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How policies influence smallholder farmers' access to and use of genetic resources in three East African countries

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Cover photo: Farmers from Kenya and Uganda admire the crop and varietal diversity on display (Hoima, Uganda).
Credit: Bioversity International/R.Vernooy

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Acronyms

ABS	Access and Benefit Sharing
AIA	Advance Informed Agreement
ARIPO	African Regional Intellectual Property Organization
ASARECA	Association for Strengthening Research in Africa
CAN	Competent National Authority
CBD	Convention on Biological Diversity
CIAT	International Centre for Tropical Agriculture
COMESA	Common Market for Eastern and Southern Africa
CSBs	Community Seed Banks
DoE	Department of Environment Tanzania
DUS	Distinctness, Uniformity and Stability
EAC	East African Community
EMCA	Environmental management Act (Kenya)
FAO	Food and Agriculture Organization
GDP	Gross domestic product
GeRRI	Genetic Resources Research Institute
IPCC	Intergovernmental Panel for Climate Change
IPRs	Intellectual Property Rights
ISFAA	Intersectoral Forum on Agrobiodiversity and Agro-ecology
ISTA	International Seed Testing Association
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KALRO	Kenya Agricultural & Livestock Research Organization
LMOs	Living Modified Organisms
MATs	Mutually agreed terms
MEA	Multilateral Environmental Agreements
MLS	Multilateral System
MNRT	Minitstry of National Resources and Tourism

NACOSTI	National Commission for Science, Technology, and Innovation (Kenya)
NEMA	National Environment Management Authority (Kenya)
NGOs	Non-Governmental Organizations
NVRC	National Variety Release Committee
OECD	Organization for Economic Co-operation and Development
OSSS	Open-Source Seed Systems
PAIPO	Pan African Intellectual Property Organization
PBRs	Plant Breeders' Rights
PGR	Plant Genetic Resources
PGRFA	Plant genetic resources for food and agriculture
PIC	Prior informed consent
PPB	Participatory Plant Breeding
PVP	Plant Variety Protection
QDS	Quality Declared Seed
SADC	Southern African Development Community
SMTA	Standard Material Transfer Agreement
STAK	Seed Trade Association of Kenya
TASTA	Tanzania Seed Trade Association
TAFIRI	Tanzania Fisheries research institute
TAFORI	Tanzania Forestry Research Institute
TFS	Tanzania Forestry Services
TANAPA	Tanzania National Parks Association
TAWA	Tanzania Wildlife Management Authority
TAWIRI	Tanzania Wildlife Research Institute
TK	Traditional Knowledge
TRIPs	Trade Related Intellectual Property Rights
UNECA	United Nations Economic Commission for Africa
UPOV	International Convention for the Protection of New Varieties of Plants

VCU	Value for Cultivation and Use
WHO	World Health Organization
WTO	World Trade Organization
WIPO	World Intellectual Property Organization

Executive Summary

Crop genetic resources and diversity for food and agriculture are the biological cornerstones of global food and nutrition security. They are critical in maintaining current food production and in addressing future challenges. Improving the productivity of major food crops in the face of climate change will depend on harnessing genetic diversity and genetic traits from a wide range of origins, including wild species.

Climate change negatively affects farmers' production systems and leads to loss of genetic diversity. Successful climate-change adaptation requires farmers to sustainably use a broader range of crops and varieties to thrive during unpredictable climate events and resultant pest outbreaks. Accessing a wider range of genetic diversity from different sources is also important, especially for developing new traits for climate-change adaptation. Genebanks are one of the main sources of this diversity. Accessing genetic resources from these genebanks is usually through the Multilateral System (MLS) of Access and Benefit Sharing of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA). Through this system, genetic resources are accessed for research and breeding purposes using the Standard Material Transfer Agreement (SMTA).

Through several research projects in Eastern Africa, the Alliance of Bioversity International and CIAT has carried out participatory research with farmers in Ethiopia, Kenya, Tanzania, and Uganda using durum wheat, sorghum, finger millet and beans provided by the national genebanks. Farmers and breeders selected the best-performing varieties with important traits for climate-change adaptation. Some of these varieties are potential candidates for breeding programs, while others were so good that farmers prefer to use them directly. However, the SMTA does not provide for the direct use and commercialization of materials exchanged through the MLS. Similarly, most regional and national access and benefit-sharing (ABS) mechanisms, seed policies and regulations also have provisions that hinder farmers from producing and distributing such varieties commercially.

This report addresses **key policy issues** around the access and use of genetic resources and their up-scaling for direct use and commercialization. It analyzes the current policy environment in Kenya, Uganda and Tanzania and **identif**ies key **policy-related gaps and challenges** related to the utilization of genetic resources, and further proposes a **strategy/roadmap for policy and institutional reforms** to address these gaps and challenges.

For the three countries the study reveals three key policy and regulatory issues that limit genetic resource diversity use among smallholder farmers: i) a differential implementation of Treaty SMTAs and related ABS policy in each country; ii) seed regulations that limit commercialization and sustainable use of genetic resources; and iii) a lack of seed policy harmonization in the region.

Based on the study findings the authors offer four broad recommendations for seed-sector policy and regulatory reforms to enhance famers' access to seeds: i) resolve and review ABS legislation in line with Treaty and Nagoya requirements and in a mutually supportive manner; ii) register farmer varieties to support broader crops and varieties diversity available in the market, at the same time asserting farmers'

rights to save, use and exchange seeds of their choice in accordance with article 9 of the Treaty; iii) Support the production of farmer varieties through alternative quality assurance schemes, and iv) Promote the recognition of community seedbanks and seed-producer associations as critical and innovative institutional avenues for enhancing seed-system access to seeds.

Use of Terms

Access and benefit-sharing: refers to how genetic resources may be accessed, and how the benefits that result from their use are shared between the people or countries using the resources (users) and the people or countries that provide them (providers). The *Nagoya Protocol* is an international agreement under the Convention on Biological Diversity (CBD). The objective of the *Nagoya Protocol* is to provide provisions for the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components.

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

Certified seed: refers to certified seed for seed multiplication, where the seed quality has been certified under national certification schemes, according to set criteria (e.g. varietal purity, germination, vigor and contamination).

Ex-situ conservation means the conservation of components of biological diversity outside their natural habitats.

Farmer-managed seed systems/farmer seed systems refers to the historical and traditional practices of farmers regarding the management of seed and propagating material, including the in-situ conservation, maintenance and selection of seed diversity, and the saving, re-using, exchanging, and selling of seed amongst family, neighbors and communities.

Harmonization: the process of creating common standards for a particular regional economic bloc, e.g., for the Southern African Development Community (SADC).

Improved plant variety means a variety developed through the formal breeding system at a national or International Research Centre or by private breeding companies.

In-situ conservation means the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species and their varieties/cultivars, in the surroundings where they have developed their distinctive properties.

Landrace variety, local variety or farmer variety means a domesticated, locally adapted, traditional variety of a plant species that has developed over time, through adaptation to its natural and cultural environment, and due to its isolation from other populations of the species. Local varieties are passed through generations of farmers and are often unable to fulfill the Distinctness, Uniformity and Stability (DUS) criteria.

Plant variety protection (PVP): means intellectual property protection given to the right holder over a new plant variety. PVP and Plant Breeders' Rights (PBR) are often used interchangeably.

Seed laws: refer to the laws that govern seed[1] certification, registration, production, marketing and trade.

[1] plant and cultivation/propagating materials/ propagules

Introduction

Climate change poses a serious and ever-growing threat to food and nutrition security of resource-poor farmers globally. In Kenya, Tanzania and Uganda, climate change has led to increased pests and disease attacks; reduced agricultural productivity; food insecurity, and general loss of genetic diversity. The homogenization of agriculture to single crops or varieties in the hope of higher yields, coupled with the associated loss of biodiversity, has decreased the resilience of resource-poor farmers. Further, it has contributed to soil degradation, a major challenge in the East Africa region. As a result, farmers deploy a very narrow genepool for food, nutrition, and livelihood security. An Intergovernmental Panel for Climate Change (IPCC) strategy for climate-change adaptation is the introduction of new diversity through breeding and other interventions (IPCC, 2014). As an adaptation strategy, plant breeders and farmers need to find and use genetically controlled plant traits that are suited to the changing climate conditions. Indeed, the *Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)* recognizes the importance of strategies based on the use, conservation, and management of genetic resources[2] for climate-change adaptation (Ibid)

In 2010, Bioversity International (now the Alliance of Bioversity and CIAT and hereafter referred to as ;the Alliance') developed the "Seeds for Needs" approach. This aimed to better harness the genetic diversity held in ex situ conservation facilities (genebanks) for climate adaptation in marginal environments, using durum wheat (Triticum durum Desf.) production areas in Ethiopia as a case study. The overarching goal of the approach was to cut short the crop improvement process by bringing genebank accessions directly to farmers' fields for evaluation in target environments (Gotor et al., 2014). Since then, the Seeds for Needs approach has been implemented in a dozen countries across Africa, Asia, and Latin America (Cambodia; El Salvador; Ethiopia; Guatemala; Honduras; India; Kenya; Lao; Nicaragua; Papua New Guinea; Tanzania, and Uganda). Over time, multidisciplinary elements were added to this initiative that eventually grew into a broad, coherent approach known as "Open source" seed systems (OSSS) that integrates genomics and participatory breeding methods pushing several innovations compared to the status quo.

OSSS uses a wide range of selected genetic material from genebanks, which are provided to farmers to plant in their fields. Through natural selection, combined with farmer selection each season, new crop populations are developed with better adaptation to local conditions. More often varieties are obtained with improved productivity and other desirable traits, compared with existing local ones (Díez MJ, et al, 2018).

The Alliance has been working with farmers in the region to introduce new diversity from genebanks through several research initiatives and projects, with the following objectives:

- Developing multi-stakeholder research teams, including farmers and national policymakers and scientists in each country, to help guide and implement project activities
- Locally assessing food-security crop vulnerability to changing climates
- Accessing and exchanging genetic diversity from various sources, including genebanks that hold the diversity that farmers and breeders need to respond to climate-change.

