmental structures.

Given the countries’ current orientation towards becoming members of UPOV, the main precondition for developing a differentiated PVP regime according to the workshop participants is having UPOV opening up the space for member countries to do so. Several proposals have been made to adapt UPOV ’91 in such a way that the exchange of farm-saved seed for certain crops and/or farmers is

⁴ See Annex 2

permitted. For example, by creating a separate PVP right for open pollinated food crops; by expanding the private and non-commercial use exemption to resource-poor farmers; or by broadening the farmers' privilege. Such amendments would obviously increase the legal space member countries have to establish a PVP system that recognizes and suits their different seed systems. The opinions on these proposals and on the concept of a differentiated PVP regime within UPOV circles have not been assessed.

The importance of quality seed control

In most African countries, quality seed control programmes are still evolving and work in shaping national seed certification schemes and seed testing standards is intended to reflect the international standards promoted by the OECD and ISTA. Of the five selected study countries, Burkina Faso and Rwanda are neither members of the OECD seed certification nor of ISTA seed testing schemes; Kenya and Uganda are members of both international schemes; while Tanzania is member of ISTA seed testing scheme but not (yet) of the OECD seed certification scheme. The five target countries all have seed acts in place that aim to regulate the production, processing, marketing and use of quality seeds. However, implementing regulations, quality control standards or guidelines are generally lacking in some of the jurisdictions.⁵ Thus, although in theory the various seed laws are meant to promote the production and use of quality seeds, these goals are not necessarily achieved in practice. In order to achieve quality seed supply at domestic level and, possibly, to integrate the international seed trade, there is an urgent need for the development of implementing regulations that put the quality control standards for seed production, processing and labelling into effect.

It was also observed that the formal quality control standards of uniformity/homogeneity and stability generally fail to take into account the different farming systems that exist in the target countries. Rules prohibiting or criminalizing sale and dealings with uncertified seed can further turn the quality control system into a barrier to access seeds. Quality Declared Seeds (QDS) offers an alternative, for crops, areas and farming systems in which highly developed seed quality control activities are difficult to implement or make relatively little impact. It was emphasized that QDS can be a channel to enhance accessibility and adoption of certified seed from the formal sector. It also facilitates the recognition and reward for farmers as local seed producers. Some countries already recognize QDS in their seed laws (e.g Tanzania) and other countries may consider extending similar recognition.

Obviously, if one aims to recognize and strengthen the various seed systems that exist in a country, the seed laws and quality control mechanisms need to differentiate between the different needs and characteristics of the seed systems as well. A differentiated PVP system will function best if it is part of a broader policy approach as, for example, promoted by the Integrated Seed Sector Development program.⁶

⁵ For greater details about the jurisdictions lacking implementation regulations or ministerial orders or the implementation of specific aspects of their seed acts, see table on annex 1. For example, with regards to quality control and seed the existence of a seed certification scheme or an agency in charge of overall supervision of the certification scheme, this report shows standards for quality control are yet to be developed in Burkina Faso; while a proper certification scheme is yet to be set up in Rwanda. For Tanzania, the 2003 seed act entrusts the minister the responsibility to promulgate by order the standards for plant varieties and seed production and the standards for seed processing, labelling for the purpose of commercialisation. These ministerial orders are yet to be promulgated.

⁶ See <http://www.wageningenur.nl/en/show/Integrated-Seed-Sector-Development-in-Africa.htm>

Biodiversity

The workshop participants emphasized the importance of farmers' varieties (landraces) for food security. It was observed that farmers' varieties are well adapted to the agro-ecological conditions where they are found. They are useful in maintaining crop genetic diversity and contain traits that are important for modern plant breeding. Their conservation and use should be encouraged. There is therefore a need to conserve, recognize, catalogue, document or register farmer varieties at all levels. However, the conditions, which these varieties must fulfil prior to being conserved, recognized, catalogued, documented or registered, should be different from those for formal varieties. An interest was shown in alternative variety registration systems and DUS standards such as the one for 'conservation varieties' in the EU.

