

A Legal Guide to Strengthen Tanzania's Seed and Input Markets

Developed by the New Markets Lab with the Southern Agricultural Growth Corridor of Tanzania Centre Ltd. for the Alliance for a Green Revolution in Africa



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This program will be run in close consultation and collaboration with Government ministries in target countries led by the Ministries of Agriculture.

During the project rollout events, government officials and private sector stakeholders will be invited as appropriate.

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Acronyms

ARI	Agricultural Research Institute
ARIPO	African Regional Intellectual Property Organization
ASA	Agricultural Seed Agency
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
CDD/DCD	Crop Development Division/Directorate of Crop Development
CIMMYT	International Centre for Maize and Wheat Research
CIP	Centro Internacional de La Papa
COMESA	Common Market for Eastern and Southern Africa
CAADP	Comprehensive Africa Agriculture Development Programme
DUS	Distinctness, Uniformity and Stability
EAC	East African Community
EASCOM	Eastern African Seed Committee
ECAPAPA	Eastern and Central African Program for Agricultural Policy Analysis
FANRPAN	Food, Agriculture and Natural Resources Policy Analysis Network
FAO	Food and Agriculture Organization of the United Nations
Ha	Hectare
HaSPP	Harmonized Seed Security Project
HSRS	Harmonized Seed Regulatory System
IARC	International Agricultural Research Centers
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IITA	International Institute of Tropical Agriculture
IPR	Intellectual Property Rights
IFAD	International Fund for Agricultural Development
IRRI	International Rice Research Institute
ISTA	International Seed Testing Association
IT	Information Technology
KEPHIS	Kenya Plant Health Inspectorate Service
LGA	Local Government Authority
MAFC	Ministry of Agriculture, Food Security, and Cooperatives
MOU	Memorandum of Understanding
NAIVS	National Agricultural Input Voucher Scheme
NEPAD	The New Partnership for Africa's Development
NPT	National Performance Trials
NPT-TC	National Performance Trials Technical Committee
NVRC	National Variety Release Committee
OECD	Organization for Economic Co-operation and Development

PBR	Plant Breeders Rights
PBRO	Plant Breeders Rights Office
PHS	Plant Health Services
QDS	Quality Declared Seed
RDD	Research and Development Division
REC	Regional Economic Community
RCTG	COMESA Regional Transit Guarantee
SANSOR	South African National Seed Organization
SADC	Southern African Development Community
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SPS	Sanitary and Phytosanitary
TOSCI	Tanzania Official Seed Certification Institute
TASTA	Tanzania Seed Trade Association
TPRI	Tropical Pesticide Research Institute
TRIPS	WTO Agreement on Trade-Related Aspects of Intellectual Property Rights
TShs	Tanzanian Shillings
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPOV	The International Union for the Protection of New Varieties of Plants
VPC	Vegetatively Propagated Crop
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

Executive Summary

Legal and regulatory systems that enable the development, access, and availability of high-quality agricultural inputs are essential to building a vibrant agricultural sector and commercially successful agribusinesses that will benefit Tanzania's small-scale farmers. A well-developed enabling environment for agro-inputs is necessary to create robust food systems, strengthen food security, reduce rural poverty, and ensure environmental sustainability.

Building these systems is central to Tanzania's commitments under the G8 Cooperation Framework to Support the New Alliance for Food Security and Nutrition (New Alliance Commitments). A number of positive steps towards fulfilling these commitments are underway. Progress will also be supported through continued work to implement and clarify Tanzania's framework for agro-inputs law and regulation. As Tanzania's agro-inputs sector grows, understanding and participating in this legal and regulatory framework will become increasingly important, as will developing a process for working through issues as they arise.

This Legal Guide (Guide) is part of an inclusive and innovative program on seed law and regulation led by the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) Centre Ltd. (SCL) and its implementing partner the New Markets Lab (NML) with the support of AGRA's Scaling Seeds and Technologies Partnership in Africa (the Partnership) initiative through the U.S. Agency for International Development. This program involves diverse stakeholders across the public sector (including the Ministry of Agriculture, Food Security, and Cooperatives (MAFC), the Plant Breeders' Rights Office (PBRO) and the Tanzanian Official Seed Certification Institute (TOSCI)) and private sector (including the Tanzania Seed Trade Association (TASTA) and SAGCOT corridor companies), and the perspectives of these stakeholders are reflected in the Guide.

The Legal Guide was created to share information on Tanzania's system for regulating seeds and other inputs, including areas such as variety release and registration, seed certification, and trade, and to identify key decision points and challenges that could unlock further development in the seed sector and implementation of existing frameworks. The Legal Guide itself will be part of a larger process of consultation and discussion, with key decision points followed by recommendations and a roadmap for strengthening the regulatory system for seeds and other inputs. The intention of the partners is that this Guide will be part of an ongoing process through which the private and public sectors can work through issues as they arise.

The Legal Guide is meant to be a practical tool that both simplifies legal and regulatory requirements and highlights the experience of the private sector and other stakeholders with using the seed regulatory system. Building a legal and regulatory framework for seeds requires both putting the right laws, regulations, and institutions in place and implementing this framework over time in a way that allows public and private stakeholders to use and further develop the legal and regulatory system. The eight chapters of the Legal Guide present the framework that Tanzania has already developed for seeds and related technologies, identify issues that have arisen and are expected to arise with respect to implementation of this framework, and highlight ways in which to close gaps in the legal and regulatory environment and reduce uncertainties in the system. Further building the system may include applying best practices in law and regulation (and their implementation), streamlining regulatory processes, addressing questions, and facilitating the production and marketing of quality seeds and other inputs in Tanzania. The Legal Guide is designed to be useful to a range of users, including private companies throughout the seed value chain (particularly those without significant experience navigating the legal and regulatory framework) and public sector officials wishing to further engage with the private sector as the legal and regulatory framework is developed and implemented, and other key stakeholders, including the local seed traders, investment facilitators, lawyers, and technical practitioners. It is meant to be an evolving tool that can be updated as improvements in the system are made or new questions arise, and its value will derive both from the information it presents and the dialogue it generates.

This Legal Guide is the result of in-depth legal research and assessment and consultations with stakeholders, including the private sector (seed trade associations, seed distributors, processors, and others along the SAGCOT corridor), public sector (regulators, public policy officials, and public research institutions), farmers and farmer associations, and other stakeholders throughout Tanzania. It covers a number of agricultural crops prevalent along the SAGCOT Corridor, including maize, soya, rice, beans, potato, and vegetables. The breadth of consultations conducted in the process of developing the Legal Guide reveal that enterprises of all sizes could benefit from a clear understanding of existing requirements at the national and regional levels, and stakeholders agreed that an ongoing process for identifying both opportunities and challenges as the market grows will be needed.

The Legal Guide is meant not only to present the current status of the legal and regulatory system governing seeds and other agro-inputs, but it also identifies key decision points that will propel the sector forward. These key decision points, summarized briefly in Table 1 below and discussed in greater detail in the Legal Guide (throughout and in particular, Chapter Eight), were developed into actionable recommendations over the course of this initiative, designed to improve farmers' access to quality seed and associated technologies and enhance food security. All of these are intended to connect the needs of the private and

public sectors, further strengthen the legal and regulatory system, build legal capacity, and help encourage strong private sector engagement in the seed sector. These key decision points and the implementation gaps highlighted at the end of Chapters 3 through 7 will be the basis for discussion and further development in the Roadmap that follows this Legal Guide. Combined action in these areas will greatly contribute to the specific objectives of the New Alliance Commitments and will help develop a workable process to advance implementation of national and regional seed frameworks.

Table 1: Summary of Key Decision Points

Recommendation	Description
Encourage Market Development	
Establish Seed Stakeholder Platform	<p>A Seed Stakeholder Platform will be established to bring together public and private sector stakeholders across the seed value chain and provide a forum for regular meetings and information exchange. The Platform will fulfill a much needed function by allowing issues to be identified as they arise and creating a participatory forum to develop solutions (also providing a voice for new market entrants and small- and medium-sized enterprises). The Platform can gradually also fulfill various specialized functions, including intensified focus on particular crops, value chains, or geographical areas; crop innovation; data gathering and trend analysis for demand forecasting to ensure availability of reliable seed data; increased awareness of amendments to laws and regulations and of regional processes; and strengthened implementation of regulations through test cases. Initially coordinated by SCL and TASTA (and used to strengthen TASTA's capacity over time) with input from Seed Unit. ASA will also have a central function, including in generation of market demand.</p>
Develop DNA Fingerprinting System to Characterize and Track Germplasm	<p>A well functioning germplasm resources center provides valuable functions and services necessary for development of the seed industry. By mapping the genome, DNA fingerprinting enables identification and tracking of sources of germplasm, including public germplasm (which could, for example, be used to inform the variety release and PBR processes). With sufficient legal status and strengthened decision-making capabilities, the National Plant Genetic Resources Center (NPGRC) could maintain a germplasm resources center and</p>

Recommendation	Description
	house a DNA fingerprinting system supported through collaboration with stakeholders such as TOSCI and SUA, regional initiatives already underway (e.g. cassava fingerprinting at Mikocheni Agricultural Research Institute), and international institutions like the Consultative Group for International Agricultural Research (CGIAR).
Study Institutional Arrangements for Early Generation Seed of Selected Crops	Challenges in early generation seed (EGS) (breeder, foundation, and basic seed) value chains significantly affect availability of high quality seed. Investment in public varieties (through, for example, the CGIAR) is not transferring readily to the private sector, and the public sector cannot always produce adequate EGS to meet demand. Developing models for institutional cooperation between the public and private sectors depending upon the demand, profitability, and public good of specific varieties could address this challenge. An agreement on institutional arrangements for EGS of selected crops could clarify a role for the private sector in EGS and contribute significantly to addressing broader challenges that exist in the Tanzanian seed sector.
Apply Best Practices in Authorization of Public Varieties	Private sector access to public varieties has been highlighted as a particular issue in the Tanzanian seed industry. To address this challenge, a Ministerial Circular was introduced to allow the private sector to access pre-basic seed directly from Agricultural Research Institutes (ARIs); however, the Circular has achieved limited success and is therefore under review. The review process has included the input of various stakeholders through, for example, workshops held by the MAFC, and many recommendations provided by the private sector have been accepted. The application of best practices in authorization of public varieties would support ongoing efforts in the MAFC to improve the 2011 Circular.
Support Regional Implementation	By streamlining processes, regional harmonization makes the market more attractive for business and leads to increased investment. Tanzania would benefit significantly from effective, forward-looking, models for regional implementation that promote all aspects of the value chain. The development of effective models could be achieved through an assessment of Tanzania's regional obligations, clear implementation in domestic regulations, as well as an evaluation, over the longer term, of the effect of these systems on Tanzania's

Recommendation	Description
	competitiveness and the alignment of commitments, including through the Tripartite Free Trade Area, based on the most advantageous system.
Facilitate Trade of Seeds, Fertilizers, and Agrochemicals	The international trade (including WTO) term “trade facilitation” refers to easing the movement of goods across borders. Easing cross-border trade procedures in Tanzania for seeds, fertilizers, and agrochemicals will encourage investment and significantly speed up the time it takes for inputs to reach the market. This could be achieved by building measures focused on seed, fertilizers, and agrochemicals into trade facilitation efforts underway, e.g. making paperwork available online and tracking seed, fertilizer, and agrochemical product and trader registrations through the electronic single window system being developed (which would also contribute to addressing counterfeit trade and enhancing transparency in customs processes.) Measures to facilitate internal trade, e.g. between regions, could also significantly improve the distribution of quality inputs.
Streamline Regulatory Processes Across Value Chain Functions	Regulatory processes along each stage of the inputs value chain (including variety release and registration, seed certification, trade, and fertilizer and agrochemicals registration) require multiple steps that need to be continually assessed and streamlined by regulatory institutions. Challenges encountered by stakeholders along regulatory processes (for example, the need for transparency in the registration process and cumbersome seed import processes) could be raised through the Seed Stakeholder Platform. Streamlining regulatory processes would support implementation of the New Alliance Commitments.
Develop Capacity Within the Tanzania Official Seed Certification Institute (TOSCI)	TOSCI is making significant capacity gains, but growing demand for certified seed is increasingly outweighing TOSCI’s capacity to deliver. One way of ensuring that TOSCI is equipped to meet rising demand is to build TOSCI’s ability to operationalize authorization of private third parties to conduct field inspections and seed testing (as recognized in the Seeds Act and Regulations and regional seed initiatives), including through development of clear guidelines and inspector training programs. In addition, monitoring technology would improve

Recommendation	Description
	traceability and enhance TOSCI's capacity to conduct seed certification and could support broader application and stricter enforcement of Quality Declared Seeds (QDS).
Streamline Regulatory Rules and Processes	
Streamline and Rationalize Functions of Regulatory Institutions Within Ministry of Agriculture, Food Security, and Cooperatives (MAFC)	Duplicity of functions among institutional bodies mandated with implementation of the Seeds Act, Plant Protection Act, Plant Breeders' Rights Act, Tropical Pesticides Research Institute Act, and Fertilizers Act can complicate and slow down different regulatory procedures (these include the Office of Crop Development and the various bodies, institutions, and committees discussed in the Legal Guide). Assessing the functions of institutional bodies within various regulatory processes, evaluating overlaps and ensuring alignment with key functions as set out in the above laws could be one way of ensuring streamlined functions. Additionally, strengthening the capacity of institutional bodies to fulfill their functions, and establishing a one-stop service where stakeholders can obtain information and paperwork in one place, would further streamline functions and processes.
Clarify Plant Breeders' Rights Language Related to Farmers' Rights and Increase Awareness	Uncertainty within the public regarding interaction between farmers' rights and plant breeders' rights could undermine efforts to formalize the seed system. This might be addressed by the distribution of information to increase public knowledge regarding this issue, possibly through Legal Clinics. Clarification of the exception to breeders' rights in the PBR Act that allows small-scale farmers to engage in traditional seed saving for non-commercial purposes will be published in regulations to the PBR Act. Clarification of farmers' rights will be provided through legislation underway to domesticate the International Treaty on Plant Genetic Resources for Food and Agriculture.
Provide Guidelines to Local Government Authorities (LGAs) on Implementation of Seed and Agriculture	Under the Local Government Act (Urban Authorities) Act Cap. 288 R.E, 2002 and the Local Government Act (District Authorities) Act Cap. 287 R.E, 2002, LGAs may establish by-laws covering different subject matters, including agricultural inputs, but challenges arise when by-laws are not in line with national legislation. The development of guidelines or model by-laws would reduce the complications of ambiguous interpretations

Recommendation	Description
Regulations	that can lead to uneven implementation and enforcement of by-laws. Guidelines or model by-laws would also take into account roles of LGAs towards implementation of the Seeds Act, Fertilizers Act, and agro-chemicals legislation.
Development of Legal Training and Approaches	
Increase Awareness of Laws and Regulations and Improve Legal Training in Seeds and Inputs (Training and Legal Clinics and Model Legal Education Curriculum)	Limited knowledge of legal processes and access to legal assistance (leaving smallholder farmers vulnerable and undermining efforts to implement formal legal frameworks to regulate and strengthen the seed system) could be addressed through increased dissemination of information regarding laws and regulations, the provision of assistance to farmers in preparing or interpreting legal documents such as contracts (for contract farming), the provision of transactional legal services to individuals working with the agricultural sector, and the enforcement of QDS rules. This could be done in combination with the development of a legal education curriculum to train and equip lawyers with necessary facilities for effective delivery of agricultural legal services to stakeholders. These efforts could be linked to existing networks offering legal services e.g. initiatives focused on human rights and rights of women in rural areas, and possibly to extension services.
Address Legal Aspects of Access to Finance	Farmers' access to quality seed, fertilizer, and agrochemicals is limited by challenges in accessing finance. Addressing certain legal aspects regarding delivery models and tools for financing could provide innovative solutions to challenges around e.g. institutional capability (legal structures of cooperatives), risk management (creation of collateral registry), and bankability. Through focused analysis and increased collaboration between regulators and financial services providers models could be developed to close gaps related to financing for seeds, fertilizers, and agrochemicals.
Assess Legal Models for Equitable Contract Farming Arrangements	Contract farming can bring significant benefits to farmers or seed producers (e.g. access to inputs and insurance), however lack of awareness of contractual provisions and protections can leave farmers and outgrowers under-protected and vulnerable. Tailoring contracts specifically towards seed production can extend contractual protections and provide greater benefits for contracting parties.

Recommendation	Description
	This work would feed into the development of a broader legal framework for contract farming already under development within MAFC and could also be connected to legal training/legal clinics.

Chapter 1

Overview of Tanzania's Agro-Inputs Systems

The system of laws, regulations, and policies surrounding agro-inputs systems, or collectively the enabling environment (discussed in more detail in Chapter 2), will directly impact the degree to which these systems can develop. An improved enabling environment in Tanzania will ultimately build successful food systems, enhance food security, reduce rural poverty, and ensure environmental sustainability. This chapter is meant to highlight the structure of Tanzania's seed sector (with some reference to fertilizer and agrochemicals, which are covered in greater detail in Chapter 7) and some of the overlapping responsibilities for the critical stages of seed development, including development of pre-basic and basic seed (Tanzania uses the term basic seed based on the Organization for Economic Cooperation and Development (OECD) Seed Schemes. This is referred to as foundation seed under the North American seed system). This overview will underpin the legal and regulatory assessment in the chapters to follow. This chapter will also highlight some of the challenges of managing a seed sector that has both informal and formal elements, particularly when formal activities can be unclear or inconsistently applied. Because this Guide will focus on both the current legal and regulatory frameworks and challenges of implementation that arise, the distinction will be made throughout between laws that set forth rules to regulate behavior and regulations that provide more specific provisions on how to enforce and implement laws.

Tanzania's agricultural sector holds significant, untapped potential, and improving productivity among farmers is vital. Tanzania benefits from a vast land area, is home to diverse agro-ecological zones, and is well positioned to take advantage of regional and international markets (Sarwatt and Mollel, 2006; *Tanzania Agriculture Development Project*, World Bank). The Tanzanian agricultural sector currently employs 80 percent of the overall work force, contributes 28 percent to the total Gross Domestic Product (GDP), and is an important source of export revenue (Thapa et al., 2012). Yet, sixty-eight percent of the population of 42 million still lives in poverty. Despite being self-sufficient at the national level, Tanzania suffers from regular localized food access problems at the household, district, and regional levels due to a dependence upon rain-fed agriculture and fragmented markets.

Improved seed can be a significant factor in generating increases in productivity and economies of scale (Wolter, 2008 and MAFAP, 2013), yet high-quality seed is not reliably accessible. A 2010-2011 National Panel Survey reported that only 16.8 percent of Tanzanian households are using high quality seed (Thapa et al., 2012), and Tanzania's agricultural productivity rate is still among the lowest in sub-Saharan Africa (MAFAP,

2013). Improved access to quality seed can have far-reaching benefits and help improve the livelihoods of Tanzanian farmers, the majority of whom cultivate only two hectares or less (Thapa et al., 2012).

The legal and regulatory system governing inputs is also a factor in low agricultural productivity among farmers of all sizes (Thapa et al., 2012). Not only do improved inputs directly impact productivity, no farmer will produce more when the market pathway appears blocked, either physically or due to intangible factors such as complicated market rules and regulations. Despite Tanzania's advantageous position in regional markets and diverse internal agricultural sector, unrealized opportunity will not be realized if markets remain fragmented and current market supply of seed and inputs does not reflect the needs and potential in the sector.

Assessment of Tanzania's enabling environment for seeds and inputs must also reflect the heterogeneous nature of the sector. Food crops represent 90 percent of crops grown and contribute 65 percent of the agricultural GDP (World Bank, 2013; ASARECA, 2014), and much focus on seed systems has been on ensuring improved seeds for these crops. Staple crops produced in Tanzania include maize, sorghum, millet, rice, wheat, pulses (mainly beans), cassava, potatoes, bananas, and plantains. While many of these crops face similar challenges in the legal and regulatory system, differences in regulatory treatment can exist, as summarized in Table 2.

Of the food crops common within Tanzania, rice, maize, potatoes, soya, and horticulture are core crops along **SAGCOT** and a focus for **SCL**, a public-private platform designed to foster agribusinesses that benefit smallholder farmers and support corridor-led growth. Many of the staple food crops grown in Tanzania are not extensively traded regionally. Consequently, local crop production conditions affecting supply principally determine the prices that farmers receive for these crops.

The bulk of the country's export crops are composed of coffee, cotton, cashew nut, tobacco, sisal, pyrethrum, tea, cloves, horticultural crops, oilseeds, spices, and flowers (Tanzania Invest, n.d.). Coffee, tobacco, and cotton are the highest-earning crops for export. Coconuts and coconut products, such as oil and matting, are also significant (Tanzania Invest, n.d.). Oilseeds also hold great potential as a cash and export crop, although Tanzania imports about half of its domestic consumption needs (Tabora City Investment Promotion Unit, 2013). Tanzania's smallholder farmers are the primary producers of cashew nuts, which grow well even in nutrient-poor soil and can be intercropped with food crops (Jiwaji, 2014). Africa produces half of the world's supply for cashew nuts, and Tanzania is one of the largest producers on the continent (Africa Cashew Alliance, n.d.), producing 158,000 metric tons in 2011-2012 (Private Agricultural Sector Support, 2013). Despite that, the

national yield amounts to only half of the world average yield (Jiwaji, 2014). One of the reasons for this is insufficient access to quality inputs, which are too expensive for many cashew nut farmers (Jiwaji, 2014). Cashew nut prices are on the rise, and the products of the cashew plant can be used in a diverse range of commercial and food products. For example, PepsiCo is reportedly planning to use cashew juice, a less expensive alternative to fruit juice, in some products (Jiwaji, 2014).

Table 2: Summary of Key Regulatory Issues by Seed Type (Food Crops)

Seed Types	Seed Companies Involved		Seed Quantities (tons)		Key Regulatory Issues
	Foreign	Local	Supplied 2011/12*	Demand 2007/08-2011/12*	
Open Pollinating Crops					
Maize (Hybrid)	12	23	28,160	26,270.2	
Sorghum (Open-Pollinated Variety (OPV))	0	4	3,360	1,083.8	<ul style="list-style-type: none"> Hybrid crops tend to be subject to more inspections and steps during the seed certification process (USAID notes 5 inspections; USAID, 2013)
Self Pollinating Crops					
Rice	0	1	13,860	821.7	
Beans	0	3	10,840	223.8	
Vegetables	19	8	Unavailable	Unavailable	<ul style="list-style-type: none"> Self-pollinating crops tend to be subject to fewer inspections during the seed certification process (USAID notes 2 inspections; USAID, 2013) Vegetables have traditionally been mainly imported due to the long variety registration process, but vegetables will no

					longer be subject to variety registration under a new regulatory amendment (only DUS trials will be required and not VCU)
Vegetatively Propagated Crops (VPCs)					
Cassava	0	0	Unavailable	Unavailable	
Sweet Potatoes	0	0	Unavailable	Unavailable	
Potatoes (cooking and table)	0	1	Unavailable	Unavailable	<ul style="list-style-type: none"> • Potatoes are not subject to government restrictions on sales and export to as extensive a degree as other crops, such as maize and rice, but new regulatory challenges may arise as potatoes assume more importance as a food and commercial crop. • Potatoes do face regulatory challenges since they can be prone to virus and fungus. • Potatoes and other vegetatively propagated crops (VPCs) previously were not subject to certification standards and have been mainly covered by quality declared seed (QDS) schemes in limited district areas. Now that potatoes are growing in commercial value, formal certification standards for potatoes, sweet potatoes and cassava may become

					more common (McEwan, et al., 2015).
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* The voucher scheme subsidy system was assumed to have caused a rise in seed production and marketing in years 2010/2011 and 2011/2012.

Source: List of Registered Seed Companies in Tanzania; MAFC does not keep data for crops where “unavailable” is noted.

Structure of Seed Sector

Formal seed systems in Tanzania date back to 1973 and were initially based on public seed programs; since then there has been an ever-increasing move toward active participation of the private sector (CALR, 2012). Before the 2000s, Tanzania's seed sector was publicly dominated, mainly by the government parastatal organization then known as TANSEED, which produced, marketed, and distributed seed, and the Tanzania Official Seed Certification Agency (TOSCA), which certified the quality of seed before it was released into the market. These two entities no longer exist in their previous form (TOSCA was the foundation for TOSCI, the Tanzanian Official Seed Certification Institute, which was established by the Seeds Act in 2003 following government reform), and the structure of the industry has shifted, with a new governmental structure under the Seeds Act of 2003 as detailed in Chapter 2. In 1989, the National Seed Industry Development Program began to facilitate the shift towards privatization. A number of laws and regulations were passed in the late 1990s and early 2000s to regulate agriculture and the seed sector, including the Plant Variety Protection Act (Plant Breeders' Rights Act) of 2002, the Seeds Act of 2003 and the Plant Protection Act of 1997.

In the last decade and a half, more private companies have entered the market. According to recent data, an estimated 27 seed companies (out of 65 registered) and 2,000 agro-dealers (out of 4,000 registered) are active in the market (USAID, 2013). In 1999, the **Tanzanian Seed Trade Association (TASTA)** was established in Arusha to promote the private sector seed industry. TASTA plays a central advisory role in seed policy through its seat on the National Seeds Committee and its subcommittees the National Performance Trials Technical Committee and National Variety Release Committee (Seeds Act, 2003; Seeds Regulations, 2007).

In 2010-2011, the private sector supplied almost 80 percent of the available commercial seed on the market (Thapa et al., 2012). However, despite growth in the formal seed sector, the majority (approximately 90 percent) of the activity in the Tanzania seed sector happens informally, where seed is traded through informal market channels and recycled by farmers. This is largely due to limited funding and lack of access to quality seed (Granqvist et al., 2009), the latter of which stems in part from the regulatory complexity

surrounding formal seed markets, including variety release and registration, seed certification, and trade, and the costs and challenges associated with this system. Tanzania has taken important steps to simplify and shorten these procedures, including the procedures for variety release (See Chapter 3), and this Guide is intended to present information on these processes to increase awareness of the current system and highlight areas for further dialogue.

Ultimately, farmers in the informal sector do not have access to improved seed, even though they could benefit from its availability. Approximately 30,000 metric tons of seed is produced in Tanzania, which is only half that needed to meet actual demand. Estimates find the potential demand for improved seed is quadruple the amount currently produced or 120,000 metric tons per annum (Magomba, 2014). A notable 83 percent of smallholder farmers use seeds from the informal seed system, while the formal seed system supplies only 17 percent of the seeds used by smallholder farmers (Agricultural Sample Census 2007/2008).

Better access to improved seed for a variety of crops could help farmers take advantage of untapped market opportunities and strengthen Tanzania's food system. The benefits of ensuring access to improved seed could be exponential, and addressing the legal and regulatory challenges facing many of these crops will help bring prices down and help ensure that quality seed is more readily available to farmers. A particular focus on the needs and role of smallholder farmers will be an important consideration when assessing the regulatory system.

There is a gender aspect to the seed sector as well, and consultations held during development of this Guide (as well as previous consultations in Tanzania during development of a Women's Legal Guide; Kuhlmann et al, forthcoming) identified important gender considerations in the seed sector. Although only six percent of women own or manage their own seed companies, they comprise 60 percent of agro-dealers (USAID, 2013) and are the primary laborers on small-scale farms, which make up the majority of farmers in the industry and produce approximately 85 percent of the food crops in Tanzania. Women farmers are the custodians of seeds and are often responsible for their storage and maintenance. As a result, women farmers are well aware of what they need from improved seed, yet they are often not the ones purchasing seed in the market. The differences in men's and women's roles and knowledge in the seed sector can impact not only what is in the market but also where research is focused. Ultimately, laws and regulations can also impact women differently than men due to their different position in the market, and these considerations are highlighted throughout this Guide.