[2] Genetic resources mean genetic material of actual or potential value; genetic material means any material of plant, animal, microbial or other origin containing functional units of heredity. (CBD, Article 2)

- Accessing germplasm from a range of other sources, including local farmers' fields, farmers in other communities, national genebanks in the same country, national genebanks in neighboring countries, and international genebanks. This germplasm is accessed either through the MLS of access and benefit sharing and/or in compliance with national laws implementing the Nagoya Protocol
- Participatory testing, evaluation, and selection of targeted diversity with farmers and researchers
- Upscaling best-performing varieties through breeding programs and farmer seed systems
- Upscaling 'direct use' of some best-performing varieties in the form they were received (without further improvement) either through community seedbanks or small and medium-sized seed enterprises
- Conserving best-performing varieties in community seedbanks
- Developing supportive policies and practices from organizational to national levels linked to: i) accessing and exchanging germplasm and information; ii) releasing and multiplying crop varieties for farmers' use, and iii) empowering farmers to participate in generation, conservation, improvement, and commercial release of varieties, either in partnerships with 'formal sector' or on their own

As part of an effort to scale up these practices, the Alliance has worked with national partners to develop the concept of sub-regional hubs or platforms for exchanging: knowledge; data; genetic resources; best practices; methodologies; and crop variety information; and exploring options for implementing and/or operating under existing international access and benefit-sharing laws. A policy brief[3] describing the seed-hub concept has now been endorsed by 12 organizations, and more are considering endorsing it. In future, countries will be able to collaborate in sub-regional activities supported by the seed hub. These will work towards developing policies, laws, institutional guidelines, and best practices that support (or at least reduce impediments to) institutionalizing or mainstreaming future initiatives.

Commissioned by the Alliance Policy Unit, this report outlines key aspects of genetic resources and seed policies in Kenya, Uganda, and Tanzania. The terms of reference (ToRs) for this study are articulated in Annex 1). The study i) **interrogates key policy issues** around the utilization of genetic resources, and their up-scaling for direct use and commercialization; ii) analyzes the current policy environment in the three countries to **identify policy-related gaps and challenges** for crop genetic resource management, and 3) proposes a **strategy/roadmap for policy and institutional reforms**. The report aims to inform and support policy processes underway in the three countries and region and contribute to a more enabling environment that supports strengthening food and seed security, better adapting to climate change, and enhancing sustainable rural development.

[3] Otieno, G. et al. (2021) A synthesis of policy issues and recommendations towards enhancing access to and utilization of agricultural genetic resources for climate-change adaptation in East Africa: Report of a Regional Policy Workshop, 1-2 April 2021, Kisumu, Kenya. Available at: www.bioversityinternational.org

1. Crop Genetic Diversity and Climate Change

Crop genetic resources and diversity for food and agriculture are the biological cornerstones of global food and nutrition security. They are critical in maintaining current food production and in addressing future challenges. Improving the productivity of major food crops in the face of climate change will depend on harnessing genetic diversity and genetic traits from a wide range of origins, including wild species.

1.1 Effects of Climate Change on Crop Genetic Resources in East Africa

Arguably, one of the most widespread and potentially devastating impacts of climate change in East Africa will be changes in the frequency, intensity, and predictability of precipitation (Case, M 2006). Changes in regional precipitation will ultimately affect water availability and may lead to significantly decreased agricultural production and potentially widespread food shortages (FAO, 2015).

Climate-change projections suggest that East Africa will experience warmer temperatures and a 5-20% increased rainfall from December-February and 5-10% decreased rainfall from June-August by 2050 (Hulme et al., 2001; IPCC, 2014). These changes will be uneven throughout the year and are likely to occur sporadically and unpredictably. It may also be likely that the increased precipitation will fall in a few very large rainstorms, mostly during the already wet season thereby adding to flooding and erosion, thus further complicating water-management issues. It is also expected that there will be even less precipitation in East Africa during the already dry season, which may cause more frequent and severe droughts and increased desertification in the region (Haile, GG 2020).

There is a strong link between climate and most East African livelihoods. East Africa depends heavily on rain-fed agriculture making rural livelihoods and food security highly vulnerable to climate variability, such as shifts in growing season conditions (IPCC, 2014). Infact, agriculture contributes between 20- 40% of the region's gross domestic product (GDP) and provides livelihoods for 80% of East (Tomsike et al, 2014. However, because the temperature has already increased and precipitation in the region has already decreased in some areas, many are already affected. For example, between 1996 and 2003, there has been a decline in rainfall of between 50 and 150 mm per season (March to May) and a corresponding decline in long-cycle crops (e.g., long maturing varieties of sorghum and maize) across most of eastern Africa (Funk et al., 2005). Long-cycle crops depend upon rain during this typically wet season and progressive moisture deficit results in low crop yields in the main season, thereby affecting the available food supply.

Over decades, farmers have adapted their crops and their cropping systems as environmental conditions have changed. However, the speed and complexity of human-induced climate change are likely to present unprecedented challenges. New crop varieties will be needed, and in some cases, farmers will have to shift to growing new crop species. The areas that are currently most food-insecure will be the worst affected and will have the greatest need for new crop varieties tolerant to drought, high temperatures, flooding, salinity, and other environmental extremes (Dhankher and Christine, 2018).

In addition to its impacts on domesticated crops, climate change will affect the ability of many crop wild relatives to survive in their current locations. Species that are unable to migrate quickly will be particularly

vulnerable to extinction. It has been estimated that between 16 and 22 percent of crop wild relative species may be in danger of extinction within the next 50 years – including 61 percent of peanut species, 12 percent of potato species, and 8 percent of cowpea species (Jarvis et al., 2008).

Some centers of diversity of some crops lie in regions that are among those most at risk from climate change. As conditions change, landraces are likely to be lost as farmers replace them with other landraces or improved varieties that are better-adapted to the new conditions. However, most landraces have characteristics and traits that are potentially useful in adapting to climate change. This could lead to greater demand for some landraces thereby contributing to their survival. Climate change is therefore likely to exacerbate loss of agricultural biodiversity which may limit the number of traits available for adaptation. This is likely to limit breeding and also to lead to lower productivity, greater food insecurity and lower incomes for farmers.

Crop production in all the three East-African countries relies on genetic resources sourced both locally and globally. This interdependency is likely to increase because of climate change. International germplasm movements will be essential in adapting agriculture to these novel climates. Many authors agree that traditional varieties are an important source of agronomic traits for adaptation to climate change and marginal growing conditions (Burke et al., 2009; Mengistu et al., 2016).

National and international breeding programmes are already seeking to develop new varieties that will be well adapted to future climates. This is likely to increase demand for a range of plant genetic resources, including those of crop wild relatives (Galluzzi, G. 2020).

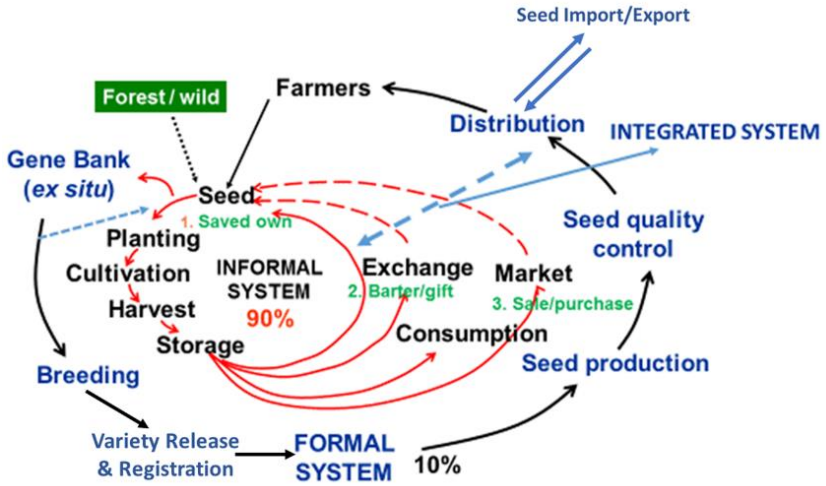
On a local scale, seed systems will be essential to the process of climate change adaptation through the exchange and introduction of landraces with diverse range of characteristics in the farming systems. These traits will continually develop under novel selection pressures associated with climate change. However, there are limits to the extent to which local seed systems can adapt (Mercer KL and HR Perales, 2010). As changes increase, seed systems will need to stretch over wider and newer areas. There is a need for policies that support diverse seed systems including expanding seed exchange as in seed fairs and other means. In addition to informal mechanisms, local seed systems could be expanded to include more formal community-based seed enterprises. This will facilitate smallholder farmers to access improved and adapted cultivars and other inputs that may be suitable for adaptation to climate change.

2. Overview of Seed Systems

2.1 Typology of Seed Systems in East Africa

The seed sector is a vital component of an agricultural system that involves activities associated with seed production, processing, marketing and use by farmers. The seed sector is generally composed of three types: the formal seed system, informal seed system and integrated seed systems (Figure 1).

Figure 1: Types of seed systems: Formal, Informal and Integrated Seed Systems



Source: Adapted from Alminkenders & De Boef, 2000

The formal and informal seed systems have been the main seed delivery systems. Considering the inability of the two systems to comprehensively meet the quantity and quality seed needs of diverse groups and farming systems (see Table 1), the integrated seed system combines elements of the two systems in a complementary system that makes the seed sector more holistic and pluralistic.

East African formal seed supply systems cover seed production and supply mechanisms that are ruled by defined methodologies anchored on research and formal breeding and based on prescribed standards. The systems in East Africa mainly deal with hybrids and specialized horticultural crops, well-developed sectors, where hardly any public support is needed. The systems have uniform standards based on distinctness, uniformity, and stability (DUS). This sector is governed by policies and regulatory frameworks that strengthen efficiency and effectiveness of variety release, seed quality control, phytosanitary measures, and plant breeders' rights. In some cases, financial incentives may be necessary to get sustainable businesses off the ground (small and medium enterprises) and public investments in research and capacity building remain important. This sector produces only 10-20% of the seed requirements by the national governments in Africa.