Geographical Indications

As a form of protecting IPRs in agriculture, Geographical Indications (GI)⁷ remain relatively unexplored in Africa. Yet, in other parts of the world, particularly in Europe, geographical indications are used as tool to protect agricultural products. They therefore hold potential to stimulate African agriculture and the workshop participants observed the need to develop legal and policy frameworks to support awareness and legislation on geographical indications in their countries.

With respect to potential IPR tools to protect farmers' interests over agricultural products it was pointed out that GI protection does not require a single person as an inventor or a discoverer of the product that it is to be protected. Groups and associations (e.g. farmer communities) can organise themselves around a specific GI and acquire the relevant rights, as long as they can localise the area where the GI derives and can justify that the established or growing reputation and other characteristics of that product are linked to that area and the methods of production.

Recently, there is some movement in relation to the promotion of GI protection in Africa, especially in sub-Saharan Africa. In 2011, an EU-ACP project covering a number of sub Saharan countries including Uganda, Kenya and Tanzania, identified some products that may be eligible for GI protection. Further materialising its interest to support the protection GI in Africa, the EU Commission signed on 26 November 2012 an agreement with ARIPO. In the context of this agreement, ARIPO will be establishing a legal framework on GI and will further explored the possibility for protecting certain products as GI.

IPR management by public national research institutes

Another issue that was briefly discussed during the workshop relates to the management of IPRs by public national research institutes. It was felt that public research institutions need to implement appropriate IP policies. These policies should balance the interests of the smallholder farmers as well as commercial players and without compromising public interest. A differentiated IPR approach could

⁷ A general protection of geographical indications is enshrined in TRIPS article 22, with an additional protection accorded to wine and spirits under article 23 of TRIPS. Under TRIPS article 22, all products may be protected as GIs if they refer to signs which identify that product as originating in the territory of a member, or region or locality in that territory, where a given quality, reputation or other characteristic of the product is essentially attributable to its geographical origin.

be an appropriate framework through which public institutions may implement IPR policies. This could for example be done by applying different licensing conditions for different crops and/or target groups. In this context, the concept of Socially Responsible Licensing and the recently adopted CGIAR Principles on the Management of Intellectual Assets⁸ were briefly mentioned. It was also emphasized that the (semi-)exclusive licensing of a new variety to one or a few dispersed seed companies could create more incentives for the production and dissemination of the new variety than giving access to that variety to all interested seed companies. A final point made was the identification of the need for public research institutes to build capacity with respect to the drafting and management of research and IPR agreements in collaborations with private or public research institutes (from abroad).

Awareness raising and capacity building

The need to raise more awareness and to build capacity with respect to issues of IPR protection and management was repeatedly emphasized. For example, and in line with the aforementioned ASARECA observation,⁹ workshop participants explained the limited recourse to plant variety protection in the countries where such protection is available due to low stakeholders' awareness. As such, it was finally concluded that "creation of awareness on the role of IPRs in agriculture and the various IP instruments including licensing amongst farmers, breeders, researchers (public or private), policymakers and government is necessary".¹⁰

Recommendations

To conclude: Four of the five countries selected for this study are in the process of developing or upgrading their national PVP system, and all countries are member of the international IPR organisation in their region, namely ARIPO or OAPI. Together with other relevant regional organisations (ASARECA and COMESA), all these entities focus on UPOV '91 as the PVP model to be implemented. This is despite general recognition that the UPOV system does not recognize and support informal seed systems, which are the main source of seed and planting material for farmers in Sub-Saharan Africa. The concept of a differentiated PVP regime was therefore welcomed as a potential framework to work towards the realisation of an IPR system that suits both commercial, national food security, and smallholder farmers' interests in the target countries.

The round of interviews and regional workshop undertaken in the course of this project can be considered a first step (i.e. introduction) in that endeavour. To further reflect on the form, feasibility and realisation of a differentiated PVP system in the five target countries, an intensive round of consultations will be needed with policymakers and relevant stakeholders on a country per country basis. Depending on the country, such process will have to involve capacity building components tailored to the needs of different stakeholders, and formula that facilitate transparency and inclusiveness of all stakeholders involved.

Additional areas in which capacity building was identified to be welcome are Geographical Indications, IPR management at public research institutes, and quality seed control. With respect to the latter, it was considered important that the countries take steps to fully implement their seed

⁸ See <http://www.cgiar.org/consortium-news/principles-on-management-of-intellectual-assets-approved/>

⁹ See chapter 2.