Public Sector Role and Institutional Structure

The public sector remains heavily involved in Tanzania's seed sector as well. Plant breeding has traditionally been done by the public sector, although private seed breeders are beginning to emerge in Tanzania. While private sector breeding programs have mainly focused in maize, the private sector is breeding seed potatoes as well (See Box 1), and private breeding can be expected in other crops as well.

Public sector breeding in Tanzania is done through the sixteen **Agricultural Research Institutes (ARIs)**, which are located in seven zones throughout the country and the international agricultural research centers (IARCs). Much of the public breeding material comes from the IARCs, such as the International Maize and Wheat Improvement Center (CIMMYT), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the International Institute of Tropical Agriculture (IITA), the International Rice Research Institute (IRRI), and the Centro Internacional de La Papa (CIP) and is provided to the national agricultural research institutions and researchers free of charge. The private sector can also access breeding material from the IARCs through Material Transfer Agreements and licensing arrangements. The ARIs produce pre-basic seed for public varieties, which is often sold to seed companies through the **Agricultural Seed Agency (ASA)** to produce certified seed that can be sold to farmers. Once the ARIs breed new varieties, they are responsible for variety maintenance; yet, the ability of the ARIs to maintain public varieties is frequently questioned. For this reason, there has been discussion around whether the ARIs should independently raise funds, although making the ARIs more independent could create perverse incentives and put the ARIs in competition with the private sector (USAID, 2013).

Typically, only Tanzania's parastatal, ASA, may produce basic (foundation) seed for public varieties, although companies can now apply to directly license protected public varieties under a relatively new Ministerial Circular (2011) described below. This new policy was intended to create a more direct link between the ARIs and the private sector without requiring that companies work through the ASA, which has effectively served as an intermediary between the public and private sectors. The ASA was created as an executive agency within the Tanzanian **Ministry of Agriculture, Food Security, and Cooperatives (MAFC)** under the Executive Agencies Act of 1997 and launched in 2006 (Agricultural Seed Agency, n.d.) to produce, market, and distribute quality seed and help address supply gaps. Pursuant to its mandate, ASA produces basic seed of public varieties as well as markets and distributes seed. ASA also leases its farms to companies and other agricultural development organizations and encourages outgrowers to work more closely with ASA farms to help support seed multiplication.

ASA is intended to maintain a focus on seed in crops that are not yet fully commercialized (i.e., “orphan” or “underutilized” crops) and is attempting to shift into the role of a service provider, with a focus on storage and processing facilities and training to develop a stronger national seed sector. In addition, ASA provides seed business incubation to help new seed businesses enter the market. Linking its mandates, ASA can continue to play a critical role in helping to commercialize underutilized crops and also support diversification of crops produced by the private sector. For example, through extensive training and marketing, ASA successfully promoted rice cultivation among farmers, which led to increased demand and commercialization of the crop. With sufficient support, ASA could carry out more of these types of activities and diminish the perception that ASA is replicating functions better served by the private sector such as commercial seed activities, including seed multiplication (USAID 2013). With its expansive mandate, ASA does face tangible capacity challenges that will need to be addressed and are discussed in greater detail below.

Unreliable market data on both supply and demand was widely cited in consultations as a pervasive challenge throughout the seed value chain. The high cost of seed production coupled with unreliable or inconsistent market data can make it difficult to keep a ready supply of basic seed for seed companies to purchase. In ASA’s case, the agency would prefer that companies pre-order basic seed and commit to purchasing it; however, this may not be commercially feasible or viable for the companies. The market data challenges also restrict the ability of companies to anticipate demand and place orders far in advance. Because of ASA’s role as a producer of certified seed, private sector companies that also produce certified seed may not be comfortable providing pre-orders. These challenging market dynamics can ultimately result in an inadequate supply of basic seed, making it difficult for improved varieties developed by the ARIs to get into the hands of the farmers who need them.

The primary regulatory bodies with authority over the seed industry are all housed within MAFC (see Figure 1, below). Each regulatory body makes decisions and judgment calls that affect the timing of each stage in the seed value chain. The **Minister for Agriculture, Food Security and Cooperatives (Minister)** has ultimate responsibility for approving new plant varieties (upon advice by the National Seeds Committee); appointing inspectors, samplers, and analysts; and hearing appeals on decisions by the National Seeds Committee. The Minister also determines the rules and procedures for certification and control of QDS and tree seed. Additionally, the Minister determines points of entry for plants and plant products as well as quarantine stations and may grant exemptions regarding plant quarantine and plant import and export control, all of which must be published in the Gazette of the United Republic of Tanzania (*Gazette*).

The main regulatory agency responsible for regulating seed quality under the Seeds Act of 2003 is the **TOSCI**, which oversees field and seed inspection, sampling, seed testing, variety evaluation and verification through National Performance Trials (NPT), Distinctness, Uniformity and Stability (DUS) trials, and control plot testing. TOSCI plays an important role in the variety release and certification processes, as well as in cross border seed trade. Given its importance, stakeholders have suggested that to better carry out its mandate, TOSCI should be provided with additional resources and funding, the latter of which would be done through amendments to the Finance Law. According to the 2014 Amendment to the Seeds Act, TOSCI is also the authority to which applications for seed dealer registration are made, and it has the power to approve or refuse registration, a role that was previously performed by the Director of Crop Development. Additional amendments under consideration will transfer control over import and export permits to TOSCI.

The **Director of Crop Development (DCD)**, with support of the Officer in Charge of the **Seed Unit**, enters new varieties approved by MAFC into the National Variety Catalogue and issues Certificates of Registration for new seed varieties. The DCD can approve variety name changes in consultation with the National Seeds Committee. The DCD is also the Chief Seed Quality Controller and the head of the national seed quality control service.

The **National Seeds Committee**, also established under the Seeds Act of 2003, plays an advisory role in the variety release process and seed policy matters generally, including consulting with the DCD on a variety's deregistration or name change (Seeds Regulations, 2007). The responsibilities of the National Seeds Committee include:

- Advising MAFC on formulation and implementation of the seed industry policy and implementation of guidelines;
- Advising MAFC on seeds legislation;
- Advising MAFC on all matters relating to seeds;
- Advising in the co-ordination and supervision of the seed industry;
- Advising MAFC on approval of plant varieties; and
- Consulting with the DCD to determine whether a variety should be deregistered and to approve a variety name change.

The Committee members are almost all public sector officials, with the exception of a representative from TASTA and the seed consumers' organization, as well as a plant breeder from an agricultural university, to include private universities. The Minister appoints all of the private sector members of the National Seeds Committee.

The National Seeds Committee has two subcommittees to advise the larger Committee during the variety release process, the **National Performance Trial Technical**

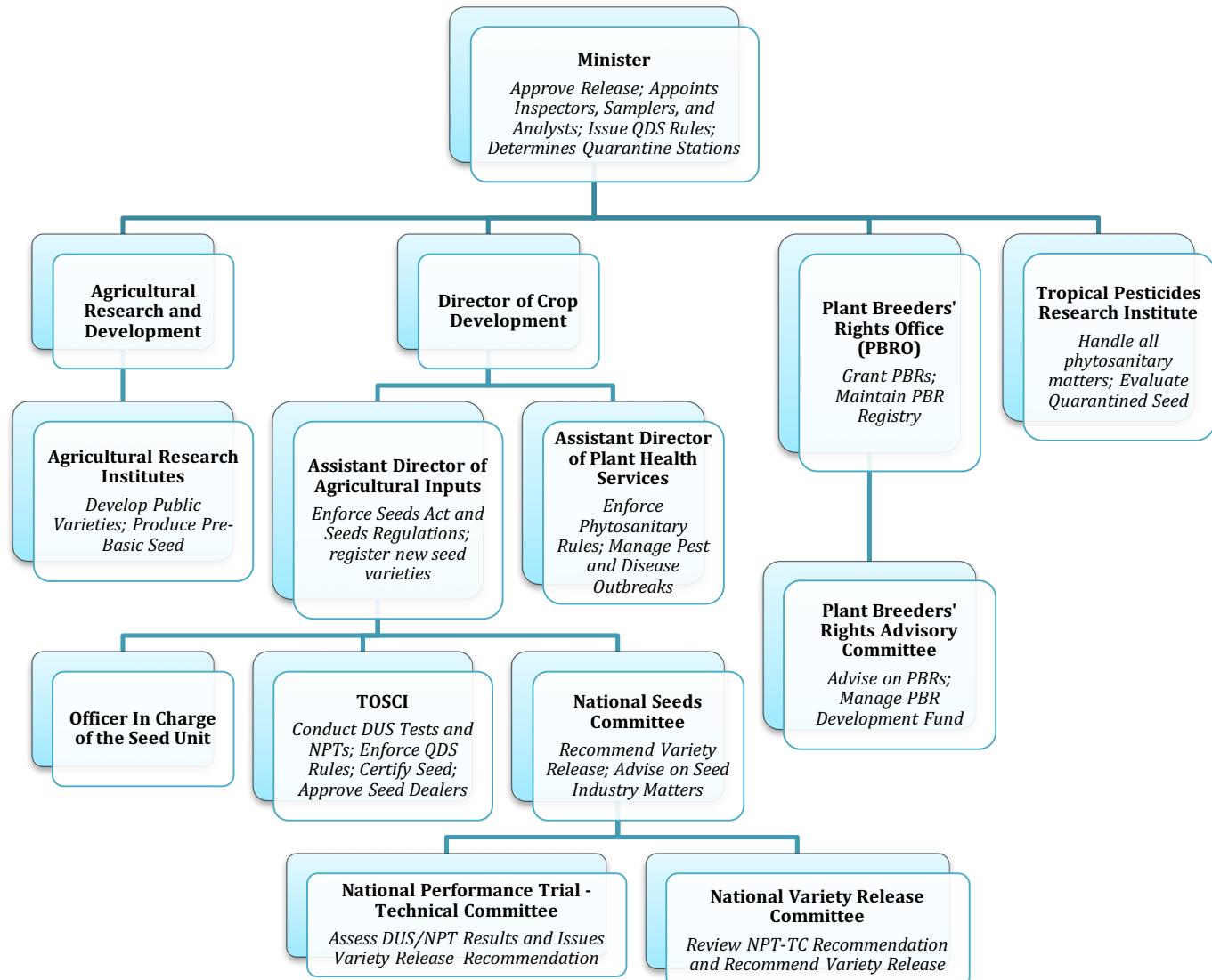
Committee (NPT-TC) and the **National Variety Release Committee (NVRC)**. The NPT-TC also has one private sector member (a seed producer representing TASTA), and the NVRC has three private sector members (representatives from TASTA, the Plant Breeders' Association, and a farmers' association). The other members of the subcommittees are drawn from the public sector (Seeds Regulations, 2007). The NPT-TC and NVRC regulate their own meeting procedures and may also invite non-members (observers) to attend meetings. Applicants are also often invited to participate (USAID, 2013).

The **Plant Breeders' Rights (PBR) Office** and **PBR Registrar** are established under the PBR Act of 2012 to administer plant breeders' rights, maintain a register of these rights, facilitate transfer and licensing of plant breeders' rights, and collaborate with relevant local and international bodies. The PBR Register includes information on a given variety and holder of the breeders' right (as well as information on the person who bred or discovered and developed the variety), along with the date and time of inception of the breeder's right. The Registry is open for inspection by any member of the public during business hours, and certified copies of Registry entries are available for a fee. A PBR Advisory Committee was formed in 2005 under the repealed PBR Act of 2002 to advise the Minister on effective enforcement of the PBR Act and comment on PBR reports and the Registrar's test results, as well as to manage the operations of the PBR Development Fund (Plant Breeders' Rights Act, 2012).

Plant Health Services (PHS) is a Section under the DCD and is responsible for ensuring that phytosanitary requirements are met for imports and exports. The PHS Division also helps manage pest and disease outbreaks in the country. Although headquartered in Dar es Salaam, PHS has a presence at border posts as well. Its role is discussed in more detail in Chapter 6.

The **Tropical Pesticide Research Institute (TPRI)**, a pest, pesticide, and biodiversity research institution in Arusha, is responsible for overseeing quarantine of imported seeds, and houses the National Plant Genetic Resources Centre (NPGRC). The NPGRC collects, researches, and stores plant genetic resources (including genetic materials of certified seed, although no deposits have been made to date), focusing on orphan (underutilized) crops and wild relatives of crops. The NPGRC provides samples of plant genetic resources to public and private sector stakeholders for development and breeding purposes. An initial review of the **1979 Tropical Pesticides Research Institute Act**, which governs TPRI, has been initiated to review the issue of which regulator should be responsible for quarantine of imported seeds. Considerations include possible separation of the different institutions housed within the TPRI. This would provide the NPGRC with enhanced legal status and strengthened decision-making and enforcement capabilities.

Figure 1: MAFC and Key Seed Industry Regulators



Chapter 2

Overview of Tanzania's Seed Enabling Environment

The legal and regulatory system for seeds is intricate and impacts each step and every actor in the seed value chain (see Figure 2). Not only do stakeholders in the seed value chain need to understand Tanzania's national laws, regional seed harmonization measures will impact how the seed sector within Tanzania develops as well. Tanzania's seed enabling environment is multi-layered, with each function operating largely within its own system. These functions are inter-related, however, and other areas of law and regulation, such as trade policy, contracts, and financial services, also play a role in Tanzania's seed system. This chapter focuses on the connection between the specific functions within the seed regulatory system, all of which are discussed in greater detail in Chapters 3 through 6.

At the start of the value chain is a complex system for variety evaluation and release and rules establishing rights for breeders and protection of plant varieties. As varieties are developed and seeds are produced, they are subject to a system of quality control and centralized certification (this does not extend to all types of seed; VPCs are currently excluded from centralized certification), which impacts not only breeders and seed companies but also, ultimately, the farmer in need of quality seeds. Rules and regulations also impact who can produce, market, and distribute seed as well as how seed is imported and exported across Tanzania's borders. Laws and regulations related to fertilizer and agrochemicals, discussed in Chapter 7, directly impact development of the seed sector as well, as do rules and practices that impact farmers' access to finance needed to purchase seeds.

It is important to note the significant difference between establishing frameworks for seed law and regulation and designing a system that can be implemented well in practice. Tanzania has indeed developed a comprehensive structure for regulating the seed sector, which is an important step in developing a robust seed system. While some structural changes are needed, many of which are noted as priorities of the Government of Tanzania, as a next step Tanzania must establish a workable system to implement these frameworks. The differences between legal structures and issues of implementation are highlighted in Table 3 below and discussed throughout this Guide, and Chapter 8 contains key decision points and proposed areas of focus that will help close some of these implementation gaps.

While laws and regulations are designed to create a structure for the sector and a way to ensure quality, if the system has too many steps or is applied without flexibility, the market will not grow according to its potential and farmers will be prevented from accessing seeds

of improved varieties. This may occur for many reasons, such as breeders struggling to register new varieties or numerous regulatory hurdles causing the price of quality seed to increase, but the end result is the same, that quality seed can be placed out of reach for small-scale farmers with limited resources. This chapter (and the chapters that follow) will contribute to addressing questions and potential conflicts that may arise in the legal and regulatory system, such as, for example, the need for multiple steps in the variety release and certification processes, further shortening the time needed for approval of new varieties, maintenance of the national variety catalogues, and so forth, where questions may still remain. These are discussed in detail in the chapters that follow on the specific areas of regulation along the seed value chain.

As a very important step in building the seed sector, Tanzania has highlighted its commitment to strengthening the enabling environment for seeds under the G8 Cooperation Framework to Support the New Alliance for Food Security and Nutrition (New Alliance Commitments).

Table 3: Tanzania's Seed-Related Commitments under the G8 Cooperation Framework to Support the New Alliance for Food Security and Nutrition

Objective	Framework Policy Actions (G8)
Increased stability and transparency in trade policy, with reduced tariff and non-tariff barriers.	<p>1. Implement policy alternatives to export ban identified in the comprehensive food security study, in order to strengthen response to food emergencies while minimizing disruptions in the market. Progress: The export ban has been removed.</p>
Develop and implement domestic and regional seed and other inputs policies that encourage greater private sector participation in the production, marketing and trade in seeds and other inputs.	<p>6. Taxes (cess, VAT) on seeds and seed packaging reduced or lifted. Progress: The VAT on seeds has been removed.</p> <p>7. Revised Act that aligns plant breeder's rights with the International Union for the protection of New Varieties of Plants (UPOV) system. Progress: Tanzania became a member of UPOV in 2015, Tanzania's 2012 PRB Act is aligned with UPOV 1991; new regulations are under discussion.</p> <p>8. Time required for release of new varieties of imported seeds from outside the region to be reviewed and benchmarked with international best practices. Progress: Tanzania's process does benchmark against other countries in the region; additional best practices could be applied to further</p>

	<p>shorten the process.</p>
	<p>9. Qualified private sector companies authorized to produce foundation seed under proper supervision and testing. Progress: Private companies can produce foundation seed, but supply does not meet demand; improvements under discussion to improve licensing of public varieties and enable private testing through TOSCI.</p>
	<p>10. International Seed Testing Association (ISTA) and OECD seed testing accreditations achieved to enable regional and international seed sales. Progress: Tanzania is an ISTA member; process underway for ISTA accreditation of Morogoro laboratory. Tanzania is in the process of adhering to OECD seed standards.</p>
	<p>11. Time required to register imported agrochemicals outside the region to be reviewed and benchmarked with international best practices. Progress: Review of the Plant Protection Act is underway with the aim of separating plant protection substances from plant health issues and streamlining importation and testing of plant protection substances.</p>

Source: Adapted from G8 Cooperation Framework to Support the “New Alliance for Food Security and Nutrition” in Tanzania, 2012

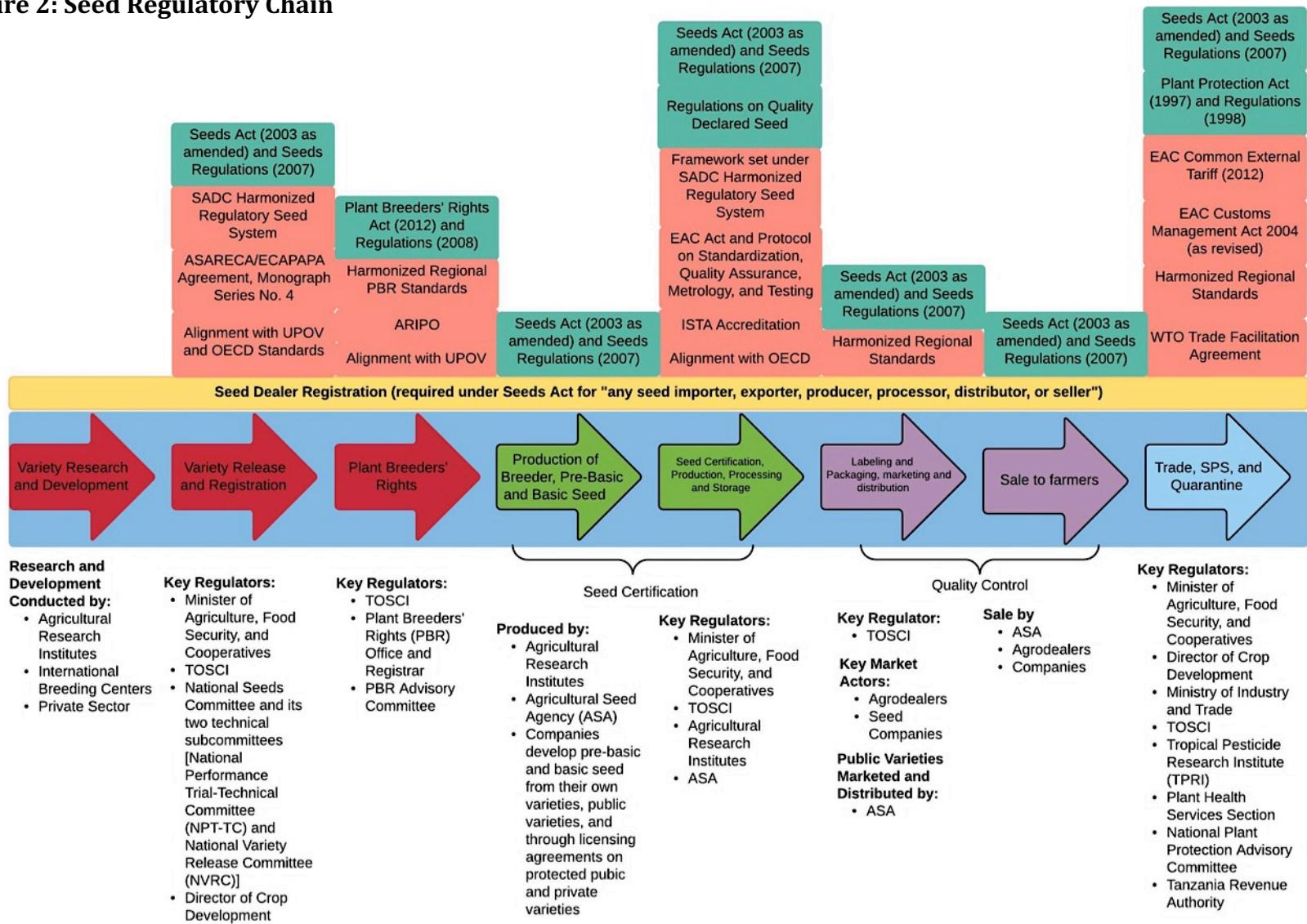
Adoption of these commitments is underway, and some notable successes can be reported, such as removal of the export ban. Further achievements include membership to UPOV, successful adoption of Plant Breeders’ Rights legislation compliant with UPOV, and new regulations nearing promulgation. Membership in ISTA and accreditation for a laboratory in Morogoro are expected in the near future, and steps are being taken as well for adoption of the OECD seed schemes. Notable progress is also being made in the implementation of regional harmonization efforts. Related areas of law and regulation that support the objectives of the New Alliance Commitments are assessed as well. Implementation of the New Alliance Commitments will strengthen Tanzania’s already well-developed legal and regulatory framework for seeds, and help these frameworks produce the intended result of contributing to the development of commercially successful agribusinesses to the benefit of the region’s small-scale farmers through improved access to high-quality seed.

These high-level commitments fit within Tanzania's existing structure for regulating seeds, and specific aspects of this structure relate directly to the objectives noted in Table 3 above. The main components of the seed legal and regulatory structure are:

- Regulation of Different Activities in the Seed Sector;
- Variety Release and Registration;
- Plant Breeders' Rights;
- Plant Variety Protection;
- Seed Certification and Quality Control;
- Cross-Border Seed Trade;
- Regulation of Fertilizer and Agrochemicals; and
- Legal and Regulatory Aspects of Access to Finance.

A number of these elements can be seen in Figure 2 and, along with the relevant legal and regulatory authorities, are discussed below.

Figure 2: Seed Regulatory Chain



Source: New Markets Lab, 2015

Overview of the Tanzanian Legal System

Tanzania has a hybrid legal system, combining English common law with customary and Islamic law. Acts of Parliament, and subsidiary legislation, are the most prominent source of law. The United Republic of Tanzania consists of mainland Tanzania and the island of Zanzibar. The head of the Tanzanian Executive is the President, and Parliament is defined in section 62(1) of the Constitution as consisting of the President and the National Assembly. The Constitution gives the President authority to assent bills by Parliament as a final step in converting a bill into a law. While legislative power with regard to all union and mainland matters vests in Parliament, legislative power in Zanzibar for non-union matters is vested in the House of Representatives (CALR, 2012).

Generally, as mandated by government policy, stakeholders are consulted in the policy and legislative reform process in Tanzania. The Tanzanian legislative process consists of seven steps. These steps are outlined below for matters within the jurisdiction of MAFC:

- *Step 1: Undertake a Study to Determine the Need for the Law:* This is done by the Responsible Ministry and involves analyzing existing policies and institutional and legal frameworks to identify gaps, overlaps, and inconsistencies. As part of this stage, the consensus of the respective Department or Ministry will be obtained, and the relevant Department or Ministry will prepare a proposal for enacting the law, which would be tabled at the meeting of the Heads of Departments.
- *Step 2: Ministerial Approval:* As a next step, the Ministry's lawyers must understand the general legal framework, and the relevant Department or Section should agree on the proposal, with the concurrence of the Permanent Secretary. The Minister will need to provide approval at this stage.
- *Step 3: Cabinet Paper Prepared for Inter-Ministerial Policy Approval Process:* This step has four stages:
 - a) The *Draft Policy will be submitted to the Inter-Ministerial Technical Committee (IMTC)* that comprises all Permanent Secretaries of the Government Ministries for approval. Once approved by the IMTC and the responsible the Minister will present the Draft Policy to the Cabinet for approval. The, Cabinet once satisfied with the content, approves the draft policy ready for dissemination and implementation.
 - b) *Stakeholder Consultations:* Stakeholder comments will be solicited through stakeholder consultations, which can be done through meetings (National Workshops) or through solicitation of written comments. Stakeholder input can be provided on various issues such as situation analysis, existing

challenges, institutional framework and implementation mechanisms. Cabinet Secretariat approval

c) *Inter-ministerial Technical Committee (IMTC) Approval*

d) *Cabinet Approval*

- *Step 4: Bill Drafting and Preparation:* The responsible Department and its legal experts will initiate bill drafting, and the Ministry (i.e. lawyers together with the Office of the Attorney General) will prepare the bill. There are two types of legislation: Principal Legislation (an Act of Parliament, which sets the principles) and Subsidiary Legislation (any law made by any competent authority other than the Parliament, which contains details that enable smooth implementation of a principal legislation).
- *Step 5: Discussion and Passing of the Bill:* The Cabinet Committee on Judicial and Constitutional Matters will meet, and the bill be recommended for the Parliament.
- *Step 6: Parliamentary Approval:* This stage has several steps:
 - a. *First Reading in Parliament* where concerns and comments from Members, the Parliamentary Sectoral Committee, and the general public will be heard
 - b. *Second Reading in Parliament* where the Minister tables the bill in Parliament for discussion
 - c. *Third Reading in Parliament* where the bill is sent to the President for assent
- *Step 7: Operationalization of the Law:* Following presidential assent, a Ministerial Notice is prepared to operationalize the law. At this stage, necessary regulations or rules are prepared by the relevant Minister. These regulations may also be followed by regulatory guidelines. During this stage, the institutional frameworks will be developed for the implementation of the legislation.

In Tanzania, all laws that regulate the seed, fertilizer, and agrochemicals industries would go through these different steps. Because they are a different type of instrument, regulations go through a different process of development, although they are also subject to consultation.