The informal seed system on the other hand focuses on farmer management of local varieties which have been selected over time and produced under local conditions. The system covers methods of local seed selection, production, and diffusion. The systems are sometimes described as traditional and informal, operating mainly at local levels through exchange mechanisms, with limited quality control and quantities

per transaction. In addition, the varieties will have special attributes specific to the farmers e.g., taste and nutrition, that give the varieties added value within the community. The system builds on the huge agro-management by farmers. These systems provide about 80-100% of the seed used in Africa.

In East Africa, seed systems of major food security crops are still largely informal except for maize (Table *1*). Farmers still rely on farm-saved seed and their social networks to access seeds and planting materials of most major food crops (Otieno et al, 2021).

Table 1: Percentage of seed supplied by the formal and informal sectors in Tanzania, Kenya and Uganda

Crop	**Tanzania***		**Kenya****		**Uganda*****	
	Formal	**Informal**	**Formal**	**Informal**	**Formal**	**Informal**
Maize	54%	46%	68%	32%	46%	54%
Beans	7%	83%	5%	95%	2%	98%
Sorghum	4%	96%	13%	87%	3%	97%
Cassava	2%	98%	7%	93%	2%	98%
Finger millet	2%	98%	3%	97%	2%	98%

Source: *Authors' complilations

More recently, integrated seed systems have emerged. These systems aim to improve the quality and quantities of local supply systems, borrowing technologies and improvements from the formal sector and using informal channels. The systems focus on improving local seed systems by introducing improved seeds from national and international agricultural research centers to local seed businesses and local seed cooperatives, who produce and commercialize them. Quality control is often through alternative (and relaxed) mechanisms such as quality declared seeds (QDS) where regular inspections are conducted for diseases and pests. These systems could also produce certified seeds using formalized and standardized quality-control measures through small-scale seed enterprises and integrating them into seed markets. The systems can also improve on informal systems to produce standard seed and/or QDS, for exchange within the community. Despite the potential, there is little documentary evidence about the volumes sold and sustainability of QDS seed businesses.

3. Analysis: Policy and Legal Frameworks on Genetic Resources Use Management and Conservation

The nature of genetic resources and diversity, and associated activities are unique and cross-cutting and defy simple regulation regimes. Regulation of genetic resources touches on access and benefit sharing; seed regulations; intellectual property rights (IPRs) indigenous peoples' rights and knowledge, and conservation. Intertwined within these topics are issues on food security, economic development, poverty alleviation, agriculture, pharmaceuticals, biotechnology, industrial development, international research efforts, and climate change.

Regulating genetic resources is therefore a complicated process with key questions such as who owns the genetic resources. What are the terms for granting access to genetic resources? To whom can access be granted? What types of products may be pursued, and can they be commercialized or protected? How should benefits be shared, and what types of benefits might be considered (e.g., cash payments and royalties, access to technology, and training)? Considered together, these disparate issues frequently require the creation of a regulatory framework to address the above-mentioned questions i.e., one that draws upon unique and multidisciplinary experiences. Some key policies and legal frameworks that regulate genetic resources internationally, regionally, and nationally are reviewed below.

3.1 Access and Benefit Sharing

3.1.1 Global ABS policy instruments and International ABS Development

The three major international agreements setting the framework for national ABS systems are i) the Convention on Biological Diversity (CBD), which entered into force in 1993; ii) the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), which entered into force in 2004, and iii) the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable sharing of Benefits arising from their Utilization, adopted in 2010.

Convention on Biological Diversity (CBD)

The CBD was primarily the first global instrument focused on conservation of the Earth's biodiversity and sustainable use of biological resources. It mainly regulates access to genetic resources of wild flora and fauna species used for food, chemical and pharmaceutical purposes. *Article 15 of CBD* provides a framework for national governments to implement ABS mechanisms to regulate and protect traditional knowledge and genetic resources, to facilitate access and ensure the fair and equitable sharing of benefits. It re-affirms the sovereign rights of states over their natural resources (CBD, 2010). Under the CBD, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation. It also establishes several general principles and obligations relating to access to genetic resources and benefit sharing (CBD, 2010). The principles are:

Parties have an obligation to create conditions to facilitate access to genetic resources and shall not impose restrictions that run counter to the objectives of the CBD.

- Access, where granted, shall be on mutually agreed terms.
- Access to genetic resources shall be subject to the prior informed consent of the contracting party providing such resources.

- Scientific research on genetic resources provided by other contracting parties shall be undertaken with the full participation of such parties and where possible in the territory of such parties.
- Parties have an obligation to take legislative, administrative or policy measures to ensure that fair and equitable sharing of the results of research and development and the benefits from the commercial and other utilization of genetic resources with the contracting party providing such resources.
- Such benefit sharing shall be on mutually agreed terms.

Secondly, Article 8(j) addresses the maintenance and promotion of traditional biodiversity-related knowledge, innovations, and practices. This issue is closely related to access and benefit sharing and as such must be an integral part of any international regime on ABS. Under Article 8(j) parties to the CBD undertook to:

- Respect, preserve and maintain the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.
- Promote their wider application with approval and involvement of the holders of such knowledge, innovations, and practices.
- Encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations, and practices.

Lastly, the Bonn Guidelines on ABS, negotiated in 2001 and adopted in May 2002, are the only instruments on ABS developed under CBD for implementation. The guidelines were intended to:

- Provide governments and stakeholders with a transparent framework to facilitate access to genetic resources and ensure fair and equitable sharing of benefits.
- Provide guidance to parties in the development of access and benefit sharing regimes.
- Inform the practices and approaches of stakeholders in ABS arrangements.
- Provide stakeholders' capacity building to guarantee effective negotiations and implementation of ABS arrangements.
- Promote the adequate and effective transfer of appropriate technology to parties providing genetic resources.

Nagoya Protocol

The Nagoya protocol was established in 2010. Its main objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity. The Nagoya Protocol applies to genetic resources that are covered by the CBD, and to the benefits arising from their utilization. The Nagoya Protocol also covers traditional knowledge (TK) associated with genetic resources that are covered by the CBD and the benefits arising from its utilization.

Under the Nagoya protocol countries are obliged to create legal measures on access and benefit sharing and provide clear rules and procedures for obtaining prior informed consent (PIC) under mutually agreed terms (MATs) and then provide users with access permits. Users also have benefit sharing obligations to

provide the fair and equitable sharing of benefits arising from the utilization of genetic resources with the provider of the genetic resources. Utilization includes research and development on the genetic or biochemical composition of genetic resources, as well as subsequent applications and commercialization. Benefits may be monetary or non-monetary such as royalties, capacity development, joint research, and the sharing of research results. According to Articles 15 and 16, Parties will take appropriate, effective, and proportionate legislative, administrative, or policy measures to ensure that the genetic resources and related traditional knowledge have been accessed according to the PIC and MATs as required by the domestic ABS legislation or regulatory requirements of the other Party.

In addition, each Party must designate an ABS National Focal Point (NFP) and one or more competent national authorities (CNAs) (Article 13). The NFP is responsible for providing information on: i) the procedures for obtaining PIC and establishing MAT, including benefit sharing; ii) CNA; iii) relevant indigenous and local communities; and iv) relevant stakeholders. In accordance with national legislative, administrative, or policy measures, the CNA must be responsible for granting access or (as applicable) issuing written evidence that access requirements have been met. It must also be responsible for advising on applicable procedures and requirements for obtaining PIC and MAT. A single entity fulfilling both functions of focal point and national authority may be designated by each Party.

Further to this, the Nagoya Protocol establishes in Article 14 an Access and Benefit-Sharing Clearing House (ABS Clearing House) responsible for sharing information related to ABS and, in particular, to information available by each Party relevant to the implementation of the NP. The ABS Clearing House should have available information to be provided by each Party regarding legislative, administrative, and policy measures on ABS, NFP, and CNA and permits (or their equivalent) issued at the time of access as evidence of the decision to grant PIC and of the establishment of MAT.

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

The ITPGRFA is a multilateral treaty ('the Treaty' hereafter) that was signed in 2001 and became effective in 2004 and specifically aimed at guaranteeing food security through sustainable use, management and conservation of genetic resources for food and agriculture. The objectives of the Treaty are the same as those of the CBD, except that they are specific to plant genetic resources for food and agriculture. Under the Treaty, ABS goals have been translated into a multilateral system (MLS) of exchange of genetic resources. Under the Treaty, countries agree to virtually pool and share the plant genetic resources of 64 crops and forages, also known as Annex 1 crops[4] for food and agriculture-related purposes. Access to genetic resources from the MLS is through a standardized system of access and benefit sharing through a standard material transfer agreement (SMTA). Genebanks holding genetic resources which are under management and control of contracting parties and in the public domain must provide facilitated access to those genetic resources. The Treaty covers materials exclusively used for food and agriculture. Article 6.1 of the Plant Treaty's Standard Material Transfer Agreement (SMTA) allows for the use of **materials for research, breeding and training for food and agriculture**. Under Article 6.2, which states that the **recipient shall not claim intellectual property rights that limit facilitated access to materials in the form**

[4] List of Annex 1 crops available at: https://www.fao.org/3/bc084e/bc084e.pdf

received from the multilateral system, the SMTA ensures the continuous access of materials exchanged in the multilateral system by all users, like farmers, researchers and breeders for further development.

Users who choose to commercialize and protect varieties bred from MLS materials must share their benefits as stipulated in articles 6.7 and 6.8 of the plant treaty as outlined below:

> 6.*7 In the case that the Recipient commercializes a Product that is a Plant Genetic Resource for Food and Agriculture and that incorporates Material as referred to in Article 3 of this Agreement, and where such Product is not available without restriction to others for further research and breeding, the Recipient shall pay a fixed percentage of the Sales of the commercialized Product into the mechanism established by the Governing Body for this purpose, in accordance with Annex 2 to this Agreement.*
>
> *6.8 In the case that the Recipient commercializes a Product that is a Plant Genetic Resource for Food and Agriculture and that incorporates Material as referred to in Article 3 of this Agreement and where that Product is available without restriction to others for further research and breeding, the Recipient is encouraged to make voluntary payments into the mechanism established by the Governing Body for this purpose in accordance with Annex 2 to this Agreement*

The Treaty therefore limits the direct use and commercialization of MLS varieties and places a barrier on how farmers can access plant genetic resources for food and agriculture.