¹⁰ See Annex2

regulations by promulgating the implementing regulations or the relevant guidelines related to quality standards on seed production, processing and labelling. In that process, awareness raising on the adoption of different quality standards and testing methods for different seed systems (e.g. QDS) would strongly support a differentiated approach that recognizes and supports the diverse seed systems that exist. Further collaboration with the Integrated Seed Sector Development program is recommended in this context, including more research on (potential) connections between IPR and seed law provisions in relation to different seed systems.

In relation to addressing breeders' interest in the seed sector, there is urgent need for the development of a PVP law in a country like Rwanda or for a swift completion and adoption of the PVP law of Uganda. Yet, the challenge in all five countries is to establish a PVP system that suits their diverse needs and interests. One that indeed triggers the development and dissemination of improved varieties by national and foreign, public and private entities, while also recognizing and supporting to the needs of smallholder farmers, farmer breeders and local seed production. In order to assist developing countries in this endeavour, discussion on a differentiated PVP approach within UPOV is to be encouraged, including on proposals that open-up legal space for member countries for its implementation.

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Annexes

Annex 1: Comparative overview of key issues covered by the PVP and Seed Acts in the study countries

Regulations	Key issues	Kenya	Tanzania	Uganda	Burkina Faso	Rwanda
PVP Laws		Yes	Yes	No	Yes	No
	UPOV compliance/membership	Current, Seed and Plant Variety Act 1975, but especially the 1991 and amended 1994 seed regulations lead to UPOV 1978 membership. When passed into law, the Seed and plant variety bill 2011 will pave the way for UPOV 1991 membership.	Currently in force is 2002 PBRs Act. However, 2012 PVP Bill just being passed by parliament; now awaiting president assent to become law (2012 PVP Act)	But 2010 PVP Bill going through parliament compliant with UPOV 1991 Act	Bound by Annex X of the 1999 Revised Bangui Agreement of OAPI which is compliant to UPOV 1991 Act although OAPI is not a UPOV member	
	Scope of protection	The Minister has the power to identify a scheme which specifies the species or groups of plant varieties eligible for protection	Specific regulations to designate/specify the species to which plant variety protection applies		All botanical taxa to be protected by this annex except for wild species, not planted nor improved by man	
	Length of protection	Based on PVP law currently in force, PVP rights exercisable for no more than 25 years. For fruit trees, their root stocks, forest and ornamental trees and grape vines, rights	Rights exercisable 25 years for trees and vines and 20 years for other crops		PVP certificate expires 25 years after its date of issue	

		exercisable for no less than 18 years				
	Farmers' privileges	Silent in the current Act. But it is encapsulated in the 2011 seed and plant variety Bill.	Based on 2002 PBRs Act, Farmers' privileges to save seeds of protected varieties harvested from their own holdings; and minister to set aside part of the fees paid to registrar for benefit of farmers and conservation of farmers' varieties		Yes, use by farmer in own holding for the purpose of propagation of harvested material in own holding a protected variety	
	Breeders' exemption	Yes, use of proprietary varieties by a plant breeder for further breeding is not considered an infringement to PBRs as long as such use is for non-commercial purposes	Use of protected varieties for non-commercial purposes and for further breeding allowed		Yes, Breeder's use allowed for the purpose of breeding other varieties	
	PVP office and PBR Registrar	Yes, based at Kenya Plant Health Inspectorate Service (KEPHIS)	Plant variety protection office established and registrar appointed in 2005		Yes, the headquarter of OAPI serves at the PVP Office of each of the member states	
		Yes	Yes	Yes	Yes	Yes
	National seed service / administration of seed Act	Overall administration of the seed Act 1975 and regulations 1991 and 1994 is with the Ministry of Agriculture. However, with the establishment of KEPHIS in 1997, much of the responsibilities	The Seed Act 2003 establishes a National Seeds Committee chaired by the permanent secretary to the ministry of agriculture. With broad representation, this committee advises the	The Seeds and Plant Act 2006 establishes the National Seed Board under the Ministry of Agriculture chaired by the Director of Crops Resources of the Ministry. The board has	There is a national seed committee established by the Act 2006 responsible for the promotion of the seed sector. The National seed service under the ministry of agriculture	The seed Act 2003 established the national seed service based at the Ministry of Agriculture