The major laws and regulations governing seeds and other agro-inputs in Tanzania are mentioned briefly below and discussed in the chapters to follow. As Tanzania moves forward with the implementation of these legal and regulatory instruments, as well as with regional seed harmonization, new gaps will be identified and amendments proposed, as is

currently underway with the Plant Protection Act, Fertilizers Act, Seeds Act, Tropical Pesticides Research Institute Act, Agricultural Inputs Trust Fund Act, and as well as with regulations under the Cooperatives Act of 2013 and the Plant Protection Act of 1999. Other elements of the legal and regulatory structure are currently under discussion for amendment. These include amendments to the Seeds Regulations, that will adjust fees and transfer authority over import and export permits to TOSCI, and amendments to the PBR Regulations to bring them in line with the 2002 PBR Act. Other legislative frameworks under review and/or formulation that may impact the agricultural development for Tanzania include: Food Security Regulations; National Irrigation Regulations; Savings and Credit Cooperatives (SACCOS) Regulations; legislation for contract farming; the Resource for Food and Agriculture Act; the Rufiji River Basin Authority Act of 1975; Tanzania Agricultural Research Institutes Act; Agricultural Land Management Crop Price Stabilization Fund; agricultural extension services; and legislation on agricultural mechanization.

The Ministry, also through its Legal Services Unit, plans to prepare Swahili and English guidelines for agricultural laws to enable stakeholder to effectively implement the laws. These guidelines also will go hand in hand with preparation of the Compendium for Agricultural Laws and establishment of Agricultural Legal Aid Clinics.

Summary of Key Laws and Regulations

A number of specific laws and regulations apply to the seed and inputs sectors and cover a wide range of areas related to ensuring that quality inputs are available in the market, including seed variety release, IP, seed certification, testing, fertilizer and agrochemicals registration, business establishment, marketing, labeling, and trade (Kuhlmann, 2013). These laws and regulations lay out the process that needs to be followed to get seeds into the market and the particular requirements that apply at every step throughout the seed value chain. It is important to note the difference between laws and regulations is in form and function. Simply put, laws set forth rules that regulate behavior, while regulations provide more specific provisions on how to implement and enforce the laws. Tanzania has made great progress towards developing a comprehensive framework governing seeds and related inputs, and the focus is shifting now towards refining and implementing these laws and regulations. In recent years, the Tanzanian Government has amended or repealed some of its older seed laws, and changes both undertaken and underway are noted below.

The primary law governing the seed sector is the **Seeds Act (No. 18 of 2003, as amended)**. The Seeds Act applies both to public and private actors in the seed industry and not only delegates regulatory authority and establishes some of the main governmental institutions but also defines the role and duties of seed inspectors, delineates offenses, and

establishes penalties for violation of its provisions. The Seeds Act is critical to Tanzania's seed system and lays out the procedure for variety release and registration, certification, seed dealer registration, and general requirements for the importation and exportation of seeds, all of which are elaborated in more detail in the Seeds Regulations.

At the end of 2014, Tanzania passed an amendment to the Seeds Act (Cap. 208), which included, among other things, a shift in institutional authority for licensing seed dealers, increased penalties for violations of the Seeds Act, and new labeling requirements. The Government, through MAFC, has initiated a full review of the Seeds Act. The Cabinet paper has already been prepared and was submitted to the Cabinet secretariat in November 2014.

The **Seeds Regulations** provide specific detail for implementing the requirements of the Seeds Act, including:

- Seed dealer registration process;
- Variety release and registration process;
- Certification process;
- Seed testing and sampling rules;
- Seed labeling and packaging;
- Seed classes for certification;
- Importation and exportation processes; and
- Offenses under the Seeds Regulations and subsequent penalties.

The current Seeds Regulations are in the process of being amended, and the Government of Tanzania is developing new implementing regulations, in consultation with the private sector, for the 2014 amendments to the Seeds Act. As of June 2015, new regulations had not yet been published to support the 2014 amendments to the Seeds Act.

The Seeds Act and Seeds Regulations touch upon almost all aspects of the seed value chain and provide an important roadmap for the variety release and registration process, certification process, and other regulatory aspects of seed sector development such as packaging, labeling, marketing, and sale of seed. Several other important laws and regulations apply to the seed sector as well.

The **2012 Plant Breeders' Rights Act** (PBR Act, 2012) became operational in June 2013 (replacing the 2002 Protection of New Varieties (Plant Breeders' Rights) Act) and protects the intellectual property rights of breeders. The 2012 PBR Act conforms to requirements under the International Convention for the Protection of New Varieties of Plants (UPOV) of 1991. Tanzania is in the process of formally becoming a UPOV member, which was delayed

for a time due to complexities arising from the dual legal system between mainland Tanzania (formally, Tanganyika) and Zanzibar. The UPOV-based system has standard procedures for testing the distinctness, uniformity, and stability (DUS), which also is factored into the variety release process and is one of the conditions for granting PBR in Tanzania.

The **Protection of New Plant Varieties (Plant Breeders' Rights) Regulations 2008** (PBR Regulations) were published under the 2002 PBR Act. The 2008 PBR Regulations cover the PBR application process, the role of the PBR Register, and the PBR Advisory Committee. While the 2002 PBR Act has been repealed, according to PBR Act 2012, the 2008 PBR Regulations are still in force and apply as if they were published under the 2012 PBR Act until new Regulations are put in place. MAFC has initiated the process to come up with new Regulations. The Plant Breeders Association of Tanzania (PBAT) is a legally registered association in Tanzania, and, under the Act, a member of PBAT would be nominated to participate in the Plant Breeders' Rights Advisory Committee. Currently, PBAT is not active, but the new Regulations could include provisions that would help move this process forward.

The **1997 Plant Protection Act and 1999 Plant Protection Regulations** govern the importation and exportation of plants and plant substances like pesticides used to protect plant products and their health. These rules and regulations have the goal of preventing and controlling pest and disease outbreaks that could reduce yields or destroy crops, and they are some of the older rules in place governing the seed sector. The Plant Protection Act is currently under review and may split out the governance of pesticides into a second Act separate from sanitary and phytosanitary (SPS) measures and plant protection matters. This split possibly could result in two separate acts, one for Plant Health Services and one for Pesticides Management. The review process had reached the Cabinet Secretariat level by early May 2015.

The **1979 Tropical Pesticides Research Institute Act** governs the Tropical Pesticide Research Institute (TPRI), the pest, pesticide, and biodiversity research institution in Arusha, which is responsible for overseeing quarantine of imported seeds and houses the National Plant Genetic Resources Centre (NPGRC). The Tropical Pesticides Research Institute Act 1979 is also under review to align with the ongoing review of the Plant Protection Act, 1997.

The **2009 Fertilizers Act (as amended) and 2011 Fertilizers Regulations** detail the fertilizer regulatory regime in Tanzania, including registration qualification requirements and procedures; proper practices for fertilizer management, packaging, and labeling; fertilizer quality standards and testing procedures; and minimum qualifications and

specific duties of inspectors and analysts. Amendments to the Fertilizers Act (Cap. 378) were passed in 2014 alongside the amendments to the Seeds Act mentioned above. Importantly, the amendments to the Fertilizers Act also updated the penalties for violations of the Fertilizers Act, which is intended to help curb the prevalence of counterfeit fertilizer. Additional amendments to the Fertilizers Act have been proposed.

While these laws and regulations articulate the requirements for different stages in Tanzania's seed system, both the laws and regulations themselves and subsequent changes are not always readily obtainable or easy to comprehend. It also often is not clear which regulations are the most recent, creating uncertainty as to which standard applies. Further adding to the complexity is the fact that both the legislation and regulations frequently provide for MAFC to publish certain information in the *Gazette*; however, gazetted changes are not always accessible or done with adequate notice, and it may be difficult to connect changes announced in the *Gazette* with the appropriate regulations. For example, under the Plant Protection Act the Minister may declare a plant to be a "harmful organism" through publication in the *Gazette*. If these changes are not widely accessible, it may be difficult for potential importers or seed traders and local small enterprises to know of all relevant changes.

In addition to these key laws and regulations, a number of other legal instruments govern the agricultural sector and are worth noting, including:

- The **Food Security Act of 1991 (The Food Security Act Cap. 249) (as amended by The Cereals and Other Produce Act, 2009);**
- The **Agricultural Input Trust Fund Act No. 9 of 1994;**
- The **Cooperative Development Act (The Cooperatives Societies Act No. 20 of 2003), the Cooperatives Act No. 6 of 2013, and the Regulations on Savings and Credit Cooperative Societies of 2004;**
- The **Cereals and Other Produce Act, 2009; and**
- The **National Irrigation Act No. 5 of 2013**
- The **Agricultural Input Trust Fund Act No. 9 of 1994**
- The **Rufiji Basin Development Authority Act Cap. 138 of 1975**
- The **Public Procurement Act of 2011 and the Public Procurement Regulations of 2013**
- The **Value Added Tax Act of 2014**
- The **2015 Finance Act**
- The **Animal Diseases Act of 2003**
- The **Environmental Management Act of 2004 and the Environmental Management (Biosafety) (Amendment) Regulations of 2015**

- **The Ministerial Circular on Licensing of Protected Varieties of Plants of 2011**

These are also several crop-specific laws, which provide for the regulation and coordination of specific crops, including:

- The Cashew Industry in 2009 (The Cashewnuts Industry Act)
- The Coffee Industry Act 2001 (The Coffee Industry Act Cap. 347) (as amended in 2009 by the Act Crop (The Crop Miscellaneous Laws Amendments Act, No. 2/2009))
- The Cotton Industry Act 2001 (The Cotton Industry Act Cap. 201) (as amended in 2009)
- The Pytherum Industry Act Cap. 376 R.E 2002 (as amended in 2009)
- The Sugar Industry Act Cap. 251 R.E, 2002 (as amended in 2009)
- The Tobacco Industry Act, Cap. 202 R.E, 2002(as amended in 2009)
- The Tea Industry Act, Cap 275 R.E, 2002 (as amended in 2009)
- The Sisal Industry Act, Cap.30 R.E, 2002 (as amended in 2009)

These and other legal measures are referenced throughout this Guide as relevant and may be subject to further assessment in relation to the seed and inputs sectors.

Overarching Measures

Regulation of Functions Within the Seed Sector

A number of different actors within the seed and inputs sub-sectors regulate various functions. Any person who intends to distribute, market, sell, and import or export seed must be registered by TOSCI under the heading of “seed dealer,” (Seeds Act, 2003, Part III). Seed businesses (including seed companies and agro-dealers) must obtain a three-year registration from the Ministry of Industry and Trade as well for a cost of 20,000 TShs. While registration requirements are an aspect of every legal and regulatory system, it is important to evaluate whether these registration requirements serve distinct purposes or create unnecessary cost and complexity for market stakeholders.

Registered seed dealers are typically located in larger towns and cities. This is particularly an issue with agro-dealers (which must be registered as seed dealers), since rural farmers seeking to purchase high-quality seeds often have to travel far to reach an agro-dealer. One stakeholder interviewed highlighted that agro-dealers sometimes purchase seed in bulk but often lack knowledge about which type of seed is most productive in a certain region or how to properly store seed. Seed processors must also be registered, and they may only process seeds from approved fields or seeds properly imported into Tanzania.

The process for becoming a seed dealer involves several steps. First, the applicant must submit registration forms and fees to TOSCI (the registration application fee is 2000 TSHs) for approval (Amendments to the Seeds Act, 2014). If approved by TOSCI, then the dealer receives a Certificate of Registration, which must be “conspicuously displayed” in the dealer’s place of business, and the dealer is added to the list of registered seed dealers (Seeds Act, 2003). The DCD may cancel a seed dealer’s registration if a dealer fails to comply with the requirements of registration. If a registration application is denied or cancelled, then a seed dealer has thirty days to appeal the decision with the Minister (Seeds Act, 2003). If a registered seed dealer contracts with another person to deal in seeds, then that person must also complete the seed dealer registration process.

Reportedly, the DCD, who previously was mandated to approve seed dealer registrations, was inundated with seed dealer applications following the establishment of the input voucher program described below, although since then a number of seed dealers have gone inactive. As a result, the DCD is in the process of de-registering the inactive seed dealers (USAID, 2013).

For some activities covered by registration, the requirements for obtaining a registration can limit those who can enter the market. These requirements may include land ownership, business expertise, development of a business plan and other aspects that may be difficult for women and others among the rural poor to meet (USAID, 2013). Such requirements are one example of how seemingly neutral legal and regulatory structures can have an adverse impact on small farmers and women, and such considerations need to be taken into account across the seed enabling environment.

Government Programs in the Seed Sector

Although some companies are registered to sell seed directly to farmers (and the ASA also performs this role), most seed is sold through agro-dealers. As noted above, there are about 4,000 registered agro-dealers (although only about half of these, or even less, are operating), and many are registered as a result of the government input voucher program that went into place in 2008/09. The National Agricultural Input Voucher Scheme (NAIVS) was piloted in two districts for one season and scaled up to a total of 87 districts by 2011/12 (USAID, 2013). A total of 607,264 hectares (ha) of crops, or five percent of total cropped land, was planted with a subsidized package of improved seed and fertilizer through the NAIVS (MAFAP, 2013).

The NAIVS involves seed fairs and is used in emergencies or relief situations (ASARECA, 2014). Farmers are given vouchers with a specific value, which they can exchange for seed and cash out at the end of the fair. Farmers are given vouchers with a specific value, which

they can exchange for seed and cash out at the end of the fair. Depending on the level of aid needed, vouchers can be distributed to more vulnerable farmers, as identified by the community, or they can be made available to everyone (Practical Action, 2013). Almost all maize, sorghum, and rice are distributed through vouchers (which provide for a 50 percent matching fund), and, of this seed, nearly 90 percent is distributed by agro-dealers. The NAIVS also includes fertilizers, and each beneficiary receives a set of vouchers including a nitrogen voucher for one 50 kilogram (kg) bag of urea, a phosphate voucher for one 50kg bag of di-ammonium phosphate (DAP), or two bags of locally produced Minjingu Rock Phosphate (MRP) +10N, sufficient to plant one acre (See Hepelwa et al, 2013). Inputs are sold by agro-dealers at market prices, and farmers use vouchers and cash (AGRA, 2014).

Although there has been an increase in smallholder access to seed and fertilizer in some of these districts through the NAIVS, the program has faced several challenges, including delays in the distribution of the vouchers to farmers, late payments on redeemed vouchers by the government, and a concurrent rise in fake seed in the market (USAID, 2013). As with all subsidy programs, while these programs may have the desired effect of making seeds and fertilizers more accessible, they may also run the risk of crowding out commercial demand and have a discouraging effect on private sector investment. These considerations must be carefully weighed in designing government programs.

In response to challenges with the NAIVS program, the MAFC has considered adopting a subsidized credit system in its place. Through a partnership with banks, interest rates would be subsidized to a significantly lower rate for qualifying farmer groups. Participating banks would be fully compensated through a government guarantee fund if the borrower were unable to pay his or her loan.

Since the credit subsidization scheme will involve different actors with varying incentives, there is still much to be considered before such a scheme can be implemented. Ultimately, in order to be effective, such a change would require careful consideration of the laws and regulations governing farmer associations, including the **Cooperatives Act No. 6 of 2013**, and **Regulations on Savings and Credit Cooperative Societies**; laws and regulations on tax, banking and financial service; and rules and regulations on secured transactions and land tenure) to ensure that small farmers and women can successfully take advantage of the new program. One challenge is that savings and credit societies like farmers' cooperatives often have difficulty providing input lending. To address this problem, AGRA, together with the Financial Sector Deepening Trust (FSDT) and the National Microfinance Bank, has implemented a credit guarantee program aimed at farmers, agro-dealers, and other agricultural businesses (AGRA, 2014). In general, rules that facilitate these transactions include simplifying and streamlining the cooperative registration process,

encouraging healthy reserve funds, implementing training and capacity building programs, establishing clear rules on tax liability, and supporting strong self-governance systems.

Efforts are also underway at the MAFC to strengthen the capacity of the Agricultural Inputs Trust Fund (AGITF) to address particular challenges in access to finance for seeds and agro-inputs. The AGITF was established in 1994 to facilitate the supply of agricultural inputs to farmers and address challenges around creditworthiness of farmers and farmer associations (MAFC, 2007).

Taxation Issues

Until recently seeds were subject to several taxes per the **Finance Act and VAT Act, 1997** as noted in the New Alliance Commitments, including a cess and value added tax (VAT). Under the previous VAT Act, the private sector had to currently pay VAT on seeds and seed packages, even though implements, fertilizer, and pesticides were free of VAT. In addition, the ASA did not pay VAT on seeds or local cess (USAID, 2013), which further complicated the market dynamics between the private sector and ASA. The situation has changed in part through the new Value Added Tax Act as amended in 2014, which came into effect on 1 July 2015 and exempts “seeds and plants thereof” from the VAT as per Part 1 (3) (34) of the schedule of the VAT Act as amended 2014.

Local governments also charge a cess, often at multiple points along transport routes. Seed should be exempt from this cess charge pursuant to the 1982 Local Government Finances Act, but, in practice, local governments continue to charge the cess and rely on it to meet their resource needs (USAID, 2013). The impact of the cess is further compounded by transport challenges, including high transportation costs that can reduce the farm price for locally grown seeds and crops and drive up the price of improved seed and imported seed. Since the grower is responsible for maintaining seed quality between the time of harvesting and transport to the processing plants, challenges can arise due to difficulty with transport and storage. Only around five private seed companies have their own storage and processing facilities (USAID, 2013), although some additional private storage and processing has recently come on line. Further, if the distance between the farm and processing plant is great, the grower must obtain a transport order from TOSCI and have the transport marked and supervised by an inspector (Seeds Regulations, 2007).

Regional Seed Harmonization

In addition to national level laws and regulations, the seed sector is increasingly subject to regional seed initiatives and protocols. Tanzania is part of both the **East African Community (EAC)** and **Southern African Development Community (SADC)**, both of

which have standards relating to different aspects of the seed and inputs value chains. While these standards will be harmonized over time through the Tripartite Agreement, which also includes the Common Market for Eastern and Southern Africa (COMESA), they currently differ both substantively and institutionally. Implementation challenges with respect to regional seed efforts are significant at this stage and will also be highlighted throughout the Guide.

It is important to note what regional harmonization entails. Harmonization can be misconstrued to mean creating uniform national regulations, but, as is true with international standards, it often actually allows for differences in national legal and regulatory systems as long as regional standards are met (CALR, 2012). Regional seed harmonization emphasizes adherence to commonly agreed principles and similarity in net results, with a focus on developing a common legal culture for regulating seed systems (CALR, 2012). Despite this flexibility in adherence to regional standards, differences in technical provisions and institutional structures will cause challenges in implementation of regional regulations if not addressed early on in the process.

Institutionally, the EAC and SADC are quite different. EAC laws and regulations are automatically binding on its members at the national level, and EAC Acts supersede national legislation. The legal structure of the EAC requires that EAC Partner States ultimately harmonize their national laws where they have relevance to the EAC. This structure is provided for both in Article 126 of the EAC Treaty and Article 47 of the Common Market Protocol, under which EAC Partner States have undertaken the commitment to approximate their national laws and harmonize their policies and systems for the purpose of implementing the EAC Protocol (Tito, 2012).

Much of the regional seed policies within the EAC countries have stemmed from the work of the Eastern Africa Seed Committee (EASCOM), which was a Committee of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA). ASARECA, which now includes eleven countries in Eastern Africa,¹ has been active in regional seed harmonization since the 1990s (Nvachae, 2007). Its work has included the ASARECA/Eastern and Central Africa Program for Agricultural Policy Analysis (ECAPAPA) (ECAPAPA, 2014) work on variety release and registration that resulted in an agreement on regional variety release and registration in Eastern Africa (ASARECA/ECAPAPA

¹The member countries of ASARECA are Burundi, the Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, South Sudan, Sudan, Tanzania, and Uganda.

Agreement, Monograph Series No. 4); seed certification; SPS regulations; plant variety protection; and seed law and regulations (Minde, 2006).

These efforts originally began in Kenya, Tanzania, and Uganda with wide-ranging analyses of these three countries' seed systems, followed by a 2002 agreement on variety release and registration under which a variety registered in one country's catalogue could be made available in another country through a fast-track process of verification consisting of only one year of national performance testing if sufficient test data was provided from previous field trials in similar agro-ecological zones (Keyser, 2014). Kenyan, Tanzania, and Uganda signed this agreement, and other EAC members (namely Rwanda) are planning to incorporate elements into their national seed laws. As discussed below, this agreement is being implemented (Tanzania has taken a leadership role in implementation through harmonization of laws and regulations and practical application of the ASARECA/ECAPAPA agreement (See Box 1)), but full implementation has not taken place in the region due to differences in approach and interpretation among the signatory states. It is also important to note that the EAC has yet to finalize a process for harmonizing regional seed policies and regulations. What exists currently is the ASARECA Harmonization Agreement as found in ASARECA/ECAPAPA Monograph Series 4.

While the harmonization of seed regulation in East Africa has thus far taken place under the work of ASARECA, in late November 2015 the EAC issued a directive to initiate a legal and regulatory framework to harmonize EAC seed regulations which would effectively institutionalize the ASARECA process in the EAC.

SADC, on the other hand, is distinct from the EAC as a regional organization. Within SADC, only the SADC Treaty and Protocols are binding upon members. These do not automatically enter into force at the national level but require domestication (incorporation into national law through appropriate legal processes and instruments). These are not the only legal instruments that are recognized within SADC, however, and other measures such as Regulations and Memoranda of Understanding (MOUs) are common. MOUs are recognized as legal instruments, but they are of a subsidiary nature ("soft law" within international legal parlance). MOUs are generally preliminary legal documents that describe an agreement between parties and may eventually lead to a Protocol, but MOUs can also become binding through implementation. The difference in legal weight between MOUs and Protocols is reflective of the fact that MOUs are not signed by Heads of State; rather, they are generally signed at the Ministerial level (Ditlhake, 2008). While these measures are not binding, they can also be domesticated through member country action. The SADC Harmonized Seed Regulatory System (HSRS), to which Tanzania is a signatory, is an MOU. Development of the HSRS Technical Agreements began in 2004, and the SADC Council of

Ministers approved the HSRS in 2007. In May 2009, the MOU for implementation of the HSRS was approved.

Within each regional economic community (REC), different aspects of seed and input regulations have received varying degrees of focus, as discussed in the chapters below. Implementation of these regional frameworks has also proceeded at different paces and with different structures. For example, in Southern Africa, the SADC Harmonized Seed Security Project (HaSSP) was designed by the Food, Agriculture, and Natural Resources Policy Network (FANRPAN) to implement the SADC Harmonized Seed Regulatory System (HSRS). This implementation scheme, which has faced capacity and funding challenges, identifies priority countries for implementation, including Tanzania.

Regional efforts can significantly impact development of the seed sector by opening up new channels for access to germplasm, improved seeds, and knowledge. Yet, they can also add another layer of complexity to the regulatory process, and many stakeholders interviewed had little understanding of the content of regional measures or how they would be applied in practice.

In addition to the technical aspects of harmonized seed measures, which are discussed in the sections that follow, effective implementation of regional agreements will rely heavily upon collaboration among regulatory agencies from different countries in a region. For example, some countries have scant resources to fund inspectors during the certification process. To work around the dilemma, a regulatory agency might authorize recent graduates to help conduct inspections (Keyser et al., 2015). However, regulators in neighboring countries might distrust the resulting certified seed, since professional inspectors had not carried out the inspections, and the entire process might be rejected as a result. In such a case, the neighboring agencies may reject the certified seed and prevent its importation. Misgivings among regulatory agencies also extend to areas beyond seed harmonization and can affect how well agencies share data and cooperate at the border.

Regulatory coordination is proving to be both critical and complicated, and it is often a determining factor in implementation of regional measures. For example, a seed agency in one country may choose to implement harmonized measures only when it recognizes that its counterpart foreign agency has regulatory competence in an area. This has already been an issue in implementing regional variety release agreements, for example. Tanzania has shown leadership in this area, however, and several improved seed varieties (including seed potato) have been successfully established in Tanzania as a result (See Box 1). Tanzania is also the country of origin for rice and maize varieties registered in other countries in East Africa.

A number of stakeholders have noted that it is relatively simple to import Kenyan seeds into Tanzania, for example, but can be quite difficult to export Tanzanian seed to Kenya, perhaps a partial consequence of wariness between regulators. This wariness may be due in part to the fact that Kenya has an ISTA-accredited lab while Tanzania does not yet; although comparative consultations have revealed that issues may arise even with mutual ISTA accreditation. Although it can take time, increasing communication and regular dialogue among neighboring regulatory agencies can help reduce distrust and promote sharing of best practices. The emerging relationship between TOSCI and its Kenyan counterpart, the Kenyan Plant Health Inspectorate Service (KEPHIS), could serve as an example for other agencies as they continue to work through common challenges together.

Chapter 3

Variety Release and Registration

Variety release and registration is one of the first stages in the seed value chain and establishes the process for making new seed varieties available in the market for farmers to purchase. Variety release and registration is a fundamental aspect of the seed enabling environment, because this stage determines how quickly improved seeds can reach the hands of farmers (Kuhlmann, 2013). Both the public and private sectors are engaged in developing and bringing new seed varieties to market, and breeders, farmers, and consumers alike have an interest in making sure these varieties perform adequately. Increasing availability of new varieties could improve agricultural production, increase farmers' yields, and provide smallholder farmers with more choices, enhancing competition among seed breeders and decreasing seed prices.

Variety Release Process

Tanzania regulates the testing of new varieties and approves or denies market entry based on test results that indicate whether a new variety is suitable for the country. There are two types of testing in the variety release process: testing for Distinctness, Uniformity, and Stability (DUS) and testing for Value for Cultivation or Use (VCU), also referred to as National Performance Trials (NPT). DUS tests indicate whether a particular variety is distinct from what is currently available on the market and will behave in a consistent manner. NPT tests show whether the variety has an advantage over already registered varieties and tend to focus on yield measures (although other factors are important as well). These tests are designed to reveal the variety's suitability and help assure agro-dealers and farmers that varieties in the market can provide demonstrable benefits. Tanzania requires two seasons of government-supervised DUS trials and one season of government-supervised NPT testing. It is common for seed breeders to conduct their own testing before beginning the formal variety release process in order to have assurance of how the variety will perform. Tanzania's seed regulations require that the breeder conduct at least one season of VCU testing before the official process begins, effectively requiring several seasons of VCU/NPT data for making a scientifically informed decision.