Article 9 of the international treaty on farmers' rights

The international treaty recognizes the immense and immeasurable contribution of farmers - in the past present and future - to the conservation and development of plant genetic resources for food and agriculture. The realization of Farmers' Rights is therefore critical to ensuring the conservation and sustainable use of plant genetic resources for food and agriculture. This diversity is particularly essential for traditional small-scale farming, on which millions of people worldwide depend, especially in developing countries where 70-80 percent heavily depend on agricultural biodiversity for their livelihoods and food security (FAO, 2007).

According to Article 9 of the Treaty, the implementation and realization of Farmers' Rights rests with the national governments. Measures for respecting Farmers' Rights suggested under Article 9 include protection of traditional knowledge, equitable benefit-sharing, participation in decision-making, and the right to save, use, exchange and sell farm-saved seeds and propagating material. Countries are thus required to take measures to provide space for farmers' customary practices related to plant genetic resources for food and agriculture, which in this context there involves a consideration into how legal, commercial and technological measures restrict customary use of plant genetic resources for food and agriculture (PGRFA) and how they can be amended in order to provide sufficient space for farmers' contributions to plant genetic diversity in agriculture (FAO, 2007). All this entails the recognition of the diversity of seed production and distribution systems, ranging from very formal to very informal activities, in order to promote balanced policy and legal frameworks, and cooperation between actors and activities. These are all important elements in the chain of seed production and supply. Further to this, the realization of Farmers' Rights is also linked to the implementation of related Articles of the Treaty dealing

with the conservation and sustainable use of PGRFA (Articles 5 and 6), and with benefit-sharing and the funding strategy (Articles 13 and 18).

All the three east African countries are Treaty signatories (table 4) and are at different stages of its implementation as shown in table 4 below:

Table 4: Membership to global conventions

	Tanzania	Kenya	Uganda
WTO	Joined 1 January 1995	Joined 15 April 2015	Joined 1 Jan 1995
UPOV	Joined 22 Nov 2015	Joined 13 May 1999	
ITPGRFA	Acceded 30 April 2004	Acceded 15 Feb 2006	Acceded in 2003
CBD	Party since 6 June 1996		Ratified on 8 Sep 1993
Cartagena Protocol on Biosafety	Acceded 11 Sep 2003	Signed 15 May 2000 & ratified in 2003	Ratified on 24 Nov 2001

Source: Authors' Compilation

3.1.2 National ABS Systems

3.1.2.1 Kenya

Kenya has been a party to the Nagoya Protocol since 2014. Kenya has a Draft Seed and Plant Varieties (Conservation, ABS of PGRFA) Regulation in place, but it is yet to be enacted. Currently biodiversity aspects in Kenya are handled under various legislations and there is no specific biodiversity act nor substantive ABS laws.

The regulations under the Environmental Management and Coordination Act of 1999 were passed as a legal notice No. 160 of 2006. The regulations cover aspects related to: Conservation of Biological Diversity (Environmental Impact Assessment License, conservation of threatened species, inventory of biological diversity, monitoring of status and protection of environmentally significant areas); Access to plant genetic resources (Access permit, notification of application, determination of application, form of access permit, communication of decision validity and renewal of access permit, terms and conditions of an access permit, suspension, cancellation, etc. of access permit, Register of access permits and Material Transfer Agreement); and Benefit Sharing (application of part, and benefit sharing). The coverage as indicated is narrow and is not clear on fair and equitable sharing of Benefits.

The Wildlife Conservation and Management Act (2013) has some provisions on access to wildlife and benefit-sharing and they have also developed wildlife sector regulations on bioprospecting, and research and development. Genetic resources under ITPGRFA, specifically for SMTAs on multi-lateral benefits, are handled by the genebank of Kenya Agricultural & Livestock Research Organization (KALRO). Biological resources under WHO are approved under the National Commission for Science, Technology, and Innovation (NACOSTI) and the Ministry of Health. The Biosafety Authority regulates approvals on genetically modified organisms.

In 2016 Kenya enacted a law on Traditional Knowledge which provides a framework for the protection and promotion of traditional knowledge and cultural expressions, but implementation is lacking. The ABS subsidiary regulation (2006) under the Environmental Act (EMCA) has been reviewed in various stakeholder forums where it has been agreed that there is a need for a substantive National ABS framework or an inclusive biodiversity law. In terms of institutional arrangements, Kenya has undertaken various steps to comply with Protocol requirements. It has an ABS National Focal Point under the Ministry of Environment and Natural Resources headed by the Principal Secretary in the Ministry.

The competent national authority in charge of environmental issues is the National Environment Management Authority (NEMA) which is under the same Ministry. There is an ABS desk officer dealing with the NP and permits system. NEMA has an internationally recognized Certificate of Compliance on the requirements of the Protocol. There is also expertise in relation to ABS within the Kenya Wildlife Services, in the Bioprospecting division. Until now, 74 permits have been issued, mostly for research projects with no commercial purposes. In addition, there are several checkpoints in place such as the Kenya Industrial Property Institute; National Museums of Kenya; Kenya Revenue Authority (Department of Customs Service); Kenya Copyright Board; Kenya Agriculture and Livestock Research Organization; Kenya Wildlife Services; Kenya Forest Services; National Commission for Science, Technology, and Innovation, and Kenya Plant Health Inspectorate Service. Checkpoints are to collect or receive, as appropriate, relevant information related to PIC, the source of the genetic resource, the establishment of MAT, and/or the utilization of genetic resources. Thus, institutional arrangements are in place as defined under the Nagoya Protocol, although these are not yet defined under the national legal framework. The country has ABS permitting and compliance procedures in place ranging from PIC and MAT to Access permits and exports of scientific collections.

An ABS portal was launched and publishes and avails all information concerning environment, access to and use of natural resources, and any new developments in the relevant laws.

A major gap on the ABS is the missing definition of genetic resources, which could imply that one would need a permit to go for fruit shopping. Secondly, the definition of PIC is also missing. The regulation does not cover approved research activities intended for educational purposes within recognized Kenyan academic and research institutions. But just in case the research is collaborative with foreign institutions, how does the regulation ensure that researchers involved do not take genetic resources out of the country on behalf of their collaborators? Finally, it seems that no ground has been laid to prevent movement of genetic resources through various entry points— there was no mention of this in the regulation.

Kenyan ABS has only three objectives out of the six objectives on access and benefits sharing that are consistent with both the CBD and Bonn Guidelines: conservation of biological diversity; access to genetic resources; and benefit sharing. This appears narrow and whether they address the implementation of the CBD as per the international obligations is in doubt.

3.1.2.2 Tanzania

In Tanzania, the Government initiated efforts and introduced a resolution for accessing the Protocol to the General Assembly on 29th June 2017. After discussions, Tanzania accessed the Nagoya protocol in

January 2018 and officially became a Party on 19th April 2018. Tanzania currently has drafted a plant Genetic Resource Bill that is awaiting approval.

The existing national policies and laws already provide a basis for the implementation of the Nagoya Protocol since they recognize the right to access to benefit sharing arising from utilization of genetic resources. Regarding these policies and legislations, there are specific sections and sub-sections that describe the procedures necessary for obtaining licenses and permits for access and utilization of biological resources.

In terms of institutional arrangements, in most cases the Ministry responsible for the Environment regulates all matters of biodiversity in Tanzania. The Division of the Environment (DoE) within this Ministry is headed by a director who is the focal point for all Multilateral Environmental Agreements (MEA) and is also responsible for the coordination of all biodiversity matters with sector ministries. A Nagoya Focal Point was recently appointed in the Vice President's Office.

Approval of permits to access genetic resources or information concerning natural resources in Tanzania Mainland is provided by the Ministry of Natural Resources and Tourism (MNRT). All permits concerning access to genetic resources for marine parks, forest reserves and bee keeping reserves is processed under MNRT. The Ministry also has National Agencies or Competent National Authorities that should be consulted for accessing research information on genetic resources. These Authorities include the Tanzania National Parks Authority (TANAPA), Tanzania Wildlife Management Authority (TAWA), Tanzania Wildlife Research Institute (TAWIRI), Tanzania Forest Research Institute (TAFORI), Tanzania Forest Services Agency (TFS), Ngorongoro Conservation Authority, and Tanzania Fishery Research Institute (TAFIRI).

3.1.2.3 Uganda

The country acceded to the Nagoya Protocol in June 2014, ratified the ITPGRFA and is Party to the CBD. Uganda has a draft PGRFA Policy and has revised the 2005 ABS regulations which are currently with the Ministry awaiting approval.

Currently Uganda is using national ABS regulations of 2005 and ABS guidelines of 2009. The 2005 ABS regulations recognize the Uganda National Council for Science and Technology (UNCST) as the CNA and prescribes the procedure for accessing genetic resources for scientific research, commercial purposes, bioprospecting, conservation, or industrial application. It further provides for sharing benefits derived from genetic resources and promotes sustainable management and utilization of genetic resources. The 2009 ABS Guidelines provide for detailed description of the ABS system and described the applicable procedures.

The 2015 memorandum of understanding (MoU) among NEMA, UNCST and NARO complements the ABS regulations as it details the relationship and division of responsibilities between these core ABS relevant institutions.

The CNA, for instance, facilitates the negotiation and conclusion of SMTAs and ensures that sufficient benefit-sharing provisions are included therein. In addition, it makes certain that representative samples and specimens of genetic resources collected are deposited in Uganda and that the person accessing

genetic resources undertakes technology transfer and information exchange. Except for the CNA, most institutions did not yet automate their parts in the application and permit issuance process.