Seed Regulations		associate with the administration of the Seed Act are assigned to KEPHIS	government on seed policy formulations and implementation among other issues.	the overall responsibility to oversee the implementation of the Act	administers the Act.	
	Variety Release committee	Regulations 12 of the Seeds and Plant Varieties (National Performance Trials) Regulations 2009 establishes the National Variety Release Committee with broad representation	The Seed Act 2003 provides for the establishment of sub committees under National Seeds Committee. There is a Variety Release committee under the National Seeds Committee	The seed Act establishes a technical committee called the Variety Release committee with overall responsibility to approve and release new varieties of plants	Two sub committees are established under the National Seed Committee charged with the approval and release of forestry seeds and agricultural seeds	The Seed Act establishes a Variety Release Committee. The Variety Release committee was appointed by ministerial order in 2010 but has not worked properly since then
	National performance Trials	Regulations 7 of the seeds and plant varieties (National Performance Trials) Regulations 2009 establishes the NPT committee with a broad representation	The Tanzanian Official Seed Certification (TOSCI) Institute is in charge of National Performance Trials	The National Seed Certification Service is responsible for conducting National Performance Trials test for varieties bred in Uganda or imported into Uganda.	Currently carried out by the National seed service through its regional representations, the two sub committees of the national seed committee should develop guidelines for NPT	The Variety release committee is expected to develop among other tools, the guidelines for National Performance Trials. Currently, performance trials are carried out by the Rwandan Agricultural Board.
	Quality control and Seed certification agency/entity	KEPHIS is the central agency in charge of seed certification issues in Kenya. In addition KEPHIS is key member of NPT committee and National Variety Release	The Tanzanian Official Seed Certification Institute (TOSCI) has overall responsibility for seed certification, quality control and for ascertaining quality of	The National Seed Certification Service is the Ugandan agency responsible for seed certification and quality control/lab tests.	Quality control and certification are under the national seed service of the Ministry of Agriculture. Standards for quality control and certification	The Variety Release committee is expected to develop certification guidelines. There is no certification per say happening in

		committee.	QDS		are yet to be developed.	Rwanda
	Seed production	Section 3 of the 1975 Act provides for regulations to be promulgated by ministerial order in respect of seed production. Regulations were promulgated in 2009 as Seeds and Plants (NPT) Regulations	The Seed Act 2003 provides that the minister shall by order prescribe the plant varieties and standards for seed production. Standards not yet prescribed by ministerial order	There are draft Seed Regulations 2011 providing guidelines and setting the standard for seed production, variety registration, seed processing and marketing	The Act provides that a ministerial order should set the standards for seed production. But such standards are not yet in place.	The seed Act 2003 provides that the minister having agriculture in his portfolio shall determine by decree the standard for quality seed production
	Seed marketing/commercialisation	Section 3 of the 1975 Act provides for regulations to be promulgated by ministerial order in respect of seed processing and marketing	operty Rights in the the minister shall by order prescribe standard for seed processing, importation and distribution. Standard yet to be promulgated by ministerial order	There are draft Seed Regulations 2011 providing guidelines and setting the standard for seed production, variety registration, seed processing and marketing	The act provides for norms on the conditioning, packaging of seeds for the purpose of commercialisation.	The Seed Act provides that he minister of agriculture shall provide regulations for the processing of quality for the purpose of commercialisation.

Annex 2- Workshop Report on the Development and Implementation of IPR in Sub Saharan Africa - Nairobi, 3-4 October 2012

Introduction

The Workshop on Development and Implementation of IPRs in Sub-Saharan Africa was held back to back with the workshop on development and implementation of ABS in sub-Saharan Africa. While the latter took place from 1st to 2nd October 2012, the former was held on 3rd and 4th October 2012. This report is a synthesis of the conclusions that were made at the workshop, following various presentations and discussions with the participants. The participants were drawn from the following countries: Kenya, Uganda, Tanzania, Burkina Faso, Rwanda and the Netherlands. The participant from Namibia attended the workshop inasmuch as Namibia is not one of the IPRs project countries. A table summary of the presentations made is at the end of this report.