Tanzania is pursuing a strategy to align its laws and regulations with common international standards, as are other countries in the region. A number of these international standards are now embedded in national law and regional seed initiatives. Like some of its trading partners and well ahead of others, Tanzania has already aligned its laws with UPOV standards, which, in addition to the conditions for plant breeders' rights discussed in the following chapter, set standards for DUS testing. Tanzania also is in the process of getting

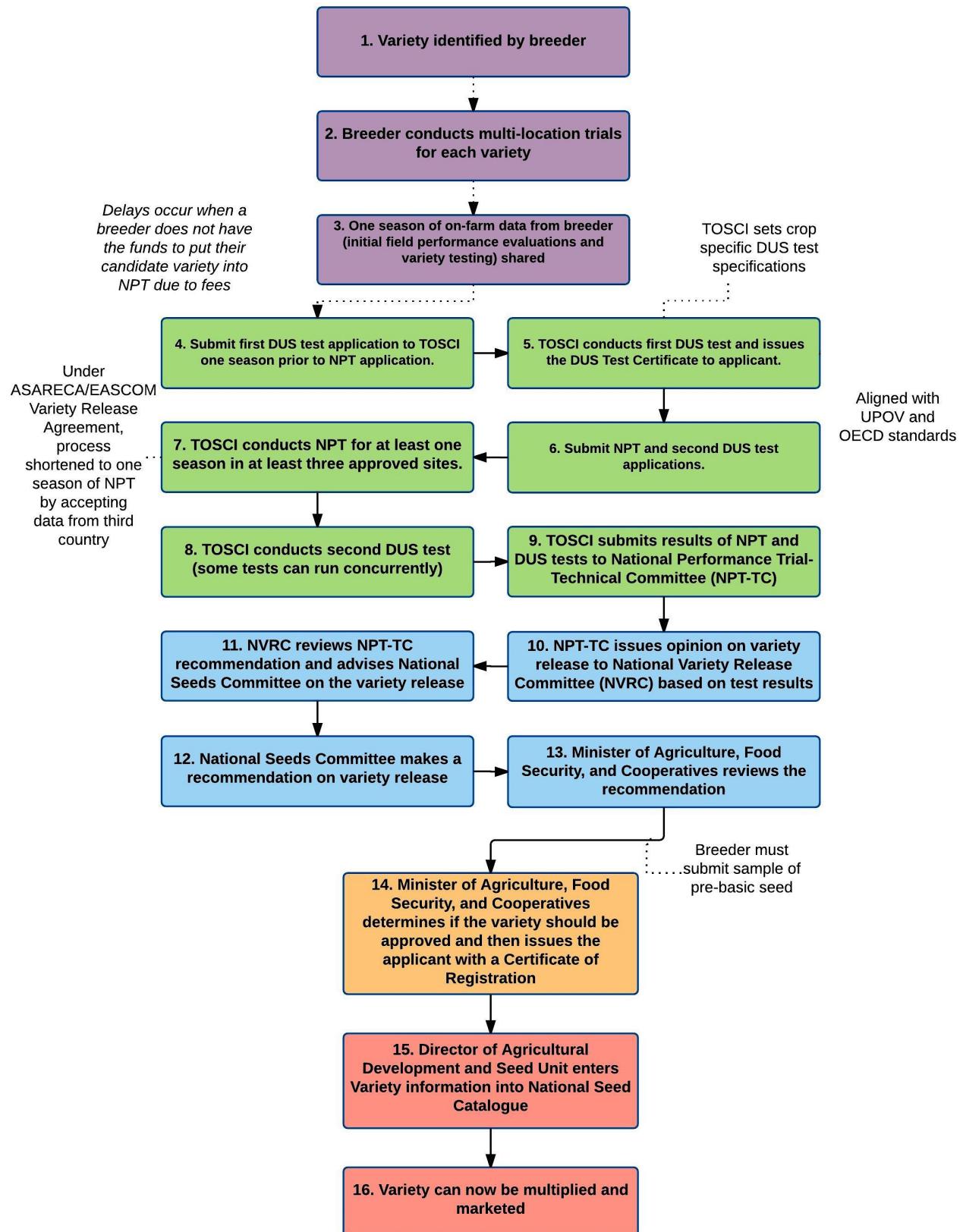
accreditation for one of its labs (the TOSCI lab in Morogoro) under ISTA, which sets international standards for seed testing and accredits national laboratories. These actions will send a signal to Tanzania's trading partners that it maintains the highest common standards. Tanzania became a member of UPOV in November 2015 and expects to receive ISTA accreditation of its laboratories in 2016, both of which are part of the New Alliance Commitments discussed above. Regulators and seed companies view UPOV membership and ISTA accreditation as positive developments that will strengthen the Tanzanian seed sector, even though these changes will require building additional capacity.

The process for variety release and registration in Tanzania is detailed in Part III of the Seeds Regulations (Government Notice No 37 published on 9/2/2007) and summarized in Figure 3 below. Typically, as outlined in the regulations, the variety release process takes two to three years in Tanzania, as noted in Table 4. Stakeholders do report some inconsistency in the duration of the process, however, which may be due in part to different understandings of what the process requires. One company noted that some DUS trials could run concurrently with NPT, and, with proper irrigation, the entire government-supervised process could take as little as one year. However, other companies have indicated that such a short time period is not realistic and that the process indeed takes quite a bit longer.

The formal variety release and registration process begins when a breeder submits an application for DUS and NPT trials to TOSCI. Under the 2007 Seeds Regulations, the DUS test application must be submitted one season prior to the NPT application to determine suitability. The DUS application requires a description of the variety and must include on-farm trial and farmer's assessment data, among other information. The application must also be accompanied by a sufficient seed sample for the first season required DUS test, along with the DUS test application fee (2,000 TShs) and the DUS testing fee for one season (500,000 TShs for two seasons) (Seeds Regulations, 2007). Upon receipt of the DUS test application, TOSCI will conduct the first season DUS test, send the test results to the applicant, and issue the DUS test certificate. The DUS test certificate costs 5,000 TShs (Seeds Regulations, 2007).

TOSCI then will conduct supervised NPT testing for "at least" one season in "at least" three locations and conduct the second season of DUS testing (Seeds Regulations, 2007). A second round of DUS testing may not be required in practice if the variety proves to be distinct, stable, and uniform. The NPT application must include "a minimum of two recent previous seasons advanced yield trial data from not less than three recognized testing sites in Tanzania" (Seeds Regulations, 2007). The stages in the variety release process and the roles of the key regulators are depicted in Figure 3.

Figure 3: Variety Release and Registration Process



Source: New Markets Lab, 2015

The NPT application also requires “any other additional information that may be required for determination of the merits of the candidate variety” (Seeds Regulations, 2007). This application must be accompanied by a sufficient seed sample for the NPT and, if required, second season DUS test, along with the NPT application fee (2,000 TShs), the NPT fee (600,000 TShs), and the second season DUS test fee (Seeds Regulations, 2007). The applicant also bears all testing costs, including re-testing.

Multiple rounds of DUS and VCU tests are a common requirement throughout the region, although the number of tests varies from country to country. Each level of testing both imposes costs and can create delays in getting improved varieties to market. Because breeders will have an interest in yields and other aspects that make new seeds superior to what is already in the market, it is in their direct interest to do their own testing to make sure a variety performs well. Some governments have done away with government-supervised testing as a result. Other countries have streamlined the variety release process to require fewer trials. Further, yield expectations can sometimes be inflated or overemphasized, keeping high quality varieties off the market even when they could have a positive impact.

The availability of proper irrigation can also be an important consideration, particularly in years of drought, because it affects whether a test will yield adequate and reliable data. According to the Tanzania Agriculture and Food Security Investment Plan (TAFSIP), as of 2010, out of the 29.4 million hectares suitable for irrigation, only 0.34 million hectares had been irrigated (TAFSIP 2011-12 to 2020-21, 2011). The National Irrigation Development Plan and Agricultural Policy has been set up to help address this challenge and is tasked with providing water to all agricultural land, but lack of irrigation remains a problem, and the Tanzanian agricultural sector relies heavily on rainfall for crop production. One company stated that new varieties must be tested without irrigation to mimic real life conditions, but the testing must be repeated during times of drought, which can be expensive and time-consuming. As mentioned above, if re-testing is necessary, then companies must bear the cost.

Variety Registration

Additional implementation challenges arise once testing is complete and a variety moves forward for registration. Following testing, test results will go through a multi-step process for review and approval. First, the National Performance Trial-Technical Committee (NPT-TC) subcommittee reviews TOSCI’s report and relays the results to the applicant. The NPT-TC also presents the NPT data and the subcommittee’s recommendation concerning release

to the National Variety Release Committee (NVRC). The form for this stage in the process can be found in the Fifth Schedule of the Seeds Regulations. The NVRC undergoes a review of the NPT-TC recommendation and then advises the National Seeds Committee as to whether the variety should be released.

The NPT-TC, NVRC, and National Seeds Committee are generally scheduled to meet at least once per year, depending upon needs and resources for holding the meetings. Frequency of meetings can be an issue, however, and implementation delays and inconsistencies have been cited at this stage in the process. The NVRC typically meets toward the end of the year, but it reportedly must sometimes cancel its meeting due to resource constraints, which means that the variety release process could be put on hold until the following year, sometimes causing companies to miss a critical stage in the seed cycle. One company noted that the NVRC did not meet in 2012 or 2013 due to resource constraints. Timing of the meetings matters as well; if a variety is not released until November or December, a company can miss an important marketing period.

The National Seeds Committee next reviews the NVRC recommendation and issues a recommendation to the Minister as to whether the variety should be released. The National Seeds Committee also is authorized to hear appeals on decisions by the NVRC. While not widespread, there have been instances reported in which companies have paid to hold a meeting of an NVRC task force to verify required information.

Another significant implementation challenge arises with regard to the submission of authentic samples of seed to TOSCI for reference purposes. The breeder must submit an authentic sample of pre-basic seed to TOSCI for reference purposes, or the National Seeds Committee will deny the release of the variety. The minimum amounts for the sample are (i) four kilograms for cereals, pulses, or any other big seed crops and (ii) 100 grams for small seed crops. For any other plant species, TOSCI has discretion to determine the required amount of sample. The breeder may also be asked to replenish the amount of the authentic sample for TOSCI. There is currently a lack of tracking system for these samples, and TOSCI's ability to maintain these samples or control their use can be a challenge. Companies have expressed concern about samples that have gone missing and need to be replenished. A more transparent tracing system for seed samples and increased communication between TOSCI and the private sector concerning the testing process and results would improve trust between the regulators and private sector.

Overall, breeder and TOSCI test data goes through a total of four reviews: first by the NPT-TC, then by the NVRC, and next by the National Seeds Committee. Finally, the Minister for Agriculture, Food Security and Cooperatives receives names of the recommended varieties for final approval. Ultimately, it is the Minister who has the final say over whether a new

variety will be released and registered. Throughout the process, a lack of sufficient staff, testing centers, or equipment can cause errors and increase the cost of variety release to both the public and private sectors. Overlapping mandates among regulators and differing meeting schedules can create uncertainty and cost. While the process in Tanzania is now shorter than in other countries in the region, a number of seed companies have suggested the review process could be further streamlined, for example by assessing the multi-step review process. Any improvements in the process can directly impact the availability of improved seed.

If the Minister approves a new variety, the DCD issues a certificate of registration to the applicant. Approved varieties are registered at a cost of 10,000 TShs and entered into the National Variety Catalogue by the DCD after which time they may be put through the certification process and multiplied for commercial sale. As mentioned above, the Minister hears appeals on decisions by the National Seeds Committee, which must take place within 14 days of the decision being appealed.

The DCD, in consultation with the National Seeds Committee, may deregister a variety if there is proof that it no longer conforms to its original description or has lost the qualitative or quantitative attributes for which it was released. Samples of deregistered varieties are returned to the national gene bank for conservation. Tanzania does maintain a National Variety Catalogue, which is made available by the DCD. Some stakeholders report that the National Variety Catalogue is not updated as often as necessary, which is an aspect that could be further assessed.

Benchmarking Variety Release

As noted in Tanzania's New Alliance Commitments, benchmarking the time required to release new varieties of seed is an important measure of the variety release process. Table 4 below compares the time it takes to register new varieties in several other countries in the EAC and SADC regions. While complete data is not available for Tanzania, the final column provides estimates for Tanzania.

Table 4: Variety Release Comparative Assessment

	Kenya	South Africa	Uganda	Zimbabwe	Tanzania
Number of active breeders	68	53	11	40	27
Length of variety	37 (2 seasons of DUS and 2	12 (Note: No NPT; DUS only)	37 (Note: 2 seasons of DUS)	22 (Note: 1 season of DUS; 2	24-36 (2 seasons of DUS; 1 season

release process (months)	seasons of NPT in at least 5 relevant agro-ecologies)		and 1 season of NPT)	seasons of NPT in at least 5 relevant agro-ecologies)	of NPT in at least 3 relevant agro-ecologies)
Three year average of varieties released	20	103	6.3	11.7	17, est.
Number of active crop seed companies for focus crops	17	37	14	20	27
Time it takes to import /export seed from neighboring countries (days)	Import 26 Export 12	Import 28 Export >25 days	Import 48 Export 18	Import 12 Export 12	Import 10 Export TBD
Market share of government parastatal	62.4%	0%	0%	2.5%	25%
Availability of seed in small packages (% volume sold)	94.4%	2.5%	29.1%	7.8%	N/A
Total seed inspectors	60	148	4	68	27

Source: The African Seed Access Index (TASAI), South Africa Brief (2015); Tanzania data added by authors where available (USAID, 2013; World Bank, 2012).

Regional Variety Release and Registration

A number of regional variety release initiatives will impact the regional dynamics and streamline the process for variety release among neighboring countries. As noted above,

Tanzania has already begun to implement an ASARECA/ECAPAPA agreement among several of the East African Community countries (originally Tanzania, Kenya, and Uganda, with Rwanda now undertaking implementation) to expedite regional variety release (See Box 1). This agreement and other regional developments are discussed below.

East African Community

Although the EAC has yet to adopt a fully harmonized seed policy, Kenya, Tanzania and Uganda (and to an extent Rwanda and Burundi as well) have enacted their national Seeds Acts and accompanying Regulations in line with harmonization agreements arranged under EASCOM and ASARECA/ECAPAPA, as noted in the preceding chapter (Minde and Waithaka, 2006). As noted above, while ASARECA includes a group of countries within Eastern and Central Africa that goes beyond the EAC, the greatest progress in implementing the fast-tracked regional variety release and registration process has been among the EAC countries.

Tanzania is implementing an ASARECA/ECAPAPA agreement to “fast track” the variety release process by allowing use of third country data. Rwanda and Burundi have also expressed an interest in joining this agreement and are taking steps to do so, albeit at different paces. Under this agreement, each party will streamline the variety release and registration process, reducing requirements to “at least” one additional season of NPT testing if appropriate DUS data is provided (ASARECA, 2014). For example, a seed potato variety that has been released in Kenya and is suitable for the Tanzanian market could be introduced and registered in Tanzania following a minimum of one season of NPT testing with submission of appropriate DUS trial data.

Notably, the ASARECA/ECAPAPA agreement has been incorporated into Tanzania law and regulation, and TOSCI has applied this process in a few cases, including for seed potato varieties imported from Kenya (See Box 1) and rice varieties imported from Tanzania to Kenya (Kuhlmann and Zhou, 2015).

Box 1: Implementation of Regional Provisions for Expediting Release of Seed Potato Varieties

Expedited Release of Seed Potato Varieties in the SAGCOT Corridor

Potatoes are an important and increasingly popular crop in Tanzania and other parts of sub-Saharan Africa. Potato production has more than doubled since 1994, with East Africa experiencing 70 percent of the growth (Cromme et al., 2010). In Tanzania, approximately

150,000 small farmers produce potatoes, many of whom are women growing them to feed their families because they are relatively easy to cook and have denser caloric content than most cereals (Mpogole, 2012).

Potatoes also present a significant commercial opportunity. The market demand for potatoes is increasing, both within countries and in Africa's growing regional markets (Mpogole, 2012). Potatoes are often more profitable than traditional staples, with higher yields per unit of land, faster maturity rates, and higher prices per unit resulting in larger income gains (Mpogole, 2012). Potato processing is relatively easy and brings new opportunity, as chips and snacks are becoming increasingly popular (Anderson, 2008).

Until recently, Tanzania did not have a commercial potato industry, due largely to the lack of high-yielding seed potatoes in the market. Introducing new seed potato varieties required understanding the legal and regulatory system for variety release and registration in Tanzania and testing the ASARECA/ECAPAPA regional agreement for expedited variety release and registration. A partnership between a private enterprise (Mtanga Foods Limited, an investment located along the SAGCOT Corridor in Iringa), the Tanzanian Government, and Mtanga's partners helped streamline this process to the benefit of the entire sector.

Mtanga Foods was one of the first companies to test the ASARECA/ECAPAPA Agreement under which one country would fast track the variety release and registration process if appropriate field test data could be supplied. Tanzania was ahead in the agreement's implementation, having incorporated key provisions into its national law and regulations, and the partnership described above helped give clarity to how this agreement would be implemented in practice. After working through the process step-by-step, the partners were able to get four new seed potato varieties approved for sale in the Tanzanian market. The first yield was 40 to 50 tonnes per hectare, around ten times the national average before the new varieties were introduced. In this case, implementation of the regional seed agreement yielded tangible benefits for Tanzania's seed sector and sent a signal to others that the regional agreement was being implemented in practice.

Despite these positive steps forward, there is still a critical lack of awareness among companies about the expedited process for variety release and registration under the regional agreement. While the Tanzanian Seeds Regulations include a reference to the regional agreement, calling for two seasons of trial data from three recognized testing sites in Tanzania *or* a country with an agreement harmonizing seed policy with Tanzania, the

process remains uncertain.² Even large companies feel that the process is not straightforward and have had difficulty bringing seed from Kenya and Uganda to market in Tanzania. One company is having so much difficulty going through the expedited process for NPT trials that it is considering abandoning registration of the new variety altogether. A clearer reference in the law or regulations to the ASARECA/ECAPAPA agreement (and other regional agreements), along with regulatory guidance on how to navigate the expedited variety release process, could help raise awareness within the private sector about the regional process and ensure that additional improved varieties, like improved seed potato varieties, are released through the expedited regional process in Tanzania. Due to the binding nature of legal instruments at EAC, the adoption of EAC seed regulations will significantly enhance the harmonization process among all member states.

Southern African Development Community

SADC agreements related to variety release and registration include the MOU on the SADC HSRS and the Variety Catalogue and Variety Database lists (Kuhlmann, 2015 forthcoming). Alignment with the HSRS does not require a complete overhaul of existing legislation, but some aspects, including those related to regional variety release and registration and procedures for conducting trials, may require changes in national law. The SADC HSRS also covers certification, quality assurance, plant quarantine, and phytosanitary measures, all of which are discussed in subsequent chapters.

According to the HSRS, a variety registered in two SADC member countries will be eligible for entry into the regional Variety Catalogue and can access the markets of the other member countries, absent objection from the receiving state. The SADC regional variety release process allows for an exception that provides that a country may reject the approved variety if agro-ecological conditions are not suitable for that particular variety. Once seed is entered into the SADC regional Variety Catalogue, there are no restrictions on the sale of the seed in SADC member states. Since this process has not yet been tested out in practice, in contrast to the expedited variety release and registration process in the EAC, it is unclear how these regulations will work in practice.

Notably, all members of the EAC except Tanzania are also members of COMESA, which has adopted (but also not yet implemented) a regional variety release process that largely

² The exact language reads: "The application for NPT test shall be supported with the following: (a) a minimum of two recent previous seasons advanced yield trial data from not less than three recognized testing sites in Tanzania or any other country which is in agreement for harmonization of seeds policy and legislations with Tanzania...."

mirrors SADC's process. The SADC regional variety release process is notably different than the EASCOM/ASARECA agreement; however, so questions will likely arise as these regional initiatives are implemented to a greater degree.

Tanzania has not yet implemented the SADC HSRS, and there is uncertainty on both the part of the government and private sector as to how implementation of the SADC MOU might progress. Some seed companies have expressed concern about the implementation of the SADC variety registration measures, since many SADC countries have very different climates than Tanzania. Concerns have been expressed that some regional seed varieties may not perform well in Tanzania, but most stakeholders interviewed recognize the important potential of the harmonized variety release rules in enabling quick and simple access to improved varieties.

Despite the endorsement of the HSRS at the political level within SADC, the technical and financial resources needed to begin implementing the HSRS at the national level do not yet exist. To begin to develop a process for implementation, the SADC Ministers plan to meet with regulators to discuss how to operationalize the agreement. Bringing the voice of the private sector into these discussions could increase understanding of the MOU and how it might best be implemented as well as increase transparency around the regional variety release process and help to bring improved seeds to the market more efficiently.

Table 5: Variety Release Framework and Implementation Challenges

Legal and Regulatory Framework	Implementation Challenges
<i>Tanzanian National Framework</i>	
Variety Release and Registration Process Established under the Seeds Act, 2003 (as amended) and Seeds Regulations; Finance Act and Division of Revenue Act for budgetary aspects Additional amendments to the Seeds Act and Regulations under discussion	<ul style="list-style-type: none"> ✓ Need for systems audit of variety release and registration process. Process has been shortened, but multiple steps remain that, if addressed, could streamline variety release and registration, including overlapping review of test data (four separate processes to check data before variety can be approved) ✓ NPT-TC, NVRC, and National Seeds Committee intend to meet once a year, but this is cited as too infrequent and meetings may be postponed due to lack of funding, adding time and uncertainty

	<p>to the process</p> <ul style="list-style-type: none"> ✓ TOSCI would benefit from increased capacity and budget to fully implement variety release and registration process and track and control use of samples of seed supplied for reference purposes in variety release process; there is concern about germplasm and samples that go missing ✓ Tanzanian Variety Catalogue reportedly not updated regularly and not always easily accessible to seed companies, farmers, and agro-dealers ✓ Across inputs value chains, stakeholders' awareness of their legal rights is very limited, and legal and regulatory processes may not be well understood or accessible for women and rural poor ✓ Capacity building of law enforcement actors (inspectors, legal officers, prosecutors, and magistrates) is necessary ✓ Need to translate law and regulations into simple language that can be understood properly by farmers and other stakeholders ✓ Need to develop guidelines for the private sector to ensure internal quality compliance
<i>Regional Frameworks</i>	
EASCOM/ASARECA Agreement allows that any variety registered in one country's variety catalogue may be released and registered in another following one season of domestic VCU/NPT testing if sufficient and appropriate test data is provided	<ul style="list-style-type: none"> ✓ Full regional variety catalogue does not yet exist ✓ Differences between ASARECA/ECAPAPA expedited release process and SADC regional variety release (ASARECA requires one season of NPT for verification; SADC provides for entry in regional variety catalogue if process for variety release and

	<p>registration has been completed in two countries); regulation under discussion to clarify process in both</p> <ul style="list-style-type: none"> ✓ Test cases could be done to establish and highlight best practices (e.g. seed potato regional variety registration under ASARECA/ECAPAPA) ✓ EAC directive issued to establish formal EAC variety release process; likely that this will track with ASARECA/ECAPAPA process but differences may arise that require further action
SADC Harmonized Seed Regulatory System (HSRS) allows for entry in regional variety catalogue if a variety has been registered through the national process in two SADC member countries	<ul style="list-style-type: none"> ✓ SADC system not immediately binding and would have to be domesticated (put into effect through national law) in order to become effective, even though this is not mandatory with a SADC MOU ✓ Variety released and registered in two SADC countries should be eligible for registration in third country if no objections raised, but no clear process for implementing this new regional standard yet exists ✓ Differences between ASARECA/ECAPAPA expedited release process and SADC regional variety release (ASARECA requires one season of NPT for verification; SADC provides for entry in regional variety catalogue if process for variety release and registration has been completed in two countries); regulation under discussion to clarify process in both ✓ Test cases could be done to establish and highlight best practices

Chapter 4

Plant Breeders' Rights

Intellectual property rights (IPR) frameworks for seed systems can shape decisions in plant breeding, basic seed production, and marketing of seed, impacting both the quality of seed available and access to that seed. The most common form of IPR for seeds is plant variety protection (PVP), also known as plant breeder's rights (PBRs). PVP/PBRs share some attributes with patents, but they are a different form of IPR that gives rights to a breeder of new plant variety, which is often cited as important for encouraging research and transfer of technology (Kuhlmann, 2013). The breeder's technology is often shared through a licensing agreement with appropriate royalty payments.

Anyone who breeds or discovers and develops a new variety in Tanzania may apply for plant breeders' rights for that variety, and Tanzania has PBR legislation in line with UPOV Convention of 1991, which sets it apart from many other countries in sub-Saharan Africa. There may be questions around the process of qualification, however, and increased regional trade may also give rise to other questions as harmonization of systems is implemented. Under the Tanzanian Plant Breeders' Rights Act, any seed variety can be protected as long as the variety is new, distinct, uniform, and stable. The duration of the right for annual crops is 20 years, with the possibility to renew for another five years. The rights for trees and vines last 25 years with the same renewal period available. Both are consistent with UPOV 1991. Protection can be extended by five years upon written notice to the Registrar given by the holder of the right six months before the expiration date of the grant.

PBR protection is required internationally by the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs). TRIPS does not say a great deal about PBR protection but stipulates that WTO members provide plant variety patents, an "effective" *sui generis* system (unique to PBR), or both. There is room for interpretation among countries on which form this protection will take, but most countries have opted for PBR legislation over patents. Least Developed Countries (LDCs) do have a longer period of transition to implement the TRIPS Agreement; this transition period has been extended several times and now extends to July 1, 2021. Tanzania, however, is ahead of other LDCs in implementing the PBR protection called for under TRIPS.

Specific IP for seeds and plant varietals is covered by UPOV, the intergovernmental organization to which Tanzania gained membership in November 2015 that establishes intellectual property protection for plant breeders (UPOV currently has over 70 country

members) (Ngwediagi, 2010). UPOV is not self-executing but provides a framework for countries to follow through national legislation. Most countries do follow UPOV's standards and pass domestic legislation to implement PBRs (Kuhlmann, 2013). Tanzania approved PBR legislation in 2012 that conforms to UPOV 1991 and has secured full UPOV membership. UPOV membership is a step forward in implementing Tanzania's New Alliance Commitments.

IPR is also the subject of a number of other multilateral, regional, and bilateral trade bodies, including the African Regional Intellectual Property Organization (ARIPO), the World Intellectual Property Organization (WIPO), and other United Nations bodies such as the World Health Organization and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Application Process for Plant Breeders' Rights

The Plant Breeders' Rights Act of 2012 covers plant breeders' rights in Tanzania. The original 2002 PBR Act (The Protection of New Plant Varieties (Plant Breeders' Rights) Act) was repealed through enactment of the new PBR Act, which became operational in 2013. No new regulations have been published under the 2012 Act; however, the 2008 Protection of New Plant Varieties (Plant Breeders' Rights) Regulations to the 2002 Act remain in force (PBR Regulations). The PBR Regulations could cause some confusion, however, as there are instances where the PBR Regulations refer to sections in the old version of the PBR Act (the 2002 PBR Act) that do not correlate to the same section in the new 2012 PBR Act. There are also places in which the PBR Act sets out certain requirements or steps and the PBR Regulations set out different requirements for the same procedure, such as inspections of the PBR Register. While the PBR Act takes precedence over the PBR Regulations, these procedures will become more easily understandable as soon as new PBR Regulations have been published.

Under the PBR Act and PBR Regulations, the primary regulator for plant breeders' rights in Tanzania is **the Plant Breeders' Rights Office** (Section 28 (2); see Figure 4, below). The Plant Breeders' Rights (PBR) Office is established under the PBR Act and has responsibility over:

- Granting plant breeders' rights;
- Maintaining a register and providing information on plant breeders' rights issued in Tanzania;
- Facilitating transfer and licensing of plant breeders' rights;
- Collaborating with local and international bodies whose functions relate to plant breeders' rights matters; and

- Additional responsibilities such as acting as Secretary to the PBR Development Fund (Section 46 (4) (a)).

The **Registrar at the Plant Breeders' Rights Office** receives and examines PBR applications, issues PBR certificates, issues provisional and final PBR protection, manages assignments of PBRs and compulsory licenses, and deals with PBR infringements. **TOSCI**'s role is to conduct the DUS tests, at the request of the PBR Office, on the sample submitted with the application, whereby the PBR Office submits the results to the PBR Advisory Committee for review. The PBR Law establishes that DUS test results may come from institutions other than TOSCI, and testing data can also be purchased. These best practices aspects of the PBR Law could have application for other areas of regulation along the seed value chain.