The 2007 ABS Guidelines specify the provisions of the ABS regulations with the goal to enable “simple arrangements and procedures”. The Guidelines specifically mention the obligation of the collector to share benefits arising from the intellectual property rights (IPR) accruing from genetic resources. In general, all benefits need to be shared based on MAT ensuring fairness and equity. Applicants for accessing genetic resources must adhere to a certain schedule in obtaining a PIC and entering into accessory agreements and MTAs with the lead agency, local community, or the owner of the resource. Foreign applicants do not require a local collaborator. Nevertheless, local communities receive special protection as they have the right to ask for benefits from knowledge and information they have provided with respect to genetic resources.

A major gap in the system is opened by exempting national researchers to apply for PIC and negotiate MAT for domestic research against the background of the well-established cooperation system of these researchers with foreign institutions. If such cooperation would lead to the export of the nationally accessed genetic resources, PIC and MAT had to be sought. While most of this collaborative research indeed operates under research permits by UNCST, a formalized system to make the researchers apply for ABS permits does not exist.

3.2 Seed Regulations

3.2.1 Regional Seed Policy and Legal Frameworks

The three countries are members of different regional seed-related agreements and protocols as shown in Table 2 and summarized in the paragraphs that follow below:

Table 2: Membership to Regional Agreement and Protocols

Agreement	Tanzania	Kenya	Uganda
SADC – Southern Africa Development Cooperation	Yes	No	No
COMESA – common Market for eastern and Southern Africa	No	Yes	Yes
EAC – East African Community	Yes	Yes	Yes
ARIPO – African Regional intellectual property organization			

3.2.1.1 African Regional Intellectual Property Organization (ARIPO) Protocol

The African Regional Intellectual Property Organization (ARIPO), formerly African Regional Industrial Property Organization, is an intergovernmental organization for cooperation among African states in patent and other intellectual property matters. ARIPO was established in 1976 by the Lusaka Agreement, through the joint efforts of the UN Economic Commission for Africa (UNECA) and the World Intellectual Property Organization (WIPO), when the Agreement on the Creation of an African Regional Industrial Property Organization (ARIPO) was concluded by a group of 15 founding states. The ARIPO Agreement came into force in 1978. ARIPO was initially open to English-speaking countries of Africa, but the membership provisions have since been amended to admit members of the UN Economic Commission for Africa or the African Union. The Mandate of ARIPO initially included Copyright, Patents & Utility Models, Industrial Designs, and Trademarks. However, in 2003 this was expanded to include the emerging issues of Intellectual Property specifically on plant variety protection, traditional knowledge, and folklore; Access and benefit sharing arising from using genetic resources, and Geographical Indications directly affecting agricultural production.

Aspirations of the Lusaka Agreement were therefore expounded into practical implementation by additional treaties each focusing on a specific subject of intellectual property. These treaties are:

a. The Harare Protocol on Patents and Industrial Designs,
b. The Banjul Protocol on trademarks ,
c. The Swakopmund Protocol on the Protection of Traditional Knowledge and Expressions of Folklore and

d. The Arusha Protocol for the Protection of New Varieties of Plants.

Arusha Protocol: The Arusha Protocol for the Protection of New Varieties of Plants was concluded by a Diplomatic Conference that was held in Arusha, the United Republic of Tanzania on July 6, 2015. The Protocol, together with the implementing regulations, will enable ARIPO to grant and protect plant breeders' rights and administer such rights on behalf of the designated contracting states. The provision for plant breeders' rights in the region will allow farmers to access a wide range of improved varieties to contribute to the attainment of the regional goal of economic development and food security. Arusha protocol provides for authorization for the use of protected new plant varieties which is seen as to limit the traditional habits of farmers' to freely save, replant and exchange seeds.

ARIPO's Arusha Protocol contains a similar approach as Article 14 of the European Council Regulation on Community Plant Variety Rights in implementing the farmer's privilege. First, in Article 22(2), it provides that agricultural crops and vegetables for which there is a common historical practice of saving seed will be subject to the farmer's privilege exception, except for fruits, ornamental plants, and forest trees. Second, in Article 22(3), the Protocol provides that the conditions for implementing the farmers' privilege exception – e.g., the variance in level of remuneration to be paid by small- versus large-scale commercial farmers shall be stipulated in regulations linked to the Protocol. As such, the Arusha PVP Protocol seems to ignore the needs of smallholder farmers that strongly depend on the exchange and trade of farm-saved seed to fulfil their seed demand. This can hamper the accessibility and affordability of new but protected varieties for those farmers, who may need them the most.

Swakopmund Protocol: The Swakopmund Protocol for the Protection of Traditional Knowledge and Expressions of Folklore was concluded on 9 August 2010 in Swakopmund, Namibia, by a diplomatic conference held there. Acknowledging that traditional and local communities have for long utilized their traditional knowledge and culture for their survival and livelihood, (including those genetic resources where there is a gradual disappearance, erosion, misuse, unlawful exploitation and misappropriation of traditional knowledge and folklore as well as the fact that no international normative framework has been concluded for the protection of traditional knowledge and expressions of folklore), the conference concluded that the Treaty was the first huge step towards prevention of this unlawful exploitation

3.2.1.2 Southern African Development Community (SADC) draft PVP Protocol

The SADC draft Plant Variety Protection (PVP)protocol[5], like the equivalent legal instruments of ARIPO and OAPI, intends to establish a protection system modeled after UPOV 1991 in the SADC region. The main features of this protocol are the same as those of the ARIPO and OAPI, and for the provision of the farm-saved seed. Farmers in the SADC region will be able to save and re-use seeds only on their farms and only pay royalties once they commercialize the usage.

SADC has included a broader definition of the farmers' privilege (Alliance for Food Sovereignty in Africa, 2014). Article 28(d) of the May 2014 Draft Protocol on PVP formulates the farmer's privilege as follows:

> *acts done by a farmer to save, use, sow, re-sow or exchange for non-commercial purposes his or her farm produce including seed of a protected variety, within reasonable limits subject to the*

[5] http://www.ip-watch.org/weblog/wp-content/uploads/2013/04/SADC-Draft-PVP-Protocol-April-2013.pdf

> *safeguarding of the legitimate interests of the holder of the breeder's right. The reasonable limits and the means of safeguarding the legitimate interests of the holder of the breeder's right shall be prescribed. (SADC Draft Protocol, 2014)*

Here, the draft SADC Protocol goes a step further than ARIPO's Arusha Protocol in that the farmers' privilege also includes the "exchange for non-commercial purposes" in the scope of the exception. This is a possible way of reformulating the UPOV farmers' privilege to bridge access to, and protection of, plant varieties in the SADC region. However, given the fact that the reformulated exemption clearly deviates from the parameters of the exemption formulated in the UPOV 1991 Convention, it may not be approved by the UPOV Council if SADC wants to become a member of UPOV.

The SADC Technical Agreements provide for the registration of landrace varieties under Chapter 2, sub-section 2.3.7: Landraces and other local plant varieties will be registered in the SADC Variety Database upon making available the description of the variety in terms of performance, farmer experiences during cultivation, its name(s) as well as the merits of the variety. The committee is working towards developing a procedure for registration of landraces and other local varieties. The procedure will outline characteristics that are essential for registration and will take into consideration difficulties that may be associated with the provision of DUS and VCU information for farmers' varieties. This provision opens new avenues to include farmers' varieties in the commercial seed sector by allowing them to be eligible for regional trade. Traditionally, landrace varieties have not been subjected to formal DUS and VCU tests because of their heterogeneity, which enables their adaptability and resistance to climatic changes.

3.2.1.3 COMESA Harmonized Seed Regulations

The COMESA seed regulations are binding on all COMESA Member States in terms of article 9[6] of the COMESA Treaty. The ostensible rationale for the seed regulations is to increase the diversity, quality, and quantity of seed available for farmers in the region and reduce the transaction costs for the seed industry which they currently face, brought about by differing regulatory and trade arrangements across countries in the region. These differing regulatory arrangements are regarded as non-tariff barriers. The envisaged scenario is regional free-flow and seamless seed trade across national boundaries in the COMESA region. This will in turn attract improved private investment through the expanded markets.

The seed regulations provide for standardized and uniform variety testing procedures for the release of varieties on a regional variety list. If a variety has been registered and released in one COMESA Member State, it is eligible for an expedited or "fast track" process, where only one season of DUS and VCU testing is required (a confirmation test), along with DUS and VCU information from the original Member State. Proof of release in the first Member State is also required. If a variety has already been registered and released in at least two COMESA Member States, no additional testing is required, and an application can be made for immediate entry in the COMESA Variety Catalogue, provided that the application contains the necessary DUS and VCU data.

[6] "Subject to the provisions of this Treaty, the regulations, directives and decisions of the Council taken or given in pursuance of the provisions of this Treaty shall be binding on the Member States, on all subordinate organs of the Common Market other than the Court in the exercise of its jurisdiction and on those to whom they may under this Treaty, be addressed."

3.2.1.4 The East African Community Seeds and Plant varieties Bill and draft regulations

The draft Bill of September 2018 incorporates plant variety release and registration, seed certification and marketing, and phytosanitary measures, with PVP into an all-in-one regional seed law that focuses exclusively on the formal or commercial seed sectors. It should be noted that the East African Community (EAC) law is dependent on national regulatory institutions and laws to implement the regional law. Regional coordination on seed matters will be done by an EAC Seed Coordination Office designated by the Council of Ministers. This means that important administrative decisions will have to be made by both national seed authorities and the EAC regional seed office.

The draft EAC Bill was developed with inputs from other regional bodies such as SADC, COMESA, and the Arusha Protocol for Protection of Plant Varieties, with a view of harmonizing movement of seed in the larger African region. In regard to genetic resources exchange, all the EAC Partner States are contracting members to the ITPGRFA, with the exception of South Sudan. As such, it should be possible to harmonize seed and genetic resources movement in the region. The finalization of the Bill was delayed due to a few issues touching on phytosanitary and plant variety protection, which needed to be agreed upon.