In drawing out the conclusions below, each presentation was followed by discussions and as a result various propositions were drawn out. These propositions were later on presented to the participants and discussed. The discussions that followed led to the conclusions summarized below.

Summary of conclusions

1. Participants observed that the UPOV system of protection of plant varieties may stimulate private sector breeding. However, in its current form, it does not recognize informal seed systems. Many small holder farmers in sub Saharan Africa access seeds and planting material through the informal seed systems. UPOV should open up the space for Member States to recognize the importance of informal seed systems in their IP policies and legislation in supplying seeds to farmers.
2. Consideration should be made by countries to create different levels of protection of intellectual property rights, including plant breeders' rights. One way of doing so is adapting the scope of farmer privilege, so that the same may vary between crops and farming system. However, the main difficulty is in defining the different levels of protection in practical and legal terms. Depending on the crop and farming system, the interests of the private sector may not necessarily be compromised by allowing smallholder farmers to save, exchange and sell seed. In fact, such a differentiated system could stimulate smallholder farmers to incrementally uptake improved varieties and progressively move them towards the levels of protection most favourable to the private sector.

3. In most African countries, quality seed control programmes are still evolving. Even where these programmes have developed, the homogeneity of compulsory quality control rules fails to take into account the different farming systems that exist in the country. As a result, some farmers are able to access quality seeds while others are not. Rules prohibiting or criminalizing sale and dealings with uncertified seed, further turn the quality control system into a barrier to access seeds. Quality Declared Seeds (QDS) offers an alternative, for crops, areas and farming systems in which highly developed seed quality control activities are difficult to implement or make relatively little impact. QDS can also be a channel to enhance accessibility and adoption of certified seed from the formal sector. It also facilitates the recognition and reward for farmers as local seed producers. Some countries already recognize QDS in their seed laws (e.g Tanzania) and other countries should consider extending similar recognition.
4. Farmers' varieties (landraces) are well adapted to the agro-ecological conditions where they are found. They are useful in maintaining crop genetic diversity and contain traits that are important for modern plant breeding. Their conservation and use should be encouraged. There is therefore a need to conserve, recognize, catalogue, document or register farmer varieties at all levels. However, the conditions, which these varieties must fulfill prior to being conserved, recognized, catalogued, documented or registered, should be different from those for formal varieties.
5. As a form of protecting intellectual property rights in agriculture, geographical indications remain unexplored in sub-Saharan Africa. Yet, in other countries, particularly in Europe, geographical indications are used as tool to protect agricultural products. They therefore hold potential to stimulate African agriculture. There is need to develop legal and policy frameworks to support awareness and legislation on geographical indications.
6. Public and private research institutions need to implement appropriate IP policies. These policies should balance the interests of the smallholder farmers as well as commercial players and without compromising public interest. A differentiated IPR system could be an appropriate framework through which public institutions may implement IPR policies. Licensing

of public owned IP is one mechanism to ensure the IP is taken by the private sector.

7. Creation of awareness on the role of IPRs in agriculture and the various IP instruments including licensing amongst farmers, breeders, researchers (public or private), policymakers and government is necessary.

Summary of presentations made at Workshop on Development and Implementation of IPR in Sub-Sahara Africa - Nairobi, 3– 4 October 2012

	Presentation	Presenter	
1	Summary of policies on IPR and Seed systems in Africa	Bram De Jonge	
2	Status of IPR legislation and implementation in relation to various seed systems in participating countries		
		Burkina Faso	Adama Zerbo
		Rwanda	Antoine Nyirigira
		Tanzania	Canuth Komba
		Uganda	Joseph Bazaale
		Kenya	Evans Sikinyi
	The Netherlands	Anke van den Hurk	
3	An Introduction to Integrated Seed Sector Development	Peter Munyi	
4	Geographical Indications for Africa	Peter Munyi	
5	Propositions: The role of IPR in formal and informal seed systems	Bram De Jonge	
6	Bringing different levels together	Bram De Jonge	

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