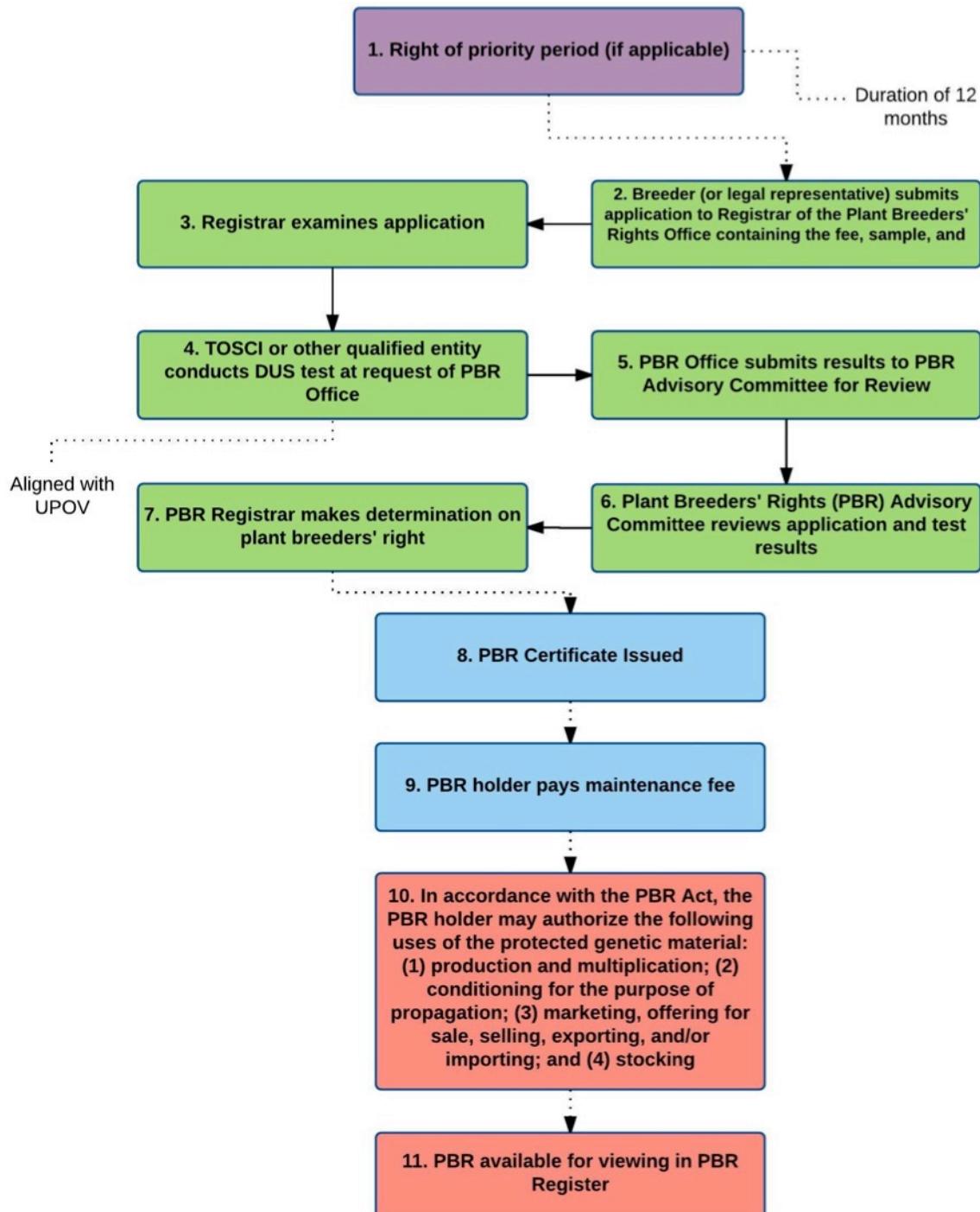
The **PBR Advisory Committee**, which was formed in 2005 to advise on effective enforcement of the PBR Act, advises the Registrar on grant of PBR after it reviews the application and test results. Under Section 28 (5) of the 2012 PBR Act, the Registrar is entitled to grant plant breeders' rights. The PBR Committee also manages the operations of the Plant Breeders' Rights Development Fund.

The PBR application process is shorter than regulatory processes arising at other stages in the seed value chain, but it can still be somewhat complex to navigate. The application must contain a fee, sample of untreated viable seed of quality determined by the Registrar, and appropriate denomination which is unique and which makes the IPR clear to anyone who markets the variety. The 2008 PBR Regulations contain the application process (Form PBR 1 in the Second Schedule of the 2008 PBR Regulations). The prescribed fee according to the PBR Regulations is US \$200. For vegetatively propagated crops, the application must be accompanied by a sample in an approved depository gene bank or a certification that a plot of vegetative material has been established in an approved depository and will be maintained for the required period.

Cross-border issues are inherent in securing plant breeders' rights. The PBR application must clearly state whether priority is being claimed as result of a preceding application made by the applicant in a country that has entered into a bilateral or multilateral agreement with Tanzania for the mutual recognition and protection of PBRs. Any breeder who has filed an application for protection in one of the other members of an international organization dealing with plant breeders' rights will enjoy a right of priority in Tanzania for a maximum period of twelve months (if the priority of the first application is claimed within twelve months). Within two years after the expiration of the period of priority, or within a period of six months when the first application is rejected or withdrawn, the applicant is allowed to furnish to the Registrar any necessary information, document, or

material required for the purpose of the examination. The regional aspect of PBR is discussed in greater detail below. The process for registering plant breeders' rights in Tanzania is summarized in Figure 4.

Figure 4: Plant Breeders' Rights Regulatory Process



Source: New Markets Lab, 2015

Issues also arise if the breeder is not a resident of Tanzania. The PBR application must also state whether the breeder or a legal representative of the breeder sold or concurred in the sale of the plant variety within or outside of Tanzania, as well as the date of the sale. If the breeder is not a resident of Tanzania or, in the case of a corporation, does not have its registered office in Tanzania, he or she must have an agent residing in Tanzania, and any application must be submitted through the agent. The Registrar will only recognize an agent if such person is authorized to act as an agent on Form PBR III in the Third Schedule of the 2008 PBR Regulations, is of good reputation, has suitable qualifications and adequate experience, and is capable of representing a person applying for the grant of a PBR or the holder of such rights and to further the interest of such person or holder. When application is made by an assignee or successor in title of the breeder, it needs to be accompanied by the original or certified copies of the deed of assignment, deed of grant of letters of administration, or other evidence to establish title (Form PBR II in the Third Schedule to the PBR Regulations).

The 2008 PBR Regulations do not give any guidance on the meaning of “good reputation” or “adequate experience” for purposes of establishing agency under the PBR Act. Under UPOV’s requirements, a representative who is licensed to commercialize the variety may perform this service, and it will be important to ensure that Tanzania’s Regulations when amended are clearly in line with UPOV.

As a first step in the PBR process, the Registrar publishes every filed application in the *Gazette* and must do so within 60 days of the filing date (the date on which the Registrar received the application; PBR Regulations, 2008). Within ten days of receipt of application, the Registrar will notify the applicant of the status of the application; if there is any deficiency, the applicant must correct it within 30 days, otherwise the application will be considered abandoned. The Registrar may reject an application if it is made under similar circumstances and on the same subject within one month of a previous application upon which the Registrar took a decision.

Any person wishing to object may do so to the Registrar within two months. In the case of an objection, the Registrar will provide the applicant with a copy of the objection within two weeks, and the applicant will be given a chance to respond to the objection (within one month or an extended period if the Registrar allows it; PBR Act, 2012).

Once the notice and objection time limits have expired, the Registrar will examine the application and then authorize the necessary testing to be carried out. At this stage, the Registrar submits the samples of the variety to TOSCI to undergo DUS testing. The PBR Act also allows for recognized testing conducted by the breeder or another competent

institution to suffice rather than only DUS tests conducted by TOSCI. Applying this “best practice” from the PBR process could encourage similar flexibility in other procedures in the seed regulatory process, such as variety release and registration or certification, and could help reduce the cost and time incurred by both companies and regulators.

If the Registrar concludes that the application conforms to the requirements of the PBR Act and no objection has been filed (or there are no grounds for an objection or failure to state an impediment to the granting of the breeder’s right for the variety), then the Registrar will submit the application and DUS test results to the Plant Breeders’ Rights Advisory Committee (PBRAC) for consideration and advice to the Registrar. The applicant has the right to appeal if his or her application is rejected. Once an application is approved, the Registrar will issue a certificate of registration, enter the variety in the register, and publish a notice of the grant of the breeder’s right and the approved denomination in the *Gazette*. The information contained in the Register includes the species and denomination of the variety, the full name and address of the applicant or holder of the PBR, as well as the person who bred or discovered and developed the variety in case such a person is different from the holder of the PBR. The holder of the PBR is required to pay an annual maintenance fee of US \$200 per the 2008 PBR Regulations.

While there are transparency measures in the PBR process, the new set of PRB Regulations, which are at an advanced stage, will increase transparency in the process and fully implement the 2012 PBR Act. For example, the 2012 PBR Act stipulates that the PBR Register will be open for inspection by any member of the public at all convenient times during business hours and that a certified copy of any entry in the Register will be given upon request and payment of the prescribed fee. This stipulation is an improvement on the 2008 Regulations, which provide that to inspect the Register a written request has to be made to the Registrar indicating the information required upon inspection and the purpose for the intended inspection. Under the 2008 Regulations, the Registrar has discretion to determine which parts of the register should be open for public inspection. In this case the Act ought to prevail.

All PBRs must be given a denomination which is unique and which makes the IPR clear to anyone who markets the variety, yet these provisions are somewhat unclear within the existing Tanzania system, due to the fact that new regulations have yet to be issued under the amended PBR Act. More specifically, Section 20 of the PBR Act provides that every variety must be designated by a denomination with a generic description, and Section 20(2) sets out requirements for the denomination. Regulation 17 (of 2002), however, sets out certain conflicting requirements. Here it is important to note that the current regulations are not yet UPOV compliant; with new regulations under discussion, the requirements of the 2012 PBR Act will prevail.

According to the 2012 PBR Act, where a variety is already protected by a member of an international organization dealing with PBR to which Tanzania is a party, or an application for the protection of the same variety is filed in a member country of such an organization, the variety denomination which has been proposed or registered shall be submitted by the applicant to the Registrar.

Once a PBR is granted (subject to limitations and conditions set out in the PBR Act), the following activities using propagating material of the protected variety can be undertaken with the authorization of the holder of the right: production and reproduction (multiplication), conditioning for the purpose of propagation, offering for sale, selling or marketing, exporting, importing, and stocking for any of the above mentioned purposes.

The PBR Act also establishes a Plant Breeders' Rights Development Fund (PBR Fund), and all money collected under the PBR Act goes towards the PBR Fund. The PBR Fund was created to cover the financing of development and promotion of plant breeders' rights, training of plant breeders on matters concerned with plant breeders' rights, establishment and maintenance of the variety collections and database, and such other activities relating to the administration of the PBR Act.

Enforcement of IPR is challenging and will become more and more important as markets move faster and technology continues to evolve (Kuhlmann, 2013). Plant breeders' rights are protected by both civil and criminal measures, and the effectiveness of these adjudication systems will have a direct impact on the validity of PBRs. The holder of a PBR may bring a suit against any person who infringes the PBR in any court with jurisdiction, which may grant an injunction, damages, or both, as well as costs of the action. Where Tanzania is party to a bilateral or multilateral agreement for the mutual recognition and protection of PBRs, these provisions will also apply.

Licensing

While PBRs provide the basis for technology transfer, this transfer is not always easy to facilitate, and more widespread licensing of public varieties is needed. In Tanzania, it has reportedly been particularly difficult for private companies to license breeding material directly from the ARIs without having to rely on ASA as an intermediary. To address this challenge, in 2011 MAFC released a Circular on Licensing of Protected Varieties of Plants (Circular) that is intended to give private companies direct access to the material (variety) from the ARIs through licensing agreements. The Circular is implemented through the Public Procurement Act, which provides for notice and publication of public tenders.

Prior to 2011, the private sector was not permitted to produce basic seed of public varieties, which meant that commercial demand was not always sufficiently being met by the quantity (and variety) of basic seed in the market. Previously, the ARIs had produced pre-basic (breeder) seed, which was then provided to ASA to produce basic seed, hopefully in accordance with the quantities required by the private sector. However, ASA's ability to accurately determine demand has been cited as a pervasive problem, and better collection and exchange of data, along with more effective licensing models, will be needed to facilitate more effective interaction between the public and private sectors.

The rationale behind the Circular was that by allowing the private sector to access pre-basic seed directly from the ARIs, companies could develop and multiply seed in a way that is better reflective of market demand. In practice, however, the Circular has had limited effectiveness due to the conditions for its application (USAID, 2013), although knowledge of the Circular, which has not been in place for long, has also perhaps been a factor in its use. Thus far, there have been two tenders under the Circular, the first of which was reportedly not well publicized and was printed only in one newspaper. That tender remained open for only two weeks. Only two seed companies applied, and only three varieties were licensed. Only four companies participated in the second tender. The same concerns that arose during the first tender process were raised again by companies during the second tender process.

The bar for qualification under the Circular is also quite high, and companies have expressed reluctance to attempt to meet the Circular's requirements. Defining demand itself has been difficult due to inadequate data. Exclusive licenses are possible but require seed companies to fulfill 80 percent of the demand in the region, while non-exclusive licenses require seed companies to fulfill 50 percent of the region's demand. For either type of license, the government receives 1.5 percent royalty from the company. The royalty payments can cause the price of seed to increase, although these increases are reportedly very small.

Although the requirements for the tender process and conditions of the license comply with the Public Procurement Act of 2011, there may be ways to improve the Circular so that companies can better take advantage of its provisions. A review of the Circular is currently being conducted by the MAFC's Director of Research and Development, under oversight by the PBR Office. In November 2015, two stakeholder meetings were held in which the PBR Office shared updates to the Circular and the private sector was given an opportunity to provide input. Various suggestions were put forward by stakeholders, including a request that the conditions be removed that require 50 and 80 percent of demand to be fulfilled given the uncertainty as to whether this condition can be met, in particular because of the lack of verified data regarding demand in a given region. All of the

recommendations provided by the private sector were accepted by the MAFC, with the exception of the removal of the 50 and 80 percent demand conditions. It was, however, agreed that the MAFC would clarify the language used in describing these conditions.

Best practices in authorization of public varieties do exist and could be more carefully studied alongside discussion on revisions to the Circular. Some of these elements are being addressed through initiatives such as USAID's SERA project.

Regional PBR Efforts

Mutual recognition and protection of PBRs through regional frameworks can enable much greater efficiency in the PBR process. Under UPOV, bilateral or regional agreements can allow one UPOV member to conduct DUS testing on behalf of another. This mutual recognition may be especially important where local technical expertise is lacking. Bilateral and regional agreements can also allow for mutual recognition of DUS test reports, whereby members mutually accept others' technical reports, thus avoiding duplication of tests.

Regional harmonization efforts for PVP in Africa are in a relatively early stage but are on the rise. Proposals regarding PVP regional harmonization were first made in 2000 through the ASARECA seed agreement, and PVP is one of the specific focus areas of the ASARECA project and the ECAPAPA Pilot Project. These initiatives require changes in national legislation in consultation with the Committee on Agriculture and Food Security of the EAC. This includes the agreement that each country would establish national PVP laws based on UPOV 1991, which would protect plant breeders' rights within the country and regionally. Under ASARECA/ECAPAPA countries also agreed that a regional plant breeder's rights committee would be established under the EAC Secretariat (ECAPAPA Policy Brief, 2003). While the membership of ASERECA has increased, a large number of ASERECA countries have not implemented their required PVP national legislation, but Tanzania notably stands apart in this regard.

Regional efforts are also underway within both the African Regional Intellectual Property Office (ARIPO) and SADC. The ARIPO Protocol for the Protection of New Varieties of Plants was adopted in July 2015, while the SADC Draft Protocol for the Protection of New Varieties of Plants is still in draft format. Tanzania belongs to both of these organizations and has participated in these regional PVP initiatives. Tanzania became a member of UPOV in November 2015, and is one of the few SADC member countries that conforms to UPOV 1991.

The ARIPO Protocol for the Protection of New Varieties of Plants was adopted by the Diplomatic Conference that was held in Arusha on July 6, 2015 and will be known as the Arusha Protocol for the Protection of New Varieties of Plants (Arusha Protocol). SADC concluded the Draft Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights) in November 2012 and is still in the process of engaging stakeholders. Both the ARIPO and SADC Protocols provide for mutual recognition and protection of PBRs, and both will align with UPOV 1991, albeit to varying degrees. While the draft ARIPO PVP Protocol was accepted by UPOV, the Arusha Protocol that was adopted contained material changes, which preclude full compliance. Most notably, UPOV is a unitary system, under which PVP must be granted for an entire territory. While territorial coverage consistent with UPOV has been discussed through the regional initiatives, as these regional systems have taken shape differences among countries have shifted focus from a territorial system to a national system with separate PBR protections. Although this will prevent organizations like ARIPO from becoming UPOV members, it does still highlight regional progress towards recognition of the UPOV framework.

There is also controversy around how the practice of saving seeds will be treated under these new frameworks, and approaches have arisen for bridging this gap. Farmers' practices of saving seeds are recognized under the International Treaty on Plant Genetic Resources for Food and Agriculture, which Tanzania has adopted and is in the process of domesticating through national legislation. At the same time, clearer plant breeders' rights are critical to ensuring the availability of improved seed in the market, to the benefit of both farmers and overall food security. UPOV 1991 provides for an optional exception that permits farmers to save and reuse seed of a protected variety on their own farm "within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder." This differentiated approach recognizes farmers' privilege (as contained in UPOV Article 15.2) and the private and non-commercial use exemption (contained in UPOV Art 15.1.i). UPOV recently published guidelines that state: "UPOV Contracting Parties have the flexibility to consider, where the legitimate interests of the breeders are not significantly affected, in the occasional case of propagating material of protected varieties, allowing subsistence farmers to exchange this against other vital goods within the local community." This statement is an important indication that the UPOV Council is willing to accept an inclusive interpretation of the private and noncommercial use exemption (De Jonge, Louwaars, Kinderlerer, 2015).

Both the Arusha Protocol and SADC draft contain a farmers' privilege comparable to those found in UPOV 1991, although these drafts employ different strategies. The Arusha Protocol only provides a farmer's privilege for specific agricultural crops and vegetables with a history of seed saving, which will be noted by the ARIPO Administrative Council. The SADC draft uses the term "subsistence farmers" to designate a specific category of farmers

who alone are the beneficiary of the farmers' privilege. Several countries have incorporated a broader farmers' privilege in their PBR legislation that allows for seed exchange and trade on a local scale (De Jonge, 2014).

The Tanzanian 2012 PBR Act similarly provides for a list of agricultural crops specified by the Minister for which 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)." "Reasonable limits" and the means of safeguarding the legitimate interests of the holder of the breeders' right shall be specified in the PBR Regulations, but the existing 2008 PBR Regulations do not give any specific guidance in this regard.

Table 6: Plant Breeders' Rights Framework and Implementation Challenges

Legal and Regulatory Framework	Implementation Challenges
<i>Tanzanian National Framework</i>	
<p>The Plant Breeders' Rights Act of 2012 (2012 PBR Act), and 2008 Plant Breeders' Rights Regulations</p> <ul style="list-style-type: none"> ✓ Regulations required under the 2012 PBR Act; currently the 2008 PBR Regulations are in force, but don't always correlate with the new 2012 PBR Act <p>Ministerial Circular on Licensing of Protected Varieties of Plants</p> <ul style="list-style-type: none"> ✓ Ministerial Circular under review 	<ul style="list-style-type: none"> ✓ New regulations needed that correlate to the 2012 PBR Act; for instance, PBR Regulations need to specify the "means of safeguarding the legitimate interests of the holder of the breeder's right," as required by the 2012 PBR Act ✓ Private sector access to protected public genetic material is limited, and the 2011 Circular on Licensing of Protected Varieties of Plants is still difficult for companies to navigate: tenders not well publicized, publication period too short, and conditions too difficult to meet ✓ Best practices in PBR system could inform other aspects of seed regulation (e.g. allowing other qualified entities to conduct DUS testing) ✓ Currently, most protected varieties are public bred varieties; hence there is a need to promote private sector utilization of the system. Strengthening

	<p>the Plant Breeders Rights Association of Tanzania (PBAT) could enhance private sector participation.</p> <ul style="list-style-type: none"> ✓ Across inputs value chains, stakeholders' awareness of their legal rights is very limited, and legal and regulatory processes may not be well understood or accessible for women and rural poor ✓ Capacity building of law enforcement actors (inspectors, legal officers, prosecutors, and magistrates) is necessary ✓ Need to translate law and regulations into simple language that can be understood properly by farmers and other stakeholders
<i>International and Regional Frameworks</i>	
1991 Act of the UPOV Convention (UPOV is not self-executing and requires national level execution); Tanzania provides PBR protection for terms consistent with the 1991 UPOV Act and became a member of UPOV in November 2015	<ul style="list-style-type: none"> ✓ Important to ensure clear consistency with UPOV 1991 as Tanzania's Regulations are amended (e.g. provisions on who may act as an agent) ✓ Clearer definition for farmers' privilege (as contained in UPOV Article 15.2) and the private and non-commercial use exemption needed ✓ Clear language regarding farmers' rights (and interaction with PBRs) in national legislation domesticating the International Treaty on Plant Genetic Resources for Food and Agriculture
Arusha Protocol (ARIPO) <ul style="list-style-type: none"> ✓ Arusha Protocol aligns with UPOV to a large extent 	<ul style="list-style-type: none"> ✓ The Administrative Council of ARIPO will have to make the necessary implementing regulations in order to ensure efficient implementation of the Protocol ✓ Most member states of ARIPO do not have national PVP legislation that is UPOV 1991 compliant ✓ Tanzania has successfully achieve UPOV

	<p>membership and established a PVP legislative framework consistent with UPOV 1991, but greater regional cooperation is required</p>
EAC (ASARECA/ECAPAPA Agreements)	<ul style="list-style-type: none"> ✓ ASARECA/ECAPAPA Agreements provide for establishing PVP legislation in ASARECA Member States; not all ASARECA member states have PVP legislation that is UPOV 1991 compliant ✓ Tanzania has successfully achieved UPOV membership and established a PVP legislative framework consistent with UPOV 1991, but greater regional cooperation is required
SADC Draft Protocol for the Protection of New Varieties of Plants (Plant Breeders' Rights), 2014	<ul style="list-style-type: none"> ✓ Requires harmonization and cooperation between SADC Member States ✓ Most members of SADC do not have national PVP legislation that is UPOV 1991 compliant ✓ Tanzania has successfully achieved UPOV membership and established a PVP legislative framework consistent with UPOV 1991, but greater regional cooperation is required ✓ From Civil Society Organizations (CSOs), there are concerns that the Draft Protocol should take into account farmers' and community rights. This concern may prompt the region to develop a separate legal framework for farmers' rights within the framework of the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (FAO- ITPGRFA)

Chapter 5

Seed Certification and Quality Control

Tanzania, like many of its neighbors, maintains a centralized seed certification process to verify the quality and value of seed to the user. The ease with which certified seed can be produced has a significant impact on the supply of high-quality seed in the market and accessibility to farmers. In addition to centralized certification, different types of seed certification schemes exist, with different roles for the public and private sectors. While some seed certification schemes are heavily centralized within governments, others allow for quality declarations without such a heavy process (such as QDS) and others shift the burden of verifying seed quality to the seed producer or seller entirely (such as “truth in labeling” schemes) (Kuhlmann, 2013).

In Tanzania, the government certifies seed before it can be sold in the market. Standards exist for grain crops, but standards for vegetatively propagated crops like potatoes and cassava are under development (McEwan, 2015). The Tanzanian process for seed certification can reportedly be lengthy and complex, which is in part due to the growing demand for certified seed and the current capacity of certification services. It is estimated that the current supply of certified seed satisfies only 25 percent of demand (USAID, 2013). Some of these challenges are being bypassed by importing seed, but this is not a long-term solution, and a workable certification process is critical. Overall, seed companies have highlighted that this is an area that deserves attention, calling for clear processes for certifying private seed inspectors and for increases in capacity for TOSCI, where the numbers of inspectors and vehicles have not increased at the same rate as demand.

Unless a company develops its own registered variety, it is difficult to obtain basic seed from public varieties needed to produce certified seed. As discussed above, ASA has developed certified seed from ARI varieties, but this is increasingly considered a function of private seed companies. By shifting away from seed production, ASA could turn its attention to developing “infant” or “underutilized” crops and creating a stronger commercial market that could attract the private sector. This shift is already happening for some varieties, including rice as noted above.

The supply and demand of high-quality seed is a critical issue, and the enabling environment plays a direct role. The steps in the certification process, including monitoring trial sites and conducting seed tests, can reportedly be costly and time-consuming and are often not well understood. TOSCI’s mandate for seed testing and field inspection alone requires sufficient staff and equipment to carry out its responsibilities. When resources are stretched too thinly, it negatively affects the ability of inspectors to conduct field visits and

retrieve accurate data. TOSCI has worked to increase its staff and is authorized to build new centers in several key regions of the country. These efforts will likely boost TOSCI's capacity to carry out its duties and strengthen its relationship with the private sector. Given TOSCI's central role along the seed value chain, a different disbursement process and increased funding could increase the agency's effectiveness and reach, allowing it to better meet market demand and address other issues, such as counterfeit seed. Some seed companies wish to see a revolving fund develop for TOSCI, which would allow TOSCI to use the money from its crop inspections to cover organizational needs.

Seed Classes in Tanzania

Tanzania already follows OECD seed schemes to a large extent and is in the process of becoming fully OECD-compliant. Tanzania has four seed classes that follow the OECD recognized classes: pre-basic seed, basic seed, certified one, and certified two. These are established under Part IV of the Seeds Regulations.³ Seed packaging must clearly show the seed class. Seed classes differ in multiplication rates, characteristics, and use. Pre-basic seed is derived from breeder seed and yields low multiplication rates but retains the characteristics of the germplasm well. Basic seed is derived from pre-basic seed and has a slightly higher multiplication rate, but its characteristics are not retained as well. Certified seed, which is the typical seed class that is sold commercially, is developed from basic seed and can be multiplied in high enough quantities that it may be sold commercially. Certified two seed is derived from certified one seed and has a lower germination rate. Tanzania only recognizes seed classes up to certified two, but other countries may recognize additional classes of certified seed, e.g., certified three or four, although some of these additional seed classes are being phased out with regional seed harmonization initiatives.⁴ SADC also recognizes QDS as a seed class, but Tanzania does not.

The benefits to using high-quality seed can be seen throughout the seed value chain (See Box 2). Roughly five percent of the total cultivated area in Tanzania is planted with certified seed, however, large variations exist among crops. Agro-dealers sell mainly maize- and rice-certified seed (ASARECA, 2014). For most other crops including grain, legumes, millets, cassava, and sweet potatoes, most farmers rely on informal sources for their seed (ASARECA, 2014). Some of these crops (mainly VPCs) are part of QDS schemes, which

³ Government Notice No. 37, published on 9/2/2007.

⁴ Kenya currently has eight seed classes but is eliminating three (including certified three, certified four, and standard seed) to bring its system more closely in line with regional protocols.

provide a viable alternative quality control and assurance outside of centralized certification.