3.2.2 National Seed Regulations

Well-functioning seed sectors have effective coordinating institutions, following rules and procedures stipulated in clearly-defined and regularly-updated legal instruments. The seed industry is governed by a national seed policy, supported by relevant laws and regulations. The seed policy, law, and key regulations for Kenya, Uganda and Tanzania are summarized in Table *3*

Table 3: Summary of National Policies, Laws and Regulation in Tanzania, Uganda, and Kenya

Item	KENYA	UGANDA	TANZANIA
Agriculture Policies	Draft Agriculture Policy 2021	National Agriculture Policy 2013	National Agriculture Policy 2013
Seed Policies	National Seed Policy 2010	National Seed Policy 2018	None
Seed Laws and Regulations	Seed and Plant Varieties Act 2012 Seed & Plant Varieties Regulation (Seeds) 2016 Seed & Plant Varieties Regulation (Variety Evaluation and Release) 2016	Seed and Plant Act 2007 Seed and Plant Regulation 2016	Seed Act 2014 Seed Regulation 2017
Intellectual Property Rights (IPRs)	Seed & Plant Varieties (Plant Breeder's Rights) Regulation 2016	Plant Breeders' Right 2012 Plant Varieties Protection 2014	Plant Breeders' Right 2012

3.2.2.1 Kenya

Kenya published the National Seed Policy in 2010, amended the Seeds and Plant Varieties Act in 2012, subsequently acceding to the UPOV 1991 Convention in 2016. Kenya is also a member of the EAC, COMESA and ARIPO.

Under the Seeds Act, only plant varieties that meet DUS requirements and the national performance trials (NPTs) can be registered. However, the Act has provisions for exemption from NPTs under specific circumstances including for food security, national interest or for regional harmonization requirements as per section 9 of the Act:

> *9 (1) A person may apply for exemption from performance Application for trials and distinctness, uniformity and stability tests under section 9(3) exemption of the Act on the following grounds— (a) food security; (b) national interest; or (c) the variety has been released in two countries within the regional economic blocks to which Kenya is a member and has harmonized regional plant variety release regulations and procedures.*

The above clause would raise questions as to whether farmers' varieties can qualify for exemption on the basis that they are important for food security and of national interest. This could form a basis for discussion and review on inclusion of farmers' varieties in the national plant variety list.

Under section 12(2 and 3) of the Act, there are some special provisions for varieties released in any country that belongs to the same regional economic bloc as Kenya (COMESA and EAC).

> *Section 12 (2) A plant variety which has been officially released in any country within the regional economic blocks to which Kenya is a member shall undergo performance trial for at least one season in similar agro ecological zones: Provided that: the country referred to in paragraph (2) has harmonized its variety release regulations and procedures with the harmonized regional variety release regulations and procedures; and the applicant shall provide the data leading to release of the plant variety in that other country to the Service.*
>
> *(3) A plant variety that has been officially released in at least two countries within the regional economic blocks to which Kenya is a member shall be exempted from performance trial if the conditions in the proviso to paragraph (2) are met.*

Although the Seed Act has no provisions for the recognition or protection of farmers' varieties, the Kenya' constitution (2010) has two relevant provisions related to farmer saved seed systems:

- *Article 11(3)(b) — "Parliament shall enact legislation to... recognize and protect the ownership of indigenous seed and plant varieties, their genetic and diverse characteristics, and their use by the communities of Kenya."*
- *Article 69(1) (a) — "The state shall ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits."*

The Seeds and Plants Varieties Act is due for revision, which presents an opportunity to anchor these provisions in the law.

Tanzania

During the last 25 years, Tanzania has moved from state-controlled agriculture and seed sector to largely private-sector development. The 1989 National Seed Industry Development Programme marked the beginning of this change, as it allowed private seed companies to operate in the country. Currently, the private sector operates mainly in maize seed production and trade, importing hybrid maize seed and some sorghum hybrids (70% of all certified seed) (ASARECA/KIT 2014). Small local seed companies deal in sorghum, rice, legumes, and some open-pollinated maize varieties. The private sector is taking on seed quality services; the Société Générale de Surveillance (SGS), an international inspection, verification, testing, and certification company, has been supporting imports inspection issues (ASARECA/KIT 2014).

The Seeds Act No. 18 of 2003 (Tanzania 2003) and a 2014 amendment, focus on commercial farmers but create space for smallholder farmers to produce and market QDS. The act is otherwise silent on farmers' rights to use, exchange, and sell farm-saved seed (Mahop, 2015). There is some concern that the amendment has made it hard for smallholder farmers to benefit from improved seeds while, at the same time, curtailing their right to reuse farm-saved seeds (Tanzania Organic Agriculture Movement 2015). The Tanzanian Seeds Act of 2014 and the Seeds Regulations of 2017 provides for related issues on plant variety, seed matters, institutional framework of the seed industry in Tanzania as well as regional and international agreements on seed. The review of the Seeds Act strengthened quality control in formal seed-sector to manage the rampant "fake" seed problem in Tanzania, while making some modification on QDS regulations on production and marketing of QDS seed.

Unlike Kenya and Uganda, Tanzania is not a member of COMESA, but is a member of SADC. In 2008, SADC adopted Technical Agreements on Harmonization of Seed Regulations in the SADC Region (SADC 2008) — which covers plant variety release, seed certification and quality assurance, and quarantine and phytosanitary measures for seeds — but does not oblige its members to harmonize national legislation with regional decisions. It remains to be seen how the government of Tanzania will respond to these regulations. The SADC framework allows for registration of landraces and other local varieties in its variety database (thus implicitly recognizing that these varieties cannot be evaluated based on conventional DUS and national performance criteria), although not included in the regional variety catalogue. The catalogue only contains varieties that have passed the DUS and VCU tests in at least two member states, which can then be produced and marketed according to the regulations.

In 2012, Tanzania enacted a new Plant Breeders' Rights Act, which is compliant with UPOV 1991 Convention leading to Tanzania acceding to UPOV in 2015. This Act replaced the Protection of New Plant Varieties Act No. 22 of 2002, with the aim to promote plant breeding activities, stimulate and promote agricultural development. It does not restrict farmers from using and re-using farm saved seed of protected varieties on their own farms and for non-commercial purposes, as provided under Section 31(1) and (2):

> *31.-(1) The breeder's right shall not extend to- (a) acts done privately and for non-commercial purposes; (b) acts done for experimental purposes; and (c) acts done for the purpose of breeding other varieties and, except where the provisions of section 30(5) apply, acts referred to in section 30(1) to (4) in respect of such other varieties.*

> *(2) For the list of agricultural crops specified by the Minister, which shall not include fruits, ornamentals, vegetables or forests trees, the breeder's right shall not extend to a farmer who, within reasonable limits and subject to the safeguarding of the legitimate interests of the holder of the breeder's right, uses for propagating purposes on his own holding, the product of the harvest which he has obtained by planting on his own holding, the protected variety or a variety covered by section 30(5)(a) or (b)*

The National Agricultural Policy of 2013 encourages farmers to use improved seeds and provides support to purchase inputs. While recognizing that only about 10% of all seeds used in Tanzania are improved, it does little to acknowledge or support smallholder seed systems. Although there is a provision for QDS, the marketing of such seed can only be done at the local district level. Producers and varieties must also be registered in accordance with section 4 (1 and 2) of the QDS guidelines.

> *4.-(1) A person shall not produce, grow or deal in QDS unless that person is registered under these Regulations. (2) A small-scale farmer or group of small-scale farmers intending to become a QDS dealer shall apply for registration to the Chief Seed Certification Officer through village and district authorities where production will take place.*

Registration requirements include a sizeable farm and proof of ability to multiply seeds. However, requirements for inspection and certification for QDS are more relaxed and de-centralized with field inspections being done by trained seed inspectors at the district level. The regulator, TOSCI maintains the variety catalogue or a list of varieties that are eligible to be produce under QDS. Although this is seen as a positive step towards strengthening access to quality seeds for farmers, QDS production is still limited to registered (breeders') varieties, as there are no provisions for the registration and subsequent commercialization of farmer varieties.

3.2.2.2 Uganda

Uganda enacted the Seeds and Plant Act, 2007 for the seed sector, which did not address the right of farmers to use, exchange or sell their saved seeds. As a member of COMESA, Uganda revised the Seeds and Plant Act, in 2012 to align it with the COMESA seed regulations that had been agreed upon. Further in 2018, Uganda developed the National Seed Policy that addresses the formal seed sector as well as the right of farmers to use, exchange and sell their saved seeds. The policy strives to create a seed sector that ensures access and availability of high quality seeds and planting materials produced in diverse seed systems. To improve the exchange and breeding of farmer varieties, the Ugandan government has committed to various policy prescriptions as indicated in Box 1.

To implement the 2018 seed policy, it has been found necessary to review the 2012 Seeds and Plants Act together with developing associated regulations. Guidelines for QDS seed production have already been developed with over 30 local seed businesses and seed cooperatives registered as QDS producers. The ongoing review offers an opportunity to incorporate any new regional initiatives, including the exchange of farmer varieties in the region.

Box 1: Policy priority areas and strategies to strengthen farmer seed systems in Uganda

Policy priority Area 3.1.1 Generate new commercial and food and nutrition security varieties

Policy Statement: Government will support the development of farmer and market-preferred varieties for both commercial, and food and nutrition security crops

Priority Area 3.1.2 Sustainably utilize and protect Uganda's national plant genetic resources

Policy Statement: Government will ensure a viable and effective protection and exchange of germplasm for crop improvement.

Priority Area 3.2.2 Enhance the production of quality seed within the informal system

Policy Statement: Government will strengthen the capacity for production of quality seed for crops that have low profit margins for seed companies

Priority Area 3.2.3 Strengthen seed distribution and marketing to enhance commercialization of quality seed

Policy Statement: Government will promote an effective delivery mechanism for quality seeds to enhance uptake by smallholder farmers.