Box 2: Quality Seed and Value Addition

The Njombe Sunflower Seed Oil Processor's Experience

Although the use of improved seed can dramatically increase productivity (in some cases yields can more than double) and bring other tangible benefits as well, certified seed can be cost prohibitive or inaccessible for many smallholder farmers, such as sunflower producers in the Njombe region. Several factors contribute to the higher price and lack of availability of certified seed, but the legal and regulatory environment is one factor that can be addressed. Lack of knowledge of regulatory procedures or factors that can make these processes costly, time consuming, uncertain, and complex may drive up the cost of producing and selling certified seed. They also impact the supply of quality seed and limit the availability of certified seed in the market as well as the speed at which that seed enters the market.

Agro-dealers and processors in and around Njombe have both noted the quality difference in certified seed and have highlighted that quality certified seed is quite expensive for smallholders. As a result, many have stopped stocking certified sunflower seeds due to the lack of sustained demand. In Njombe, land plots are small and available plots are scarce, so many smallholders are unable to expand their land. Quality seed would help these farmers grow more on less land. Farmers are disadvantaged by the inaccessibility of quality sunflower seeds, which has repercussions along the entire value chain.



Throughout Tanzania and the region more broadly, sunflower seed oil is a popular alternative to traditional cooking oils, and the potential for oil in the local and regional markets is growing. However, sunflower seed oil processors do not always have access to quality sunflower seeds, which directly impacts the quality of the processed product. Tanzania has registered several certified varieties of sunflower seed that are distinct from the uncertified local varieties. The certified varieties are marked by one flower per stalk and have a less fibrous texture and darker color. In contrast, local sunflower varieties are characterized by multiple, smaller flower heads on a single stalk, and the seed derived from the sunflower heads is more fibrous and lighter in color than certified seed. Producers of sunflower seed oil prefer to use sunflower seed from certified varieties because it produces clearer, better-tasting sunflower oil. It is also more difficult and costly to process the lower-quality variety sunflower seeds with high fiber content. In addition to oil, processors also produce

sunflower cakes, which are used for animal feed. The cakes produced using certified seed are smoother and lighter in color (see photo insert) and tend to be more popular among farmers for feed purposes as well.

However, due to the lack of certified sunflower seeds in the region, Njombe-based sunflower seed oil processors are left with little option but to purchase local sunflower seed that is much more expensive and arduous to process, making their product more expensive and less marketable. To possibly address the situation, one sunflower seed oil producer suggested that agro-dealers could receive additional training, perhaps alongside the registration process agro-dealers must go through, on which varieties grow well. Better linking agro-dealers and farmers could also help. As a step forward, stakeholders consulted recommended an oilseeds platform, which would bring together seed producers, agro-dealers, and processors to assess demand, supply, and regulatory challenges in order to advance growth in the oilseeds value chain.

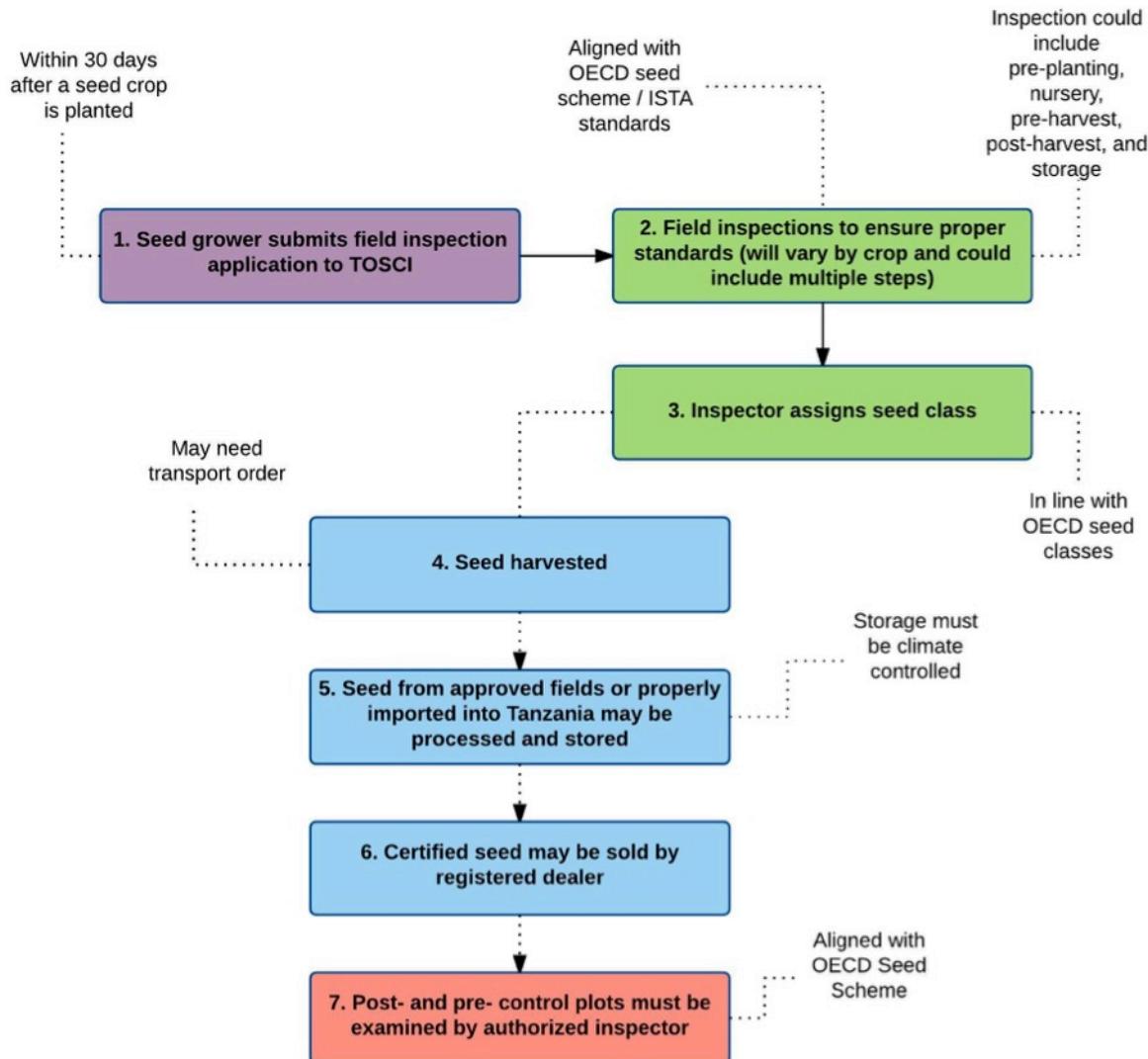
Seed Certification Process

Seed testing, processing or multiplication of seeds must occur in a registered laboratory, seed processing factory, or seed multiplication farm. While most companies report that the certification process is relatively straightforward compared to the variety release process, it can reportedly be an expensive process, and issues may arise. Some stakeholders have reported that the seed certification process can take two to three years depending upon how the numerous steps play out in practice. One organization suggested that because of the costs of production in Tanzania, some companies find it more profitable to produce seeds in another country and then import the seed, which is easier overall even given the process for importing seed. Overall, the seed certification process would benefit from a systems audit of the steps in the process, which would assist with streamlining the process and conducting effective benchmarking, as the New Alliance Commitments call for with regard to the process for variety release and registration.

The process for seed certification is depicted in Figure 5 below and is primarily described in sections 26 through 35 of the 2007 Seeds Regulations, which enumerate the steps for certification. Because of TOSCI's limited resources, companies cover many of the costs associated with certification, and many companies report that the process can be difficult to navigate and understand. The fees involved may be unpredictable. Some of the fees are part of the certification process itself and are not always fully detailed in the Seeds Regulations. Companies are often expected to pay for expenses such as copies of letters, per diems for inspectors, transportation costs for TOSCI staff and inspectors, paper for reports, samples, and sometimes fees that do not appear in the public fee schedule. One company

suggested that a matching fund be set up to jointly cover fees with TOSCI; while this alternative may bear the need for further discussion it does indicate that the fees in the process perhaps need to be better explained and evaluated as part of a systems audit.

Figure 5: Seed Certification Process



Source: New Markets Lab, 2015

Application and Inspection Process

Timing of the application process is critical. The seed grower or its agent must apply to TOSCI for a field inspection within thirty days after a seed crop is planted, or the application may be denied. The application must be accompanied with a fee of 3,000 TShs (Seeds Regulations, 2007).

After the application is accepted by TOSCI, the inspector will conduct field inspection/s to ensure that field standards are met. The field inspector can enter any part of the field, and

he or she may disqualify the field in whole or in part if there is a portion that does not meet the field standards. This stage will vary with the type of crop, and multiple steps can be imposed. Tanzania follows the OECD Schemes for the Varietal Certification or the Control of Seed Moving in International Trade (OECD Seed Schemes), which set international certification standards. Although the OECD standards have not always been implemented in practice, TOSCI has recently placed a stronger emphasis on them.

The minimum number of field inspections is crop-specific as specified in the 2007 Seeds Regulations, and some crops are subject to more steps in the certification process as noted in Table 2. Inspectors conduct field inspections and count plants, with a minimum as follows: "up to two hectares, five counts shall be used; and for each addition of two hectares up to fifty hectares, one more count shall be needed; beyond fifty hectares, one additional count shall be needed for every four hectares" (Seeds Regulations, 2007). The field inspection may include the pre-planting, nursery, pre-harvest, post-harvest, and storage stages, because the seed grower must observe the "recommended cultural practices at every stage of seed production for each unit of certification" (Seeds Regulations, 2007). The seed field inspections cost between 2,150 and 5,000 TShs, and the "minimum fee per field where the inspected total field is less than 10 hectares" is 20,000 TShs (Seeds Regulations, 2007). The seed inspection and sampling fees range from 1,500 to 2,000 TShs, and the "minimum fee for each lot inspected (maximum of 10 tons per lot)" is 10,000 TShs. Certified seed must meet certain germination, purity and moisture requirements, the testing for which ranges from five to 20 TShs.

Local governments exercise authority over inspectors, but the lack of direct interaction by TOSCI with inspectors can make it difficult for TOSCI to carry out its enforcement duties. As noted and elaborated in Chapter 8, the authorization of private inspectors by TOSCI to conduct testing could alleviate staff capacity issues and help TOSCI enhance its ability to enforce regulations.

In addition to OECD Seed Schemes, Tanzania also is a member of ISTA, which develops and publishes international rules for seed testing and certification, offers an accreditation program for laboratories, provides international seed analysis certificates and training, and promotes research in seed science and technology. Tanzania has aligned its laws and regulations to a large degree with both OECD and ISTA standards, as noted in assessment of the certification process, variety release and registration process, and cross-border trade. For some crops, TOSCI has collaborated with neighboring country agencies, primarily KEPHIS in Kenya to improve this alignment.

After each field inspection, the results are presented on a form, which is signed by the inspector and seed grower. If issues with noncompliance arise after any field inspection,

then the inspector may advise the seed grower and determine whether a re-inspection is needed, for which the grower would bear the cost.

After the field inspection, the inspector will assign the seed crop a class according to the standards of the seed and fill out a final inspection result form, signed by the field inspector and the grower. A grower may appeal the results of a field inspection within seven days after the results are issued to the Chief Seed Certification Officer. The Chief Seed Certification Officer will make a determination and issue a written decision within 14 days from the date he or she receives an appeal. If an appeal is accepted, the Chief Seed Certification Officer may issue a re-inspection of the field. In the event of a re-inspection, a senior inspector, breeder, and the seed grower will inspect the field. The seed grower will have to pay for the re-inspection but can be refunded for the re-inspection if the results indicate that the seed actually does conform to the appropriate standards (Seeds Regulations, 2007).

In Tanzania, post-control plots must follow the guidelines under the OECD Seed Schemes, and pre- and post-control plots are open for examination and assessment by any interested parties. The inspector will examine and assess the control plots and write a report based on his or her observations (Seeds Regulations, 2007).

Once certified seed is harvested or imported, it may be processed and stored. Seed processors must obtain a work order by notifying the Chief Seed Certification Officer before processing seed lots (Seeds Regulations, 2007). The processed seed must be properly marked and stored in separate, identifiable seed lots, and the facility must be properly climate controlled (Seeds Regulations, 2007). Only a registered dealer may then sell certified seed.

Approved Alternatives to Centrally Certified Seed: Quality Declared Seed

As discussed above, most seed sold in Tanzania is centrally certified. However, Tanzania also permits the sale of quality declared seed (QDS), or seeds that registered QDS farmers have endorsed as compliant with QDS quality standards. The Tanzanian Government adopted the QDS production system to complement the efforts of seed companies producing certified seeds in order to increase the accessibility and utilization of quality seed at community levels. Since QDS is also subject to inspection and certification, it is increasingly gaining prominence as a recognized channel for quality seed production and distribution in Tanzania, although stakeholders have noted various challenges that exist in the QDS system, particularly in enforcement. As a result, QDS helps address the gap between the formal and informal seed sectors by providing good quality seed at a more affordable price point compared to certified seed, ultimately preventing farmers from

buying cheaper, fake seed. Tanzanian farmers produce approximately 150-300 metric tons of QDS annually.

Since 2000/2001 the government of Tanzania has accepted the production of QDS by either individuals or farmer groups. As currently applied, QDS is a community-based (rather than nationwide) quality assurance program, whereby “seed produced by a registered smallholder [must] conform to the specified standards for crop species concerned and which has been subject to the quality control measures prescribed in the regulations” (Seeds Act, 2003). In 2003, Tanzania modified and adopted the Food and Agriculture Organization (FAO) QDS system (developed in 1993), which was incorporated into the formal seed system in the National Seeds Act of 2003 (CABI, 2014). QDS is therefore permitted under the 2003 Seeds Act but is not a recognized certified seed class in Tanzania, since it is not subject to the formal certification process. The Minister is responsible for issuing QDS regulations, and TOSCI is responsible for carrying out inspections.

Under the Tanzanian QDS system, only open-pollinated varieties that are on the official National Variety List can be produced under QDS, excluding F1 Hybrids. Any farmer who wishes to become a QDS dealer must submit an application for registration to TOSCI, a process separate from other types of registration. TOSCI must inspect a minimum of 10 percent of a district's registered total QDS production (Granqvist, 2009). Due to limited resources, TOSCI has delegated inspection tasks and sampling to the district agricultural offices to help meet the demand for inspection services (ASARECA, 2014). Village Extension Officers are trained in good seed production and are responsible for extension services in participating villages, while District Agricultural and Livestock Development Officers supervise inspectors and send reports to both TOSCI and the Ministry (CABI, 2014). This has had the positive impact of making inspection services more accessible to farmers in more remote areas and enabling farmers to grow in compliance with existing seed regulations.

If the authorized seed lot is approved, bags can be labeled as QDS, and the labeled seed may be sold. Although sales of QDS seed are limited to the administrative area in which the seed is produced, registration, control inspection, and seed lot test costs are relatively minimal compared to centralized certification (CABI, 2014). As a result, the QDS system provides a viable alternative for producing and selling quality seed, allowing for implementation of regulatory standards in a way that enables broader participation in the regulated seed value chain. QDS also ultimately leads to lower prices for farmers (ASARECA, 2014) and is often distributed through a variety of market channels. Local open market (Gulio), market centers, farmer groups, the DASPA Agri-Industry Corporation, and the Tanzania

Association of Women Leaders in Agriculture and Environment (TAWLAE), are all involved in the distribution of QDS seeds in Tanzania.

Although QDS regulations limit the marketing and distribution of QDS to the area in which it was produced, the QDS system serves as a powerful intermediary scheme between informal and formal certification systems in areas with limited resources. Expanding the accreditation process for seed inspectors and establishing a process to trace QDS in the market could perhaps expand the reach of QDS beyond limited administrative areas as well as provide a more regulated and controlled QDS system, allowing the benefits of QDS to be more far-reaching.

Packaging and Labeling

Seed generally must be packaged according to set standards, and repackaging requires approval of the Chief Seed Certification Officer. A number of stakeholders have cited issues with seed packaging. One challenge is that seed packages (unlike packaging for fertilizers or agrochemicals) are subject to the VAT, as noted above (USAID, 2013). Seed package labeling requirements also differ according to the type of seed; however, all require certain standard information such as the name and address of the dealer; month or year of germination (or sprouting) test; lot number; country of production if imported; and typically the seed class, variety name and plant species name (where applicable). Another challenge is that seed packaging is not well suited for the needs of most farmers, who often need only small (two kilo or less) packages.

Bags of processed seed must be correctly labeled in English and Swahili. Each seed class is assigned a color, and the seed class and color must be large enough to be read easily. Regionally traded seed is often assigned specific colors; for example, seed packages imported from an EAC member country are labeled in grey. Labels may not contain “incorrect or misleading information, mark or brand name that might be construed as a variety name” (Seeds Regulations, 2007). Each label also requires a description that includes the seed standard. If a package contains a blend of seed lot certified seed, then the label must also read “BLEND” and the seed year (Seeds Regulations, 2007). Despite these requirements, counterfeit seed is prevalent in Tanzania, and strong enforcement of labeling and packaging requirements could help address several of the underlying causal factors.

Certified seed must be labeled accordingly and can only be sold by registered seed dealers (farmers associations, for example, are not permitted to sell certified seed unless registered as seed dealers), and this designation carries certain responsibilities. Registered seed dealers are ultimately responsible for the quality of seed sold or offered for sale. Under the 2014 amendments to the Seeds Act, if seed is packaged, labeled, or presented for sale in

such a way that may be mistaken for a different class, then the person responsible for the seed must take steps to ensure the seed meets the proper packaging and labeling requirements for its actual seed class. Seed that is not properly packaged and labeled may not be sold in Tanzania. When the validity of germination test results expire, it is the responsibility of the seed dealer to contact an inspector for re-testing. The dealer may appoint a knowledgeable agent to maintain the quality of the seed in stock, as long as the agent must be a registered seed dealer (Seeds Regulations, 2007). Overall, improving enforcement of the requirements for proper packaging, labeling, and presentation for sale could help address the issue of counterfeit seed.

Labeling can be a significant aspect of the seed value chain, and it deserves greater focus as a result. In addition to the labeling issues discussed above, stakeholders raised the possibility of future challenges as the Tanzanian Bureau of Standards (TBS) becomes more involved in labeling, which could have implications for seed and other inputs.

Counterfeit Seed

Despite a strong system for quality control, counterfeit seed remains a pervasive problem in Tanzania. Tanzania struggles with a high level of fake seed in the market, and both public and private stakeholders acknowledge the seriousness and difficulty of this challenge. Estimates suggest that 25 to 30 percent of all seed on the market may be counterfeit (USAID, 2013). Companies have a vested interest in ensuring that farmers have access to higher-yielding certified seed, and the prevalence of counterfeit seed on the market can make it difficult to sell improved seed. Farmers that end up with fake seed incur a loss and cannot afford and/or may not trust to purchase certified seed the next year. Dealers in counterfeit seed take advantage of the fact that the demand for quality seeds surpasses the ability of researchers to produce them. Fake seeds dealers often operate by using names of brands that are trusted by farmers, and pack the fake seeds in bags bearing the logo of genuine seed companies (Tambwe, 2013).

One way to address counterfeit seed is through a better system of seed inspection. As noted above, TOSCI operates under a limited budget and is in charge of testing throughout a relatively large geographic area in Tanzania. To address some of TOSCI's challenges, which arise from minimal funds and staff, testing centers could be built in more strategic areas where the demand for inspection service is high and maximum outreach can be attained. Best practices in inspection service models could also be adopted. Overall, a system for quality control with effective traceability is needed, both for seeds and for fertilizer and agrochemicals.

Seed inspectors can issue a stop sale if they have reason to believe that the quality of seed violates the Seeds Law or Regulations or does not meet minimum quality standards. If an inspector has reasonable grounds to believe there is a violation of the Seeds Law, Regulations, or Orders, then he or she can seize, issue or stop sale of seeds or package related to the violation (Seeds Regulations, 2007). A seizure or stop sale must be lifted after three months or once compliance is resumed. Seized goods or a stopped sale order can remain in place beyond three months if proceedings have been instituted regarding the violation, but the order or seizure remains effective only through the end of the proceedings (Seeds Act, 2003). Detained seeds must have a proper detention mark affixed, and proper detention and forfeiture guidelines must be adhered to (Seeds Regulations, 2007).

Under the Plant Protection Act, an inspector may also seize illegally imported plants, and any importation not in accordance with the Plant Protection Act may be subject to penalties and fines. Misrepresentation in any manner for the purpose of obtaining registration of a plant protection substance should result in a fine of 10 to 100 million shillings, or imprisonment of up to three years, or both (Plant Protection Act, 1997). Further, any person who manufactures, compounds, imports, distributes, sells/offers to sell an unregistered plant protection substance will be penalized. The Minister may, however, allow for such action (the use of an unregistered plant) to continue for not more than 120 days if the delay in registering such a substance (due to the penalty) would result in dangerous effects on other plant products (Plant Protection Act, 1997).

Prior to the 2014 amendments to the Seeds Act, penalties for violations were too low to act as a deterrent. The fines were widely regarded as outdated and, as such, could not address the challenge of counterfeit seed on the market. The amendments to the Seeds Act addressed this issue by increasing the penalties for violations of the Seeds Act and Seeds Regulations. Violations related to seed dealer registration are now punishable by a fine between five million and ten million shillings, imprisonment for three to five years, or both (Amendments to the Seeds Act, 2014). However, this improvement will only be effective if consistently and stringently enforced.

Other countries in the region have struggled with counterfeit seed and are coming up with different methods for addressing the challenge. Kenya has recently allowed authorization under the 2012 Seeds and Plant Varieties Act (Amendment) of registered private seed inspectors and seed testing services to supplement the services offered by KEPHIS. While corresponding regulatory changes are still under development, since changes were made to the Kenyan law, private seed companies have ranked their satisfaction with the availability of inspection services at an average of 63.8 percent (The African Seed Access Index, 2015). KEPHIS now employs hundreds of staff, about 15 percent of whom are

involved in seed inspections. To ensure effectiveness and efficiency in service delivery, KEPHIS has dispatched inspectors to various sites, including all formal border points and international airports. In much the same way, private seed inspectors out in the field and at border points could help expand TOSCI's reach and better enable enforcement of regulations.

Tanzania is also applying an innovative "scratch card" approach to address the counterfeit seed challenge that could significantly contribute to the effective regulation of counterfeit seeds, fertilizers, and agrochemicals. Before buying a product, a consumer scratches a special security label to reveal a unique, one-use code. This code is then sent by SMS text to a secure number that is provided on the product package. Within seconds, the user is notified via SMS of the result. Verification can also be done using an app, by web, or using the company's call center to get results in local language.

While the causes of counterfeit seed are complex, effective implementation and enforcement of laws and regulations, especially those concerning seed packaging, labeling and trade, provide an opportunity to reduce the prevalence of fake seed while strengthening the overall enabling environment. Better implementation and enforcement of the seed regulatory system alone will not eliminate counterfeit seeds, however. Education is one aspect of addressing counterfeit seed, and, despite training programs for agro-dealers, many stakeholders continue to highlight that agro-dealers sometimes lack knowledge of the seed they are selling and at times cannot tell the difference between counterfeit seed and certified seed. Because of the responsibility the Seeds Regulations place on seed dealers to ensure quality of seed sold, additional training could help prevent the sale of counterfeit seed. Ultimately, a system-wide approach that brings together enforcement of rules with training and education for farmers and dealers on the distinction between quality seed and fake seed, along with development of an improved marketing information system, could make a significant impact in addressing the challenge of counterfeit seed (ASARECA, 2014). In China for example, the Ministry of Agriculture increased awareness through campaigns to combat and warn against fake seed, while also promoting the protection of IPR (Siyu, 2011). Practices such as these could be better studied and perhaps replicated in Tanzania.

Regional Seed Certification Initiatives

While almost all countries have developed their own certification standards, regional harmonization efforts on seed certification are still taking shape (OECD, 2014). Regional harmonization efforts based on internationally accepted best practices can lead to simpler, better-coordinated certification standards, if well implemented. Allowing for countries in a region to mutually accept certified seed would be a significant step in regional market

development (Gisselquist, 2001). Under a harmonized seed system, regional seed certification could allow for seed certified in one country to be available in other member countries, reducing redundancy in the process and encouraging private sector participation in seed production and trade.

Regional harmonization efforts tend to incorporate international seed certification standards into their harmonized seed rules. The OECD seed scheme, UPOV, and ISTA guidelines have all shaped African regional seed harmonization efforts and have formed the basis for some of the regional seed certification efforts discussed below (Kuhlmann SFSA, 2015). Adhering to these standards and formally joining these bodies, all of which are well underway, will both move Tanzania forward in implementation of the New Alliance Commitments and advance regional harmonization efforts. However, while adoption of OECD and ISTA standards can raise the level of quality assurance, many African countries struggle with the capacity to comply with these standards (Keyser, 2013), which creates challenges for both the countries that have signed onto international standards and those that are in the process of doing so. For example, the SADC Seed Certification and Quality Assurance System requires ISTA-certified laboratories in order to implement regional certification, but few member states have that capability (Zulu et al., 2014). Those countries that do have ISTA-certified labs may find that their trading partners refuse to recognize their lab test results, despite the fact that ISTA establishes common testing procedures and protocols. Countries also struggle with how to mutually recognize national regulatory processes, and trust among regulators is a significant issue.

Other quality assurance systems, such as QDS systems, can provide both cost-effective and efficient alternatives to centralized certification as discussed above, impacting a variety of crops. However, the rise of QDS standards can also give rise to questions in regional harmonization efforts. For example, Tanzania (a member of both SADC and the EAC) has established QDS alongside its centralized certification process through the Seeds Act of 2003, but not all of Tanzania's neighbors recognize QDS. Within East Africa, QDS is also allowed in Uganda, but it is not authorized in Kenya (CABI, 2014).

East African Community

In 2011, the EAC Secretariat issued a Call for a Concept Note that expressed the region's desire for expanding regional seed harmonization. This Note aimed to enhance the development of quality assurance systems with the full participation of stakeholders and develop better regulations for seed quality assurance, in line with regional frameworks and international standards (EAC Secretariat, June 2011).

The EAC Protocol on Standardization, Quality Assurance, Metrology, and Testing, together with the Standardization, Quality Assurance, Metrology, and Testing Act, set regional standards for varieties of certain crops (Kuhlmann, SFSA 2015). Through ASARECA/ECAPAPA, the EAC has agreed to harmonize certification standards covering at least 42 staple foods, including grains, pulses, edible oil, and tubers. Of these, 29 are in place, while 13 new standards are in the final draft stage and awaiting comment (Keyser, 2012). Uganda, Burundi, and Tanzania have also adopted shared seed certification standards for 10 crops (maize, sorghum, beans, groundnut, soybean, wheat, Irish potato, rice, sunflower, and cassava) based on the OECD seed scheme and UPOV and ISTA standards (Kuhlmann, SFSA 2015). The EAC is also in the process of establishing harmonized seed standards. The EAC has begun to draft harmonized standards for maize, sorghum, sunflower, soybeans, and groundnuts. Future work might be done on cassava, wheat, common beans, rice, and sesame commodities. (Minagri News, 2014). Out of the five EAC members, Kenya and Uganda fully participate in the OECD seed scheme, while Tanzania is aligning to the requirements under the OECD seed scheme. Kenya and Uganda have ISTA accredited laboratories, and Tanzania will soon join their ranks.

Southern Africa Development Community

Through the Memorandum of Understanding on the Harmonized Seed Regulatory System, SADC has also developed a framework for harmonization of regional certification standards, which are based on ISTA standards. As mentioned above, the SADC MOU does not carry the same legal weight as a Protocol (CALR, 2012). However, Tanzania has accepted the MOU and is looking ahead to the next stage of implementation. Under the SADC system, the SADC Project Management Unit (PMU) will coordinate the SADC Seed Certification and Quality Assurance System. South Africa is currently the only SADC member that fully participates in the OECD Seed Scheme, although Zimbabwe participates informally. South Africa, Zimbabwe, Zambia, and Malawi all have ISTA accredited laboratories.

Table 7: Certification and Quality Control Framework and Implementation Challenges

Legal and Regulatory Framework	Implementation Challenges
<i>Tanzanian National Framework</i>	
Seeds Act, 2003 (as amended) and Seeds Regulations;	✓ Need for systems audit of certification process. Process for seed certification reported to be lengthy and expensive

<p>Finance Act and Division of Revenue Act for budgetary aspects</p> <p>Additional amendments to the Seeds Act and Regulations under discussion</p>	<p>due to numerous steps in process, and delays reported for obtaining test results and approvals; an audit of the process would highlight where these issues are most pressing</p> <ul style="list-style-type: none"> ✓ Demand for certification exceeds TOSCI's capacity; also difficult for TOSCI to carry out its enforcement duties because inspectors are under the authority of local government ✓ Need to prepare guidelines for TOSCI authorization of private seed laboratories and analysts ✓ Limited resources for TOSCI to inspect QDS production ✓ Consider incorporating QDS as seed class in the Seeds Act and expanding jurisdiction for QDS production through relevant regulations ✓ Consultations highlighted that the seed certification process could better meet demand if private inspectors were authorized to conduct seed certification ✓ Fees associated with certification not always clear in regulations; creates difficulty for companies to anticipate all costs ✓ Seed packaging not yet exempt from VAT ✓ High prevalence of counterfeit seed due to lack of awareness on difference between counterfeit and certified seed, which could be better addressed through training, market information systems, and technology ✓ Need to assess challenges in labeling, including intersection between TOSCI and TBS ✓ Unreliable market data on both supply
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	<p>and demand, which makes it difficult to keep steady supply of basic seed and limits ability to place orders in advance</p> <ul style="list-style-type: none"> ✓ Across inputs value chains, stakeholders' awareness of their legal rights is very limited, and legal and regulatory processes may not be well understood or accessible for women and rural poor ✓ Capacity building of law enforcement actors (inspectors, legal officers, prosecutors, and magistrates) is necessary ✓ Need to translate law and regulations into simple language that can be understood properly by farmers and other stakeholders ✓ Need to develop guidelines for the private sector to ensure internal quality compliance
<i>Regional Frameworks</i>	
ASARECA/ECAPAPA agreement to harmonize certification standards for 42 staple crops	<ul style="list-style-type: none"> ✓ Of the 42 certification standards, 29 are already in place, while 13 new standards are in the final draft stage and awaiting comment ✓ Burundi, Tanzania, and Uganda in particular have been working on shared seed certification standards, but none has fully recognized other countries' seed certification tests ✓ EAC recognizes ISTA rules and OECD guidelines; Tanzania member of ISTA and in the process of getting ISTA certification for Morogoro laboratory; adherence to OECD Seed Schemes underway (in process consistent with New Alliance Commitments)
SADC Seed Certification and Quality Assurance System	<ul style="list-style-type: none"> ✓ SADC system not immediately binding and would have to be domesticated (put into effect through national law) in

	<p>order to become effective, even though this is not mandatory with a SADC MOU</p> <ul style="list-style-type: none"> ✓ SADC Seed Certification and Quality Assurance System not yet implemented in practice ✓ SADC harmonized labeling to be established based on ISTA standards and appropriate laboratory analysis but no system implemented yet ✓ The SADC seed system recognizes five certified seed classes: Basic, Breeder's, Certified, Certified (2nd Generation), and Quality Declared Seed (Tanzania recognizes four seed classes in line with the OECD) ✓ Tanzania is a member ISTA and is in the process of getting an ISTA-accredited lab; also in the process of adhering to OECD Seed Schemes (consistent with New Alliance Commitments)
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Chapter 6

Cross-Border Trade

The ability to import and export seeds (as well as germplasm and trial data), fertilizer, and agrochemicals is a critical factor in ensuring a market for high-quality seed and other inputs in Tanzania. The rules and regulations for seed importation and exportation directly affect the ability to access improved seed varieties, and rules on physical movement of goods and customs formalities also have a significant impact on regional seed trade. Gaps in regulatory implementation can quickly drive up costs and limit accessibility of high-quality seeds and economies of scale.

For seeds and other inputs, the ability to easily trade across borders is critical to development along the entire value chain. Seed companies may learn of an improved variety that has performed quite well in a neighboring country with similar growing conditions to Tanzania and seek to import the seed to introduce it in Tanzania. Companies may also look to neighboring countries to import germplasm that could be developed and multiplied locally to help address a lack of a particular variety in Tanzania. In addition, farmers rely on imported inputs like fertilizers and pesticides as well as farm machinery and implements.

Cross-border seed trade has several different components, which are regulated through different mechanisms and regulatory bodies. The ASARECA/ECAPAPA agreement on expedited variety release and registration under implementation in Tanzania, Kenya, and Uganda (and soon Rwanda), described in the chapter on Variety Release and Registration above, allows for a very important kind of cross-border trade: trade in field test data from a partner country that can facilitate regional variety release through a fast-tracked variety approval process. This agreement, which represents a key component of East African regional harmonization, has the potential to increase regional trade, scale seed markets, and increase output. Further regional cooperation and harmonization is also underway and will continue to build the enabling environment for quality seeds, provided that appropriate regulatory implementation is an ongoing commitment and sufficient regional capacity and cooperation are built. An important step has been taken through the issuance of a directive at EAC level to institutionalize the ASARECA/ECAPAPA process. Moving germplasm across borders can also be complex (much imported germplasm is for CIMMYT hybrids) and is also frustrated by the lack of climate-controlled storage facilities and high transportation costs.

Another important component of the enabling environment revolves around measures that facilitate the physical movement of goods across borders, commonly referred to as “trade

facilitation.” Trade facilitation includes customs formalities (documents, automation, and procedures), transparency in development of laws and regulations, information availability, and cooperation among regulatory bodies both nationally and across countries. Within customs formalities and procedures, focus has been placed on development of single windows for different trade functions or one-stop border posts, procedures like advance rulings, appropriate fees and charges, and governance and consistent application of rules.

Tanzania has made efforts to streamline border procedures, such as the **Tanzania Single Administrative Document (TANSAD)** and automated customs data exchange system. Within Eastern and Southern Africa, steps have also been taken towards improving trade facilitation. Further improvements in fees and charges, governance, and consistent application of measures are underway and will be further reinforced by adoption and implementation of the recent WTO Trade Facilitation Agreement (TFA) that, once ratified, will bind all WTO member countries to improve trade facilitation.

SPS measures are another critical component of seed trade. SPS measures relate to plant and animal health and disease prevention and can be in the form of international, regional, national or local regulations or official procedures that aim to prevent the introduction and/or spread of pests (FAO, 2001). Such measures are often applied to protect human, plant or animal life from risks arising from additives, contaminants, toxins or disease-causing organisms and, by their very nature, SPS measures may result in restrictions on trade if not carefully designed and implemented (WTO, 1998). Controls can include testing at the border, requirements for SPS certificates, and post-entry quarantine measures. International trade and free movement of seed, in particular, require that SPS measures be undertaken in a way that keeps seed and plant products safe but also facilitates trade (Johnson, 2014). An ISTA certificate (orange pass) is often needed for cross-border trade, which can present challenges to many companies and governments in regions where ISTA certified labs are not the norm. Regional SPS measures have significant implications for cross-border seed trade and are discussed in greater detail below.

Seed Importation and Exportation

Seed importation and exportation are governed by the Seeds Act (Part III, Sections 13 and 14) and Seeds Regulations (Sections 33 and 34). All importers and exporters must be registered companies, registered seed dealers, and registered with the Ministry of Trade (USAID, 2013).

Importation Process

For varieties that are already approved in Tanzania, the importation process takes approximately ten days. The imported plant product must comply with Tanzanian quarantine requirements and be accompanied by both an international phytosanitary certificate stating that it is free from harmful organisms and a certificate of quality issued by a recognized certification agency. No harmful plant products are permitted into the country per Tanzania's pest list, and the use of packing material likely to harbor or support harmful organisms like hay, straw, rice husks, peat, or chaff is forbidden. The list of harmful organisms is declared and published in the *Gazette*. Overall, the Minister prescribes the varieties of seed that may be sold in Tanzania or imported into Tanzania and sets standards for seed to be imported or exported. These are generally published in the *Gazette*.

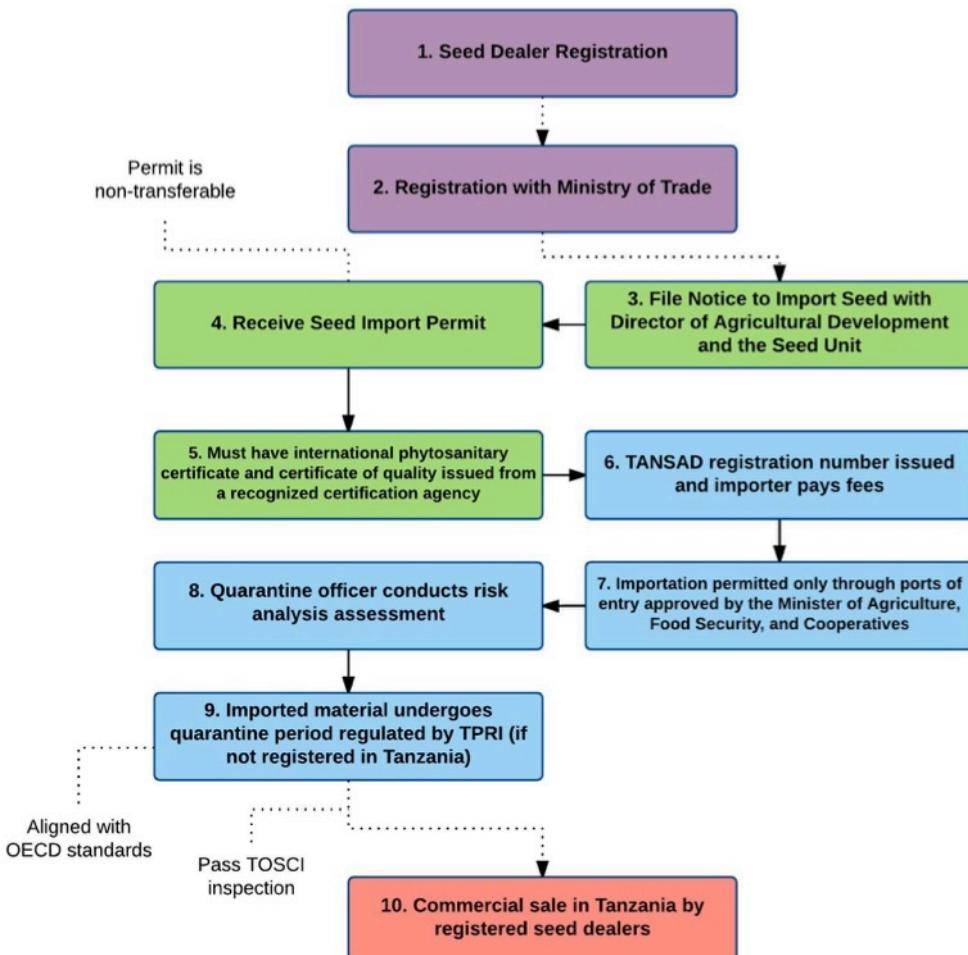
To import seed, an importer must file a Notice to Import Seed with the **Director of Agricultural Development** of MAFC, who issues import and export permits. Once a completed application is approved, an importer will receive a Seed Import Permit. The fee for a Notice to Import is 2,000 TShs (Seeds Regulations, 2007). The permit is nontransferable and revocable in the case of a violation of Tanzania's Seeds Law; further, the importer can only import the item or items under the conditions and period stated in the prescribed permit. Any plant products imported under a prescribed permit must be maintained in strict compliance with conditions stated in the permit and must be made available at all times to the inspector.

Once the import permit is obtained, the importer must inform the **Plant Health Services (PHS) Division** of the expected arrival date of the consignment. PHS, which controls imports and exports to ensure that SPS requirements are met, will inspect documentation and the seed lot prior to release. PHS also helps manage pest and disease outbreaks. PHS is headquartered within MAFC in Dar es Salaam, but it also has a presence along the border posts, where it inspects documentation and conducts visual inspections of the seed lot for clearance. If there is an issue with the seed import, PHS must transfer the seed lot to the **Tropical Pesticide Research Institute (TPRI)** in Arusha for quarantine and evaluation. For seed exports, the PHS issues the phytosanitary certificates. Both the PHS and the TPRI follow the phytosanitary standards of the International Plant Protection Convention (IPPC).

The **National Plant Protection Advisory Committee (NPPAC)**, which was established by the Plant Protection Regulations, also plays a role in seed trade. Its functions include coordinating plant protection activities of the NPPAC subcommittees, maintaining a system of collaboration with any national or international body or person dealing with plant protection, considering and endorsing reports from the NPPAC sub-committees, and proposing areas in plant protection legislation to the Minister that require revision or

updating as may be deemed necessary. The NPPAC has various subcommittees, which include the Pesticides Approval and Registration Technical Subcommittee (PARTS), the Biological Control Agents Subcommittee (BCAS), the Plant Quarantine and Phytosanitary Sub-committee (PQPS), and the Outbreak Pests Subcommittee (OPS). These subcommittees have largely advisory roles. Figure 6 below outlines the steps in the importation of seed material.

Figure 6: Process for Importing Seed Material



Source: New Markets Lab, 2015

As noted, all seed dealers, including anyone who imports, exports, produces, processes, distributes, or sells seeds must be registered through **TOSCI** and the **DCD** (Seeds Act, 2003). To be able to sell imported seeds, an importer also needs a quality certificate, which is issued by TOSCI. Notably, the import permit does not allow for the sale of imported seeds. To be sold, the imported seeds must pass a quality inspection by TOSCI and meet all quarantine requirements in the Plant Protection Act.

The Minister may make certain exemptions to the permit requirements, which must be published in the *Gazette*. The Minister may only grant an exemption if he or she is satisfied that the importation of certain plant or plant products would not present a significant threat to the agricultural or natural environment of Tanzania. The Minister may also allow the importation of anything otherwise ineligible under the Plant Protection Act if used for essential scientific research or experiment. Under the Environmental Management (Biosafety) Regulations, as amended 2015, importation of genetically modified organisms for research purposes is permitted. Import seed and germplasm for research purposes is generally allowed and can be an initial step in trying new varieties for suitability in Tanzania, but the overall process of variety release and registration must be simplified for trade in commercial quantities as well.

After MAFC approves all required documents but prior to arrival at the border, a TANSAD registration number is created in the automated customs data exchange system, and the importing company pays all appropriate fees. At that point, plants and plant product applications are sent to the plant quarantine section, where an assigned quarantine officer examines the documentation and conducts a risk analysis assessment. The risk assessment determines whether the plants or plant products will need to be inspected. The process for clearance varies depending on the results of the physical inspection, as indicated by the figure, and includes steps such as obtaining the Phytosanitary Certificate and paying all additionally required duties, taxes, and fees.

Importers may only bring in high-risk material (listed in the Fifteenth Schedule of the Plant Protection Regulations) at selected entry points, which are limited to Dar es Salaam International Airport and Kilimanjaro International Airport; Dar es Salaam and Tanga harbors; and the Overland Border entry points of Namanga and Tunduma. These locations are equipped to implement the technical rules associated with importing plant materials, such as risk analysis assessments. The Minister can change entry points as necessary by notice in the *Gazette*. High-risk plant material must be clearly identified and labeled, free from soil and other matter, and be packed in clean, new packaging so as to be readily inspected (Plant Protection Regulations, 1999).⁵

⁵ Tissue cultures must be properly contained in a clear vessel in which they have been grown; within a clear agar-based medium, free from opaque matter and poured into the vessel while liquid; and aseptic (Plant Protection Regulations, 1998).

Imported seed not already registered in Tanzania must undergo both quarantine by TPRI (following OECD standards) and pass a quality inspection by TOSCI before it can be sold. Consultations conducted in the development of this Guide have highlighted concern with the split in function and location between PHS and TPRI; this could be further assessed through a systems audit of the trade importation process.

Exportation Process

The process of exportation is also elaborated in the Plant Protection Act 1997. An exporter must file a Notice to Export Seed with the DCD, which requires an import permit from the country of destination. This can only be issued in Dar es Salaam and must specify the quantity, plant species, and variety that will be exported. The fee for a Notice to Export is 2,000 TShs (Seeds Regulations, 2007). If all appropriate information is contained in the notice, the DCD will grant the exporter a Seed Export Permit, which is nontransferable and revocable in the event of a violation of Tanzania's Seed Law.

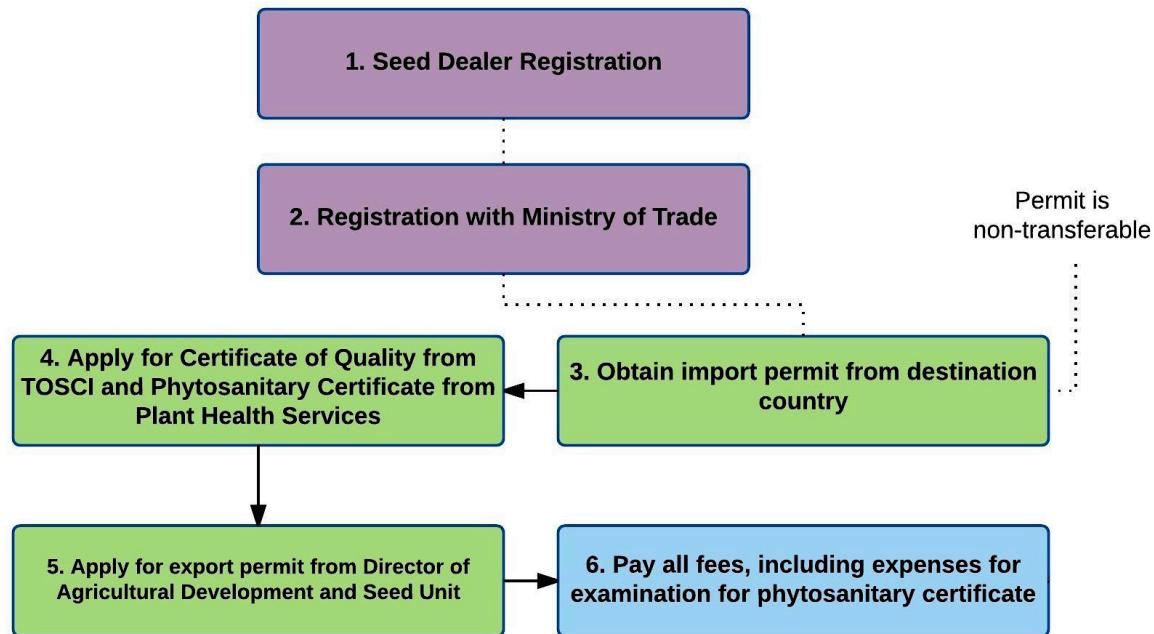
Exporters must comply with the export conditions outlined in the Plant Protection Act and must meet the requirements of the destination country. Kenya, for example, requests the orange ISTA certificate for seed exports, although only countries with ISTA-accredited laboratories can comply. The exporter must have a Certificate of Quality issued by TOSCI, a phytosanitary certificate, and other relevant documents governing exportation in addition to the export permit. The phytosanitary certificate applicant must provide the facilities necessary for the examination by an inspector appointed by the Minister of Agriculture, Food Security, and Cooperatives and pay for any expenses (Plant Protection Regulations, 1998). Figure 7 below outlines the steps in the exportation of seed material.

The inspector-in-charge can approve the plant product for export if it is free of pests and conforms to the current phytosanitary requirements of the country to which it will be exported (Plant Protection Regulations, 1998). The Minister may also declare that any plant or plant products carrying any harmful organism in excess of an amount specified in the notice may not be exported from Tanzania, but such a declaration must be published in the *Gazette*.

Import and export procedures can be challenging to learn, especially for small companies. Exporters may not know what documentation is needed until they arrive at a border post, and many are turned away for lack of proper paperwork. Publication of procedures and requirements can help avoid misunderstandings with customs officials and can help exporters prepare in advance of traveling to the border. Some of these issues will be addressed through implementation of trade facilitation frameworks, and simplification of

cross-border procedures will make it easier to conduct legitimate trade and contribute to addressing trade in counterfeit goods.

Figure 7: Process for Exporting Seed Material



Source: New Markets Lab, 2015

A rise in trade also increases the need for more thorough border control. Insufficient resources on the part of regulators, coupled with complicated regulatory systems, not only contribute to insufficient supply of seed but can also be a factor in trade in counterfeit seed (USAID, 2013). Although formal imports and exports must follow detailed regulatory processes, in practice fake seed can easily slip through porous borders. Under the Seeds Regulations, seed that is identified as a particular class by the Minister, or even closely resembling such a class, must be properly marked, packaged, and labeled. It is a criminal offense to improperly label, package and/or mark the seed for import or export, and Tanzania recently increased its penalties in this regard (Amendments to the Seeds Act, 2014).

In addition to enforcing the rules on the books, providing TOSCI with the mandate and additional capacity to place staff at border crossings and ports could help identify fake seed at these key entry points. Another important institutional change to facilitate trade is to bridge activities of TPRI, which is located in Arusha, with those of PHS, which conducts inspection at the border. As mentioned above, PHS requires documentation and conducts visual inspections of seed upon importation, but if there is an issue with the seed import, PHS must transfer the seed lot to the TPRI for quarantine and evaluation. The distance

between TPRI and PHS alone compromises effective coordination, and better harmonization could result in a faster and less costly process.

Regional Harmonization

One way of streamlining import and export procedures and expanding potential markets is to harness Tanzania's geographical advantage within Eastern and Southern Africa and focus on ways in which to synchronize and harmonize trade with neighboring states. This will help advance the government's New Alliance Commitments to increase stability and transparency in trade policy and facilitate importation of seeds, fertilizer, and agrochemicals. Harmonization of regional policies is already well underway, although regional trade efforts could also benefit from stronger implementation. In addition to regional trade initiatives, developments at the WTO level will also impact improvements in trade facilitation in Tanzania.

The time it takes for products to cross borders remains a significant challenge. Border areas away from cities are not well equipped to handle cross-border trade, and most traders do not know the trade rules and procedures. To address this, many countries are making sure that information on trade procedures and customs documents is readily available at all border posts, not just those in major cities. Ideally, each border posts would contain everything needed for importing and exporting products, so that a trader missing one single document would not have to travel all the way to the border and then be forced to go to Dar es Salaam to obtain the missing document.

Farmers, seed companies, and governments also have a great deal to gain from effective regional SPS implementation. Greater regional harmonization of SPS measures would increase certainty regarding border testing, streamline notification and release of test results, improve risk profiling, and simplify paperwork. As is true in other areas, there are different approaches to regional harmonization in SPS. The most common are developing common pest lists subject to controls and paring down the list of pests and diseases. Pest lists can cover (1) those pests that exist in some countries but not in others; or (2) those pests that represent an economic threat. When pest lists are established, "seeds for many crops [could] be moved from one country to another without phytosanitary certificates, while seed for other crops [could] be traded with phytosanitary controls for a reduced list of realistic threats" (Gisselquist, 2001). More specific regional measures within the EAC and SADC are discussed below.

Customs harmonization is also central to effective trade in seeds and other inputs. Tanzania has streamlined its own customs functions, and, in July 1996, the **Tanzania Revenue Authority (TRA)** was established following the integration of the Customs and

Excise, Sales Tax and Income Tax Departments, all of which had previously been under the Ministry of Finance (Mbunda, 2011). Customs processes have been automated through the **Tanzania Customs Integrated System (TANCIS)**, which links customs authorities, clearing agents, shipping lines, ports, authorities, and banks. As one direct result, the time it takes to lodge documents to release orders at the port went down from four days to one day (IPP Media, 2014).

Customs in Tanzania is largely governed by EAC legislation, due to its emphasis on border issues and its binding nature. Tanzania's customs reforms significantly contributed to the implementation of the EAC Customs Union Protocols, including the EAC Customs Management Act. The EAC Customs Management Act 2004 (as last amended in 2011) allows products that originated in the EAC to move freely between EAC countries. Implementation of the Customs Management Act and proper operationalization of the rules of origin (the rules that determine where a product comes from or where value is added) would greatly enhance the ease of trade with neighboring countries. Further, the EAC is exploring ways to simplify its rules so that traders do not have to go through Dar es Salaam, a change that would be especially helpful for smaller traders. The EAC has also announced a Trade Logistics Information Pipeline, with a new integrated ICT data system for information exchange.

Other significant changes in administrative policies resulting from these reforms include a review of the TRA administrative structure to incorporate a Project and Modernization program unit and introduction within the customs administration of units such as Modernization and Quality Assurance, Risk Management, Trade Facilitation, and Post Clearance Audit to enhance coordination of reforms and efficiency. A Task Force coordinated by the Prime Minister's Office was formed to monitor improvements in trade facilitation, with an eye to improving Tanzania's ranking in the World Bank Doing Business assessment. Tanzania could now bring down the costs of certification of crops in order to further improve trade facilitation and increase exports (TRALAC, 2014).

In December 2013, a Trade Facilitation Agreement (TFA) was agreed to among WTO members to facilitate trade and regional cooperation across all sectors, including agriculture. For Tanzania, measures that increase automation and transparency in trade processes and expedite border crossing, such as standardizing trade procedures, will offer significant benefits to seed importers and exporters. Once ratified by the majority of WTO members, the new WTO agreement will mean that Tanzania and its neighbors will be required to make additional changes to border procedures, and the TFA presents a further opportunity for streamlining seed trade. LDCs may stagger the implementation of the trade facilitation measures required under the Agreement, and Tanzania has already identified the measures it has implemented or could readily implement ("Category A"

notifications) once the Agreement comes into force. One area highlighted in the TFA Agreement is expedited release for perishable goods, which could include plant live parts used for propagation like those of vegetatively propagated crops.

In fact, many of the trade facilitation principles, standards, and practices of the WTO and World Customs Organization (WCO), an independent intergovernmental body focused on enhancing the effectiveness and efficiency of customs administration, have already been incorporated into the EAC Customs Law. Article 6 of the EACCU, for example, details certain basic strategies through which trade facilitation can be realized. These include, reducing the volume of documentation required with respect to trade among EAC Partner States, adopting common standards of documentation and procedures, and promoting the development and adoption of common solutions to problems in trade facilitation among Partner States (Kafeero, 2008).

Even absent additional legal and regulatory changes, the import/export process would be made significantly more efficient if existing laws and agreements were fully implemented. For instance, there are more than 15 informal border points that have not been formalized in the Tanzanian *Gazette*. This is not only confusing for traders who are trying to follow the correct procedures, but it also creates problems for TOSCI inspectors and other officials attempting to fully staff all border points. Proper implementation and better dissemination of information about requirements and entry points for imports would help address this issue.