Policy Area 3.3.2 Quality control for Quality Declared Seed

Policy Statement: Government will put in place appropriate seed quality standards and mechanisms for regulation, production, and sale of Quality Declared Seed to reduce use of home saved seed and bridge the gap between formal and informal seed systems

The Plant Variety Protection Act was adopted in 2014. The Act recognizes and protects the rights of breeders to varieties that they develop and promotes the supply of good quality seed and planting materials. However, the Act explicitly states that the act does not apply to the following:

(a) the traditional method of access, use or exchange of knowledge, technologies, and plant varieties by local and between local communities

(b) the sharing of benefits based upon the customary practices of the local communities concerned, except that paragraph 2 (a) shall not apply to any person or persons not living in the traditional and customary way of life relevant to the conservation and sustainable use of biodiversity; and

(c) The access to plant varieties, indigenous knowledge, innovation, or technology solely for educational purposes.

This act offers some leeway for the free use and exchange of traditional varieties, but does not allow for their registration and subsequent commercialization, which ultimately limits the functioning of farmer seed systems.

4. Policy and Regulatory Issues Limiting Genetic Resource Diversity Use among Smallholder Farmers

4.1 Issue 1: The Treaty's SMTA and related ABS policy implementation in the three countries

Through several projects, 'climate-smart' materials have been identified from national genebanks and exchanged through SMTAs. After several rounds of testing, farmers have identified some materials that are ready for direct use. However, the Treaty's SMTA only allows MLS materials exchanged to be used for research and breeding. There are cases where materials received under the SMTA are found to be ready to scale-up and for use in production in the form in which they were received under the SMTA. The uses of these materials are not included in the scope of the SMTA, either for direct use in cultivation or for commercialization. So, it is possible that other rules apply to such materials, depending on the established national laws in the countries from which they were obtained, at the time they were obtained.

As such, the Ad Hoc Technical Advisory Committee on the Multilateral System and the Standard Material Transfer Agreement (TAC-MLS/SMTA)[7], published 'Opinion 10', the TAC-MLS/SMTA stating that:

- "*PGRFA received under the SMTA can be made available to farmers for direct use for cultivation only if there is a separate express permission allowing for such distribution from the provider that included such material in the Multilateral System*.

- *No such permission would be required where germplasm is being restored to farmers that originally provided it.*

Consequently, to up-scale these varieties, the three countries are to have additional agreements to allow for direct use and commercialization of the materials in accordance with the ABS laws of the three countries. Such agreements should provide for these PGRFA materials but additional MTAs should be needed for their direct use and commercialization.

In practice, however, the three countries have not implemented both treaties and ABS mechanisms They are still anchored in CBD principles and have not taken into consideration the mutual and supportive implementation of both instruments as suggested in article 8 of the Nagoya protocol and article 1 of the Treaty. The Treaty and the Nagoya Protocol texts have provisions to create coherence between the Treaty and the CBD/Nagoya Protocol implementation by contracting parties. Article 1 of the Treaty states that *"The objectives of this Treaty are the conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising from their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security*", and that *"These objectives will be attained by closely linking this Treaty to the Food and Agriculture Organization of the United Nations and to the Convention of Biological Diversity*". Likewise, Article 8 of the Nagoya protocol states that "*In the development and implementation of its access and benefit-sharing legislation or*

[7] Ad Hoc Technical Advisory Committee on the Multilateral System and the Standard Material Transfer Agreement (TAC-MLS/SMTA) as its name suggests, this body was created by the Plant Treaty's Governing Body to consider legal issues associated with daily operation of the multilateral system and the use of the SMTA.

regulatory requirements, each party shall (...) consider the importance of genetic resources for food and agriculture and their special role for food security".

Kenya, for instance, is a party to the Treaty, but has not properly implemented it and there are no provisions to facilitate access to annex 1 crops. However, the country is currently working on revision of the 2006 ABS regulations to provide clarity on ABS of PGRFA, as required by the Treaty. This also aims to anchor the constitution of Kenya's requirements in protecting indigenous knowledge and related genetic resources. In **Uganda**, an MOU between three ABS implementing institutions has been agreed to facilitate access to genetic resources, and to differentiate between access to both PGRFA and non-PGRFA materials. However, these measures are temporary, and the country is currently working on a new PGRFA policy to implement ABS under the Treaty. **Tanzania** does not have an ABS policy and is also currently working on developing ABS mechanisms for implementing both the Treaty and Nagoya protocol. One way would be to take advantage of the current policy development or review processes that are taking place in the three countries in order to pursue a mutually-supportive implementation of the Nagoya Protocol. The situation is exacerbated by the two treaties being implemented by different ministries. The CBD and the Nagoya Protocol are primarily based on biodiversity conservation concerns and therefore handled by the ministry of environment, while the Treaty focuses on PGRFA for agriculture and food production and is often handled by ministry of agriculture. It seems unrealistic to expect this situation to change fast, but there should at least be *some form of coordination between the different ministries involved to make it easier to access genetic resources*.

It is important to find national means of dealing with the co-existence of the CBD/Nagoya Protocol and the Treaty. ABS regulations based on the Nagoya Protocol should consider the MLS of the Treaty. In countries which are party to both the Treaty and the CBD (such as Kenya, Tanzania and Uganda), regulations should make a clear distinction between PGRFA (covered by the Treaty) and other genetic resources (covered by the CBD). In ABS regulations based on the CBD, requiring bilateral case-by-case agreements, the PGRFA included in Annex 1 of the Treaty should be explicitly exempted.

The three countries are currently developing or reviewing their ABS policies – Uganda has a draft PGRFA policy that can still be revised and reviewed to accommodate Annex 1 PGRFA. Kenya is also in the process of reviewing its Seeds and Plant Varieties (Conservation, ABS of PGRFA) Regulations and can still incorporate ABS policies. Tanzania is also in the process of developing ABS policies and regulations and all these processes can provide avenues for the development of ABS regulations in a mutually supportive manner.

4.2 Issue 2: Seed regulations that limit commercialization and sustainable use of genetic resources

Seed policies and regulations determine who can legitimately produce and sell seeds and which varieties are available in the market. Flexibility in who can sell seed (seed producers, vendors, and dealers) and in which market locations can be particularly important for the informal seed sector. Presently the regulations in the three countries have been harmonized to be in line with regional seed regulations such as COMESA and SADC, to allow for trade and seeds movement across boundaries. Based on the analysis of national seed policies and legislation, we found that the current variety testing, registration, and release

mechanisms in the three countries are left exclusively to breeders of new varieties, without space for the release and use of farmer varieties. This is despite the fact that farmer-preferred varieties evolve over time, have desired cultural and functional traits, and may be well adapted to changing climatic and environmental conditions.

These regulations also prohibit farmers from sharing, exchanging, or selling uncertified seed of unregistered varieties. Thus, varieties which were tested and selected by farmers through various projects cannot be up-scaled due to these restrictions. In Tanzania and Uganda, seed regulations reviews have seen the introduction of a new class of seed known as quality declared seed (QDS), which farmers and seed cooperatives can produce, label and sell. This is based on FAO's developed QDS concept, which provides opportunities for small-scale seed production and local sale, and therefore improves access to improved quality seeds for farmers at local levels. Under this scheme, local seed businesses, local cooperatives, and farmers' groups can now produce QDS under national regulations and procedures, following guidelines developed by FAO. This is an accepted set of guidelines on standards and procedures for seed production that has been taken up in Tanzania and Uganda, but not in Kenya, which has instead recently developed "standard seed" regulations, similar to QDS. Kenya has been criticized for imposing overly stringent seed regulations that prohibits seed production and selling by farmers. Standard seed will be marketed throughout Kenya but not eligible for export. Uganda and Tanzania have QDS guidelines that enable farmers and community-based seed producers to commercialize seed. However, QDS production is still restricted to seeds of registered varieties, which are sold only in limited localities, which further limits the diversity of seed available in the market. As such, Uganda is currently working on modalities for the registration of farmers' varieties to allow for their commercialization through QDS systems.

Moreover, PVP laws and plant breeders' rights in the three countries are based on UPOV provisions that create restrictions on the multiplication, exchange or sale of seeds of protected varieties by farmers. Under UPOV, farmers are only allowed to save and re-use seed of a protected variety "on their own holding" and "within reasonable limits and subject to safeguarding the legitimate interests of the breeder". The exchange and sale of farm-saved seed, as is common practice amongst farmers in informal seed systems, is prohibited for protected varieties (De Jonge, 2014). Under these regimes, varieties are protected for 20 years after which they are freely available and can be saved, re-used, or sold. This is seen to limit access to diversity for farmers in the East African region.

4.3 Issue 3: Seed Policy harmonization in the region

The complex system of regional laws and regulations can present a hurdle to accessing seeds, especially for smallholder farmers. Kenya and Uganda subscribe to COMESA seed trade regulations while Tanzania subscribes to SADC seed regulations. Yet, all the three countries are members of the EAC which is also developing harmonized seed regulations. The different regional groupings have different approaches to a harmonized system. For instance, the EAC and COMESA seed regulations are automatically legally binding and closely aligned to UPOV requirements. COMESA, for example, is institutionally structured such that national-level implementation is required and must also be aligned to international standards.

SADC seed regulations on the other hand are not legally binding and are based on the principle of subsidiarity. SADC rules recognize the need to develop i) both the formal and informal seed systems and

pursue a common variety-testing and release system; ii) a common seed certification; iii) quality assurance mechanisms which include QDS, and iv) a common plant-variety protection system to facilitate seed trade across the SADC region.

EAC's work on streamlined variety release within the region has largely taken place through the Association for Strengthening Research in Africa (ASARECA,) with full EAC harmonization still under discussion. Kenya, Tanzania, and Uganda are currently implementing the ASARECA approach, but no other multi-country list of approved varieties is yet in operation. These three countries have the benefit of being united through the EAC and ASARECA agreement and have been able to streamline variety-release procedures to a degree based on a mutual recognition of test results, but even these procedures are still being tested and implemented.

There are different variety-testing and evaluation protocols in the Partner States, and some of the Partner States are yet to acquire membership into the relevant international bodies for example Uganda is yet to acquire membership of UPOV, ISTA and OECD. This is a major constraint that definitely adversely affects each countries' capacity to produce adequate high quality or certified seed, and further limits seed trade capacity development.

5. Recommendations for Seed Sector Policy and Regulatory Reforms to enhance famers access to seeds

1. **There is a need for the three countries to resolve and review ABS legislation in line with Treaty and Nagoya requirements and in a mutually supportive manner**

The three countries need to develop ABS legislation that takes cognizance of PGRFA under Annex 1 and in tandem with ABS under Nagoya protocol for non-annex 1 crops. Regulators in Kenya and in Uganda have been aware that the present regulations in these countries do not reflect the requirements of the Treaty and cause bureaucracies. In Kenya, for instance, NEMA is working on linking all different institutions involved in ABS in the country and to create a 'one-stop-shop' for prospective users. This will contribute to decreased complexity and reduction of bureaucracy.

The countries also need to work on creating a clear and separate status for PGRFA in national ABS regulations and differentiating those that are accessed under ITPGRFA and automatically in the multilateral system, from those that need to be accessed through Nagoya protocol. This should ideally follow up with clear guidelines and a decision-making process – this could ideally be facilitated through the decision-making tool or national implementation of the plant treaty's multilateral system of access and benefit sharing available at:

https://www.bioversityinternational.org/fileadmin/user_upload/Decision_JCBP_2018.pdf

2. T**he registration of farmer varieties is a critical step towards enhancing the diversity of crops and varieties available in the market and implementing farmers' rights to save, use and exchange seeds of their choice in accordance with article 9 of the Treaty**

The three countries need to introduce flexible approaches to variety registration and release, including registration of farmer varieties. These can include differentiated variety-registration procedures with reduced testing requirements and/or the adoption of different seed catalogues or variety lists. For example adjusting the requirements for DUS testing could allow identification of farmer varieties and establishing a parallel listing for them. This would call for administrative changes and approaches by the regulators at national and regional level.

In Uganda, the genebank's plant genetic resources center is already working with the Ministry of Agriculture's seed certification services to develop modalities and related guidelines for the registration of farmer varieties as part of the process of implementing the new seed policy of 2019. Kenya

3. Support the production of farmer varieties through alternative quality assurance schemes

Alternative quality assurance mechanisms offer farmers a cost-effective way of producing seeds and improve access to quality seeds. QDS can coexist alongside a formal certification system, but with relaxed requirements that enable farmers to locally access good quality seeds and thereby reduce their seed costs and increase revenues for farmer seed producers. In Tanzania and Uganda, the QDS system is already in place but only allowed for varieties that are already registered. This limits the farmer access to local varieties with adaptable traits. There is a need to expand this to include farmer varieties. In Kenya, QDS seed is not allowed, but certified standard seed presents an avenue that allows farmers to produce seed in situations of critical seed emergencies. However, this also limits access to local varieties, whereas the system should be reviewed to include community-level production of farmer varieties with less stringent standards.

4. Advocate for the recognition of community seedbanks and seed-producer associations as critical and innovative institutional avenues for enhancing seed-system access to seeds

Informal actors can also be integrated into the formal seed system through legal recognition of community and farmer associations and community seedbanks, local seed businesses, and seed clubs, clubs that have driven inclusive seed system development (Vernooy et al, 2020). Various forms of support offered to local seed producers can help stabilize and improve access to seeds that are not available through seed companies, such as seeds of neglected and underutilized crops. Such support should include training on seed production and quality assurance mechanisms, credit, and seed business management.

6. Roadmap/Strategy for Policy and Institutional Reforms

(for all three targeted countries Kenya, Tanzania, and Uganda)

	Proposed Action	Proposed Strategy	Timeframe
Policy and regulatory Action/review/development	Develop and sign Standard Material transfer Agreements (SMTAs) for direct use and commercialization of MLS materials	Organize a high-level meeting with National Focal points of the treaty, legal officers of the ministry of agriculture and national focal points of the IT and Nagoya protocol	Short term
	Leverage on existing policy review, implementation measures in the countries to develop regulations that are conducive to farmers	Contribute to Kenya's process of implementation of the constitution in line with requirements of treaty and farmers' rights and the review of ABS policies as well as policies on agro-ecology through various platforms such as Intersectoral Forum on Agrobiodiversity and Agro-ecology (ISFAA) Contribute to Uganda's implementation of the national seed policy 2019 and the draft PGRFA policy Contribute to the development of ABS policies in	Medium Term
	Develop policies/guidelines/regulations on the registration of farmers' varieties and alternative quality assurance mechanisms that work for farmers	Build on existing policy processes/reviews to develop legislation related to registration of farmer varieties to allow for their commercialization with relaxed DUS requirements.	
Regional initiatives on policy harmonization	Contribute to regional policy harmonization initiatives of SADC, EAC, COMESA and the African Union e.g through the AU's African Seed and Biotechnology Platform (ASBP)	To develop submissions and policy briefs sharing experiences and best practices to regional policy platforms especially with regard to implementation of the treaty and Nagoya protocol and farmers' rights.	Medium term

	Proposed Action	Proposed Strategy	Timeframe
	Develop a common vision within the region and join forces to work on ABS emerging issues	The six East African countries are members of the African Union. Recalling the adoption of the AU guidelines on the Nagoya Protocol for Africa, this shall represent the ideal regional and political platform to build a vision and strengthen a common position on ABS implementation at regional level	Long Term
	Advocate for the recognition of community seedbanks and farmer associations at the regional level and build on a regional in-situ and on-farm conservation strategy	With support from Alliance of Bioversity International and CIAT develop a regional platform on seedbanks for the exchange of information and seeds and also develop modalities for exchange of genetic resources in the region	Mid Term
Technical Support related to the proposed regional seed hub	Seek support to undertake a resource mapping inventory and evaluation of existing natural genetic resources in the region including those held by farmers in community seedbanks	National Competent Authority in each country shall work in a coordinated manner with relevant national institutions, and in particular universities/research institutes, and with the support of the Alliance to develop such an evaluation of existing natural GR at country and regional level	Long term
	Develop a platform/information network to share experiences regarding ABS and to communicate on issues such as genetic resources listing, share information on permit requests from potential user in various countries	The Alliance shall provide support to beneficiary countries and define through its projects a way to develop this monitoring platform or network.	Long Term

	Proposed Action	Proposed Strategy	Timeframe
	Establish a database and/or a gene bank at regional level that will serve as a repository for GR	The Alliance as regional organization shall consult countries and help to identify an appropriate and competent existing body/institution within the region that could develop and host such a database/gene bank	Long Term
	1) Seek support to implement ABS action plans and strategies 2) Seek support to develop pilot projects /activities on ABS as well as Community bio- protocols 3) Seek financial support to enhance capacity of National Focal Point(s), National Competent Authorities, checkpoints, and Clearing House Mechanisms	Each country shall develop ABS action plans and a budget to guide resource mobilization for ABS activities. Donors could provide financial support to develop these strategies and action plans, as well as ABS pilot activities and capacity building of key actors.	Long Term
	Seek support for joint ABS Research and Development activities at national and regional level	Countries to jointly develop proposals on research related to ABS, information management and policy support	Short Term

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ANNEXES

Annex I: TOR

Consultancy on Development of a Draft National Strategy/Road Map for Policy, Legal and Institutional Reforms for Supporting use of Crop Genetic Diversity for Climate Change Adaptation in Kenya, Uganda and Tanzania

Name of Client:	The Alliance of Bioversity International and CIAT
Client's Representative/ Consultancy Supervisor:	Gloria Otieno. The Alliance of Bioversity International and CIAT
Name of Consultant/Lead expert:	Evans Sikinyi, (PhD)
Period of Assignment:	15th October to 30th December 2021

1. Introduction

This brief, outlining the roadmap, activity timesheet and a proposed outline of a report on "**National Strategy/Road Map for Policy, Legal and Institutional Reforms for Supporting use of Crop Genetic Diversity for Climate Change Adaptation in Kenya, Uganda and Tanzania"** is made pursuant to an award for consultancy for undertaking an assessment of country systems **(Kenya, Tanzania and Uganda)** and their capacity to mainstream integrated seed system approaches that adopt and use genetic resources to enhance country adaptability and resilience to climate change for increased food security.

The Consultant will review existing international, regional and country seed systems including the policy, legal and institutional set ups for facilitating the conservation, access and use of biodiversity especially crop genetic resources for agriculture and food security in a rapidly changing environment arising from effects of climate change.

The consultancy will employ methods and approaches that will entail the following

(a) Review of literature relevant to the assignment

(b) Face to face meeting with critical seed industry actors where necessary and applicable within limitations of the current COVID 19 guidelines

(c) Virtual meeting with targeted seed industry experts in the three countries of Kenya, Tanzania and Uganda

(d) High-level virtual meeting with Government policy experts research and CSO/CBOs leadership; and

(e) Review of draft reports and validation of information with key experts from target countries

(f) Scheduled meeting with client representatives to assess and share on work progress and eliciting of feedback for report finalization

The Consultant will deliver on the assignment within a period of two months covering 15th October and 30th December 2021

2. Roadmap for Delivery of Final Report and Intermediate outputs

The following key activities will be undertaken by the lead consultant and team of experts to deliver on the final report and intermediate outputs.

(1) Review of Literature on current key drivers, initiatives, and country systems for PGR for climate adaption and food security

(2) Submission of Outline of Final Report

(3) Initial Meeting with Other consulting teams

(4) Writing of Zero Draft Report

(5) Virtual Meeting with Key Seed Experts/Industry informants from Kenya, Tanzania and Uganda

(6) Review of Zero draft Report

(7) High-Level Policy Meeting

(8) Development of 1st draft Report

(9) Virtual meeting for validation of reports with Country Teams (Kenya Tanzania and Uganda)

(10) Submission of 1st Draft Report

(11) Development of final report

(12) Submission of Final Draft Report

The Alliance is part of CGIAR, the world's largest agricultural research and innovation partnership for a food-secure future dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources.

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