Tanzania is also implementing an e-payment system, which will further result in improved cargo clearance times and better revenue collection (Economic and Social Research Foundation, 2014). In April 2014, the Tanzanian Government signed a contract to produce an electronic single window system that will incorporate e-payments and electronic tracking. As part of this system, an online inquiry point will be developed as well. This system is expected to be operational at the Dar es Salaam port in late 2015 and will then spread to border posts and airports (Phaeros, 2014). Expanding the single window system to include documentation and procedures for seeds, fertilizers, and agrochemicals could be an important step in improving cross-border trade.

East African Community

The customs laws of the EAC are quite comprehensive and consist of relevant provisions of the EAC Treaty, the Protocol on the Establishment of the East African Community Customs Union (EACCU Protocol), annexes, regulations, Directives of the Council of Ministers of the EAC, and applicable decisions handed down by the East African Court of Justice, Acts of Community enacted by the East African Legislative Assembly, as well as relevant

international law principles. The EACCU was concluded in 2004, and implementation commenced in January 2005 under the East African Community Customs Management Act, 2004 (which has subsequently been revised). The EAC has also implemented the East African Community Customs Management Regulations, 2006, which also governs customs procedures (Kafeero, 2008). In 2015, the EAC Legislative Assembly passed the Elimination of Non-Tariff Barriers Act, which provides a process for companies to report non-tariff barriers to the EAC Secretariat and receive compensation for the resulting financial loss (Nderitu, 2015). The EAC Summit must assent before it becomes binding on member states.

The Tanzanian Excise Management and Tariff Act of 2008 also applies to cross border trade. In July 2009, TRA adopted the Customs Modernization Strategies and Action Plan, which was subsequently incorporated into the TRA Third Corporate Plan 2008/8-2012/13 developed to provide a roadmap of transforming customs administration, including by facilitating trade and reducing cargo clearance times across ports, automating customs processes and procedures, enhancing enforcement capacity, and strengthening relations with stakeholders. The strategies were prepared in line with the WCO Framework of Standards and the WTO Trade Facilitation initiatives and were designed to generate revenue growth and facilitation of foreign and local investments, enhanced transparency and predictability, improved cargo clearance time across ports, improved staff integrity, and increased traders' compliance levels. The TRA is now in the process of implementing the Fourth Corporate Plan, which includes Valuation and Harmonized System Classification. Tanzania is being supported in this by the WCO's Customs Capacity Building, which aims to enhance the skills and knowledge of TRA staff who deal with valuation and classification procedures, as well as strengthen relevant infrastructure (WCO, 2013).

The EAC recognizes that agriculture is a comparative advantage for the region and that agricultural trade should be increased and strengthened intra-regionally and outside of the region as well. In June 2015, the Tripartite Free Trade Area (between the EAC, SADC, and COMESA) was officially launched; giving the negotiations new momentum, and negotiations for a Continental Free Trade Area (CFTA) were launched by the African Union, also in June 2015.

To facilitate trade, EAC countries have agreed to standardize seed import documentation with a plant import permit, a phytosanitary certificate, and a quality certificate. An EAC SPS Protocol has been developed for a number of goods, including seeds, and was approved by the EAC Summit in its 14th Summit Meeting and signed by the EAC Council of Ministers on 12 July 2013 for implementation by EAC members. Although the Protocol is binding on EAC members, it is now subject to further EAC Member State domestication.

The EAC's SPS Protocol calls for harmonized SPS measures, including on seed, consistent with international standards, guidelines, and recommendations (EAC, 2014). Unified SPS standards for a number of staple foods, including grains, pulses, and tubers, are established under the East African Standards. However, varying capacity among member countries to implement these measures will remain a challenge. Implementation would help significantly reduce non-tariff issues and increase transparency in trade policy within the region and should be priority going forward.

Tanzania is required to adopt the EAC SPS Protocol by reviewing its national legislation related to SPS. A review of the Plant Protection Act Cap. 133 R. E 2002 has been initiated, with proposed amendments awaiting Cabinet approval. In addition to a review of laws, there is a need to develop and build institutional capacity for effective implementation of the SPS Protocol. The identified institutions for SPS implementation are the Ministries responsible for Agriculture, Trade and Industries; Livestock and Fisheries, TBS, the Tanzania Food and Drugs Authority (TFDA), the Ministry of Health, the Ministry of Natural Resources, and relevant Ministries in both mainland Tanzania and Zanzibar.

The EAC has also taken steps to streamline border crossing procedures by implementing a One Stop Border Post (OSBP) model to facilitate regional trade. Survey results from the first OSBP project, at the Malaba border post between Kenya and Uganda, show that average border crossing times dropped from 24 hours to under six hours (Fitzmaurice and Hartmann, 2013). Instead of having two buildings, one for each country on each side of the border, one location could be established for joint customs operations. Tanzania also aims to expand OSBPs with countries outside the EAC. Because Tanzania borders so many countries (eight in total), OSBPs could offer significant benefits as a result of streamlined procedures. An EAC OSBP Bill was passed in April 2013 but has not yet been implemented, as it has not yet been assented to by the Heads of State Summit (The East African, 2014).

The EAC is also exploring a number of other ways in which to facilitate commerce for smaller traders. These include a proposed agreement with the Small Industries Development Organization (SIDO) to provide traders with beneficial information such as packaging rules for export; placing officers at each OSBP to answer questions; and providing manuals, leaflets, or posted instructions in both English and Swahili at borders to enable traders to read and understand the requirements when officials are not available (for instance if traders arrive at border posts outside of normal business hours).

In May 2013, the East African Legislative Assembly (EALA) passed a bill to restrict vehicle overloading and reduce transport costs by harmonizing axle load regulations in all EAC member states. It is estimated by the EAC that businesses and governments in the region would save one billion US dollars as a result. Even incremental improvements can

sometimes have a big impact, such as the synchronizing of working hours for officials on both sides of the border at the Kabanga border crossing between Burundi and Tanzania (Kuhlmann, 2013).

Southern African Development Community

As a member of both the EAC and SADC, Tanzanian traders must recognize the regulatory measures of each, including the differing levels of enforcement. Unlike the EAC, whose legal instruments are automatically binding on member states, SADC's measures are not automatically binding absent domestic action. Still, both the EAC and SADC have important rules regarding intra-regional trade and SPS measures with which Tanzanian traders must comply.

In July 2014, the SADC Committee of Ministers on Trade approved the Sanitary and Phytosanitary (SPS) Annex VIII to the SADC Protocol on Trade, which harmonizes the SADC member states' application of SPS measures as a regional body and with the WTO Agreement on the Application of SPS measures (WTO SPS Agreement) (SADC, 2014). While the region originally adopted the SADC SPS Annex in 2008, relevant regional bodies are still implementing the new standards. These include the sub-committees on manufacturing, certification, standards, legislation, and notification; epidemiology, risk analysis, and laboratory testing; capacity building and information, education and communication; laboratory and pest diagnostics; surveillance and pest risk analysis; plant health inspection; and agrochemical regulations (2014).

The SADC harmonized seed regulations require the introduction of rationalized SADC pest lists for the movement of seeds between Member States and create a separate list for trade between SADC member states and outside countries (2008). The SADC system rationalizes pest lists based on science and authorizes the Project Management Unit of the SADC Seed Security Network, the SADC Secretariat, and the Plant Protection Sub-committee to facilitate quarantine and phytosanitary measures for seeds (SADC, 2008).

Additional Regional Harmonization Efforts

Although Tanzania is not a member of COMESA, Tanzania has joined Kenya, Uganda, and Rwanda in fast tracking the movement of goods along the main corridors (Northern and Central) under the customs seals in the COMESA region. This participation comes after the signing of an inter-surety agreement by Tanzania's National Insurance Corporation to join the COMESA Regional Transit Guarantee (RCTG) scheme, which allows Tanzania to issue regional customs bond guarantees.

The RCTG Scheme is a customs transit regime designed to improve the movement of goods under customs seals in the COMESA region and to provide the required customs security and guarantee to the transit countries. The scheme ensures that customs in a transit country receive proper payment for dues and duties for any goods in transit.

Uganda, Kenya and Rwanda started using the COMESA Customs Bonds Scheme after the rollout of the EAC Single Currency Territory. The rollout of RCTG on the Northern Corridor from Mombasa to Kampala and Kigali has reduced transit time from an average of 21 days to four days, and trucks with RCTG spend on average 30 minutes on both sides of the border post in contrast to an average of two days for trucks that are not in possession of a single regional transit customs bond guarantee. This is significant, given that a three-day delay in clearing a transit truck at a border post could add US \$1500 to the cost of doing business (TRALAC, 2015).

Table 8: Trade Framework and Implementation Challenges

Legal and Regulatory Framework	Implementation Challenges
<i>Tanzanian National Framework</i>	
Seeds Act, 2003 (as amended) and Seeds Regulations The Seeds Act and Regulations are currently under review.	<ul style="list-style-type: none"> ✓ Need for systems audit of input import and export processes. ✓ Border procedures are often complex, and traders/importers/exporters may not know what is required ✓ Addressing capacity challenges within TOSCI will help address counterfeit seed trade ✓ The gap in function and location between TPRI and PHS can create challenges ✓ Trade in seeds not integrated fully into efforts to improve customs and border measures ✓ Across inputs value chains, stakeholders' awareness of their legal rights is very limited, and legal and regulatory processes may not be well understood or accessible for women and rural poor ✓ Capacity building of law enforcement actors (inspectors, legal officers,

	<p>prosecutors, and magistrates) is necessary</p> <ul style="list-style-type: none"> ✓ Need to translate law and regulations into simple language that can be understood properly by farmers and other stakeholders ✓ Need to develop guidelines for the private sector to ensure internal quality compliance
<i>Regional Frameworks</i>	
EAC Treaty and Protocol on Establishment of the East African Community Customs Union (EACCU Protocol); East African Community Customs Management Act, 2004 (subsequently revised); East African Community Customs Management Regulations, 2006; Tanzanian Excise Management and Tariff Act of 2008	<ul style="list-style-type: none"> ✓ Implementation underway of Tanzania Revenue Authority's Fourth Corporate Plan with specific focus on Valuation and Harmonized System Classification ✓ Implementation of Tanzania Revenue Authority's Third Corporate Plan 2008/8-2012/13 underway with roadmap of transforming customs administration, including by facilitating trade and reducing cargo clearance times across ports, automating customs processes and procedures, enhancing enforcement capacity, and strengthening relations with stakeholders in line with WCO Framework of Standards ✓ Trade facilitation could be more closely linked to seeds and other inputs
May 2013 East African Legislative Assembly (EALA) bill to restrict vehicle overloading and reduce transport costs by harmonizing axle load regulations in all EAC member states	<ul style="list-style-type: none"> ✓ Implementation requires additional focus; payoff significant (estimated US \$1 billion savings across region)
SPS Protocol for some goods, including seeds, was approved and signed by the EAC Council of Ministers of Agriculture on 12 July 2013	<ul style="list-style-type: none"> ✓ SPS Protocol approved by the EAC Summit in its 14th Summit Meeting and signed by the EAC Council of Ministers on 12 July 2013 for implementation by EAC members ✓ Although binding, the SPS Protocol is

	<p>now subject to further EAC Member State domestication</p> <ul style="list-style-type: none"> ✓ Countries are encouraged to review pest lists, but no universal pest quarantine list yet exists (under development) ✓ Tanzania is required to adopt the EAC SPS Protocol by reviewing its national legislation related to SPS. A review of the Plant Protection Act Cap. 133 R. E 2002 has been initiated, and proposed amendments are awaiting Cabinet approval ✓ In addition to a review of laws, there is a need to develop and build institutional capacity for effective implementation of the SPS Protocol. The identified institutions for SPS implementation are the Ministries responsible for Agriculture, Trade and Industries; Livestock and Fisheries; the Tanzania Bureau of Standards (TBS); the Tanzania Food and Drugs Authority (TFDA); the Ministry of Health; the Ministry of Natural Resources; and relevant Ministries in both mainland Tanzania and Zanzibar. ✓ Domestication of the SPS Protocol will require conducting national workshops to raise awareness among key stakeholders ✓ Review of relevant SPS regulations pertaining to different sectors will also be necessary
SADC Quarantine and Phytosanitary Measures contain (i) pest control list for seeds traded among SADC members and (ii) pest control list for seeds imported into SADC countries	<ul style="list-style-type: none"> ✓ SADC system not immediately binding and would have to be domesticated (put into effect through national law) in order to become effective, even though this is not mandatory with a SADC MOU ✓ Countries are encouraged to review pest

from outside the region (universal pest list)	lists, but no universal pest quarantine list yet exists
Regional Customs Measures and WTO Agreement on Trade Facilitation	<ul style="list-style-type: none"> ✓ Tanzanian system based on EAC legislation; already linked to WTO measures, but progress in some areas still needed ✓ Tanzania has submitted Category A notifications for the WTO Agreement on Trade Facilitation (TFA) (undertakings that could be implemented readily and immediately upon the TFA coming into force) ✓ TFA will come into effect once 2/3 of the 159 WTO Members have ratified it

Chapter 7

Fertilizers and Agrochemicals

Fertilizers and agrochemicals, including pesticides, are important in both seed and crop production, but they can be prohibitively expensive for the majority of farmers in Tanzania and are sometimes unavailable altogether (Barnett, Chivo, and Pinto, 2011). Both fertilizer and agrochemicals are subject to significant regulatory requirements, such as licensing and registration procedures that impact both market growth and farmers' access to critical inputs. While establishing legal and regulatory structures for fertilizer and agrochemicals is a positive step forward, identifying milestones for implementation will be needed. This process could include distinguishing among challenges to implementation, determining the political, financial, or technical needs and commitments, and finally, having mechanisms in place to integrate the national and regional level structures (Seed and Fertilizer Policy in Africa, 2013). Assessing farmers' access to appropriate fertilizer and agrochemicals will be important in the regulatory context and impact effective and efficient use of these inputs.

The cost of fertilizers and pesticides can be a challenge, and a significant portion of price can be attributed to external factors, which, if effectively addressed by regulators, could significantly cut the cost and make these inputs more accessible for farmers. These factors include trade and transport, infrastructure, low competition in the sector (with few market actors), and unpredictable competition from public sector fertilizer distribution. The resulting costs can be addressed in a number of ways, including liberalizing private distribution and rebalancing public sector involvement in the value chain, expanding access to finance, and reducing the costs of licensing and other regulatory compliance in consultation with private sector and farmer representatives (Seed and Fertilizer Policy in Africa, 2013).

For fertilizer in particular, the regulatory structure in Tanzania is quite new. The industry has also recently shifted from a public to a market-based model. The use of fertilizer in Tanzania remains quite low compared to other countries. Only nine percent of Tanzanian farmers used fertilizer regularly in 2008 (Kamhabwa, 2014). While Tanzanian farmers use an average of 9kg per hectare annually of nitrogen fertilizer, by way of comparison the average farmer in Malawi uses 27kg N/ha, the average farmer in South Africa uses 53kg N/ha, and the average farmer in Vietnam uses 365kg N/ha (Kitalyi et al, 2010). It will be increasingly necessary to ensure that the enabling environment is conducive to the ongoing participation of private firms in the fertilizer value chain.

Transport and trade issues also play a particularly significant role in the market for fertilizers and agrochemicals. Fertilizer in particular is a bulky commodity largely

produced overseas and shipped inland from Dar es Salaam, principally by expensive road transport (See Table 9). Transport, storage, and distribution infrastructure and storages can add to costs.

Table 9: Destinations and Cost of Transporting Fertilizer Per Ton

Destination Center	Cost of Transporting Fertilizer per ton (TShs)
Iringa	50,000
Makambako	60,000
Moshi/Kilimanjaro	60,000
Arusha	70,000
Mbeya	85,000
Songea/Ruvuma	95,000
Tabora	130,000
Sumbawanga/Rukwa	150,000

Source: AfricaFertilizer.org, 2014.

Measures to address trade facilitation at the national and regional levels, as discussed in the preceding chapter, are a significant aspect of the regulatory enabling environment for fertilizer and agrochemicals and will directly impact these costs. These measures have the potential to reduce transport costs considerably, including through cutting the time and resources needed to cross borders. Trade facilitation measures focused specifically on fertilizer and agrochemicals (and seeds as well) could also help to smooth out regional trade. These could include incorporating functions specifically targeting the importation of fertilizers and agrochemicals into single window efforts, including making required paperwork available online, creating integrated IT platforms, and tracking fertilizer and agrochemicals shipments.

Registration and Licensing in the Fertilizer Sector

All fertilizer in Tanzania must be registered with the **Director of the Tanzania Fertilizer Regulatory Authority (TFRA)**, whose authority is established under the **Fertilizers Act of 2009(as amended in 2014)** to check the quality of all fertilizers, whether imported or domestically produced. The TFRA is the key regulator in the fertilizer industry and was established by the Fertilizers Act of 2009. In addition to fertilizer registration, the TFRA regulates all matters relating to quality of fertilizers, including registration and licensing of fertilizer dealers and fertilizer sterilizing plants (Fertilizers Act, 2009 as amended in 2014). Another institution that plays an important role in the fertilizer industry is the **Tanzania Atomic Energy Commission**, which monitors levels of radioactivity in phosphate fertilizers.

The application processes for registration and licensing, both of which must be submitted to the Director of the TFRA, are laid out in the **2011 Fertilizers Regulations**. Within 30 days after receiving an application for registration, the Director of the TFRA must register applicants and issue a registration certificate if all requirements have been met. Likewise, the Director will issue a license within 30 days after receipt of the application, as long as the applicant met the prescribed requirements. Every license and registration will expire no later than two years from the date of issuance, unless the dealer's registration is cancelled sooner (Fertilizers Regulations, 2011).

For registration, an applicant must include a sample of the fertilizer, copies of the label, and a prescribed fee. If the applicant is not a resident of Tanzania, then the application must be signed and subsequently presented by an agent who is a permanent resident; otherwise the application is not eligible for registration (Fertilizers Regulations, 2011).

All fertilizer and fertilizer supplements submitted for registration must undergo testing using prescribed analytical methods prior to submission of the registration application. Fertilizers and fertilizer supplements already in use must undergo laboratory tests to determine the suitability for use performed by the TFRA Director (or other authorized person). New fertilizers and fertilizer supplements must undergo such testing by the Director (or authorized person) in both the laboratory and the field for at least three consecutive seasons (Fertilizers Regulations, 2011). The applicant bears the cost of the laboratory and field tests for new fertilizer or fertilizer supplements, which is USD \$10,000 per season (Fertilizers Regulations, 2011).

The Director of the TFRA may cancel or suspend a fertilizer registration if:

- (a) The registrant has not followed all terms required for registration;
- (b) The fertilizer is not of the composition and efficacy specified in the application (i.e. is different in some chemical, physical, or other way from the properties described in the registration documentation);
- (c) The procedures or facilities at the manufacturing plant are not appropriate for fertilizer production;
- (d) The person running the fertilizer business is not sufficiently familiar with the provisions of the Fertilizers Act of 2009 (as amended in 2014) or of the requirements specified in the Fertilizers Regulations of 2011;
- (e) The director deems that there is a "public interest" in not allowing the registration of the fertilizer; or
- (f) The fertilizer is incorrectly or misleadingly advertised (Fertilizers Act, 2009, as amended in 2014).

Companies interviewed have reported that the fertilizer registration process can be complex, costly, and time consuming. One stakeholder reported that the registration cost for fertilizer is between US \$30-35,000, since several trials are often required, with a cost of approximately \$10,000 per trial. As a result, Tanzanian consumers are often unable to access newer, safer, more effective fertilizers and chemicals (Keyser, 2012). The registration renewal process can also be quite lengthy and the timing uncertain. One company reported that its current registration expired while it was waiting on the registration renewal to go through, meaning that it had to cease operations, which caused its shipments to be held up at the port.

Similarly, uncertainty may arise in the licensing process. A fertilizer license may be suspended for a definite or indefinite period if the Director of the TFRA finds that the licensee “has been convicted of any offense against the provisions of [the Fertilizers Act of 2009] or regulations; becomes bankrupt or, if a company, has gone into liquidation; or failed to comply with any conditions of the license” (Fertilizers Act, 2009).

The Fertilizers Act also sets requirements for the manufacturing, sale, supply, or storage of any fertilizer or fertilizer supplement (Part IV, Fertilizers Act). These requirements include the registration of the sterilizing plant or premises where the manufacture for sale, supply, or storage of any fertilizer or fertilizer supplement will occur. Currently imported fertilizer overtakes domestic production, and building the capacity to develop the local manufacturing industry is a very important objective of the government.

Under the legal and regulatory structure for fertilizer, implementation challenges may also arise due to organizational structure and capacity challenges within the TFRA (Kamhabwa, 2014). The TFRA has to rely on a small number of inspectors who fall under the authority of local government. Inspections and tests performed by these inspectors are often unreliable, as inspectors have numerous other responsibilities and lack resources such as transport and testing equipment to perform their duties properly. The TFRA often has to supplement inspectors' allowances in order for them to do site inspections. Issues with laboratory testing are also prevalent: testing is similarly under-funded, test results have been found to be unreliable, and tests are excessively expensive for local farmers (AGRA, 2014). TFRA must also do testing but does not have an independent laboratory and must rely instead upon SUA. Improved testing and inspection capacity would not only bring down costs and improve the efficacy of fertilizer, but it would also allow for soil testing that could pave the way for the blending of soil specific and crop specific formulations, which, when properly tested and labeled, could fill a need in the market.

AGRA has supported programs aimed at training fertilizer dealers in skills ranging from business management and fertilizer characteristics to how to offer extension information

on fertilizer use. These programs, run by the Citizens Network for Foreign Affairs (CNFA) and the MAFC, have increased the number and density of agro-input dealers and fertilizer sales and use by farmers. Challenges remain, however, one of the most significant of which is the inability of most agro-dealers to obtain credit (AGRA, 2014).

Registration of Plant Protection Substances

Agrochemicals also can be subject to a complex, lengthy, and costly registration process. One stakeholder reported that registering a chemical costs between US \$5000 and US \$20,000, depending upon the number of trials required. As with fertilizer, three trials are commonly required.

The **Plant Protection Act 1997** and **Plant Protection Regulations 1998** govern agrochemicals registrations. For the application itself, the producer, marketing firm, and importer of the plant protection substance can apply for registration of the plant protection substance. This application must include the designation of the substance, details of its composition and application, details of procedures for its proper disposal or neutralization, instructions for use, indications and markings for packaging, and details for the packaging materials (Plant Protection Act, 1997). The Minister will register the plant protection substance if it is effective and does not threaten the health of humans, animals, or the environment (Plant Protection Act, 1997). At the international level, chemicals and pesticides are covered by the Rotterdam Convention, Basel Convention, Stockholm Convention, and FAO Code of Conduct on Pesticide Management and International Code of Conduct on the Distribution and Use of Pesticides.

According to the Plant Protection Regulations 1998, Section 20, every application for pesticide registration or renewal of registration must be accompanied by:

- A dossier containing information to determine the suitability of the pesticide's use and technical data on how to detect and quantify the active ingredient;
- Fees and other charges (as detailed below);
- A sample of the pesticide and certificate of analysis, if issued; and
- A written declaration that the pesticide has or has not been banned or restricted in the country of origin.

Every pesticide submitted for registration must be submitted to the **Tropical Pesticide Research Institute (TPRI)** for field tests and laboratory analysis. TPRI is one of the key institutions dealing with plant protection substances and was established by the **Tropical Pesticide Research Institute Act of 1979**. It is mandated to perform research regarding pesticide application; to establish a National Herbarium to render services to other

institutions and carry out taxonomic research; and to establish a plant quarantine station to handle all phytosanitary matters in Tanzania.

Laboratory analysis and submission of the results must be conducted within fourteen days. Field tests will also be required, the duration of which will depend upon intended use; for agricultural pesticides three rainy seasons are required, which can take two to three years (Plant Protection Regulations, 1999). After the analysis and field tests are done, the results are submitted to the Registrar of Pesticides with a Certificate of Analysis (Plant Protection Regulations, 1999). Possible delays might occur at TPRI during the testing and laboratory analysis. Companies also report that they have trouble finding up-to date lists of banned chemicals causing delays early on in the registration application process.

Finally, the applicant for an agrochemicals registration must prove to the Registrar of Pesticides that technical staff are qualified to handle the pesticide and that storage facilities for the registered pesticide are adequate and well equipped to avoid any hazards to human, animals and the environment (Plant Protection Regulations, 1999).

The approval process for pesticides registration has several steps. First, the Registrar of Pesticides submits the final report with all relevant information to the Pesticide Approval and Registration Subcommittee (PARTS) for review. The PARTS report is then submitted to the National Plant Protection Advisory Committee (NPAAC) for approval. At this point, the pesticide may shift from experimental registration (not allowed into the market for any use) to restricted registration (must be handled and applied by technical professionals) or provisional registration (allowed in the market for intended use; valid for two years). Once a full registration is granted, the certificate of registration is valid for five years (Tropical Pesticide Research Institute, n.d.).

The Minister publishes and updates the list of registered plant protection substances in the *Gazette*, and the registration period expires after ten years (Plant Protection Act, 1997). The Minister may terminate the plant protection substance registration before its expiration, but only if he or she gives notice to the applicant who submitted the registration an opportunity to show why the registration shall not be cancelled (Plant Protection Act 1997).

The process for registering pesticides can also differ depending upon the type of chemical registered. For example, livestock-related pesticides are regulated by the Animal Diseases Act 2003 and registered by Veterinary Services under the Ministry of Livestock and Fisheries Development, which also includes the Tanzania Veterinary Laboratory Agency. These pesticides are subject to separate inspection processes as well.

As discussed above, there are currently a number of laws and regulations that affect fertilizer and agrochemicals, and the MAFC is busy reviewing the manner in which these processes are regulated. There are overlaps in the various requirements of the Plant Protection Act, the Tropical Pesticides Research Institute Act, the Animal Diseases Act 2003, and the Fertilizers Act, as well as accompanying regulations. Overlapping mandates regarding the different regulatory institutions, such as the TRFA, the TPRI, and Plant Health Services, also require further study. One proposal under consideration is to divide Plant Health Services and Pesticides Management into two separate functions under two separate acts.

Stakeholders have suggested that a systems audit of the fertilizer and agrochemicals registration processes would help increase understanding of the process and identify steps that could be addressed to further improve the registration processes. When coupled with a systems audit of other stages in the value chain, including variety release and registration, seed certification, and import and export of inputs, this could help streamline and benchmark best practices in regulation of inputs and reduce time and cost, sharpen regulatory purpose, and strengthen institution involved. A comprehensive systems audit would help avoid duplication of institutional functions and would support implementation of Tanzania's New Alliance Commitments.

Enforcement of Fertilizer and Agrochemicals Regulations

Similar to the rise in counterfeit seed, there is also a mounting challenge with counterfeit fertilizer. A 2014 amendment to the Fertilizers Act 2009 was passed to combat the rise of counterfeit plant products by raising the penalties for offenses under the Fertilizers Act and increasing the power of inspectors. For example, if a person is registered to deal in fertilizers, he or she could be stopped on the street and asked to produce a permit by an inspector at any time.

However, since the amendment is new, enforcement of these changes might be slow to transition into practice. There is still a large amount of fake fertilizer on the market; one company estimated the incidence of counterfeit fertilizer was as high as 60 percent, which negatively affect harvests and trust in the market. Similarly, the prevalence of counterfeit pesticides in Tanzania is estimated to be approximately 40 percent (Shao and Edward, 2014).

Overlap in institutional functions is also an issue with regard to quality control of fertilizers and agrochemicals. There is a review underway of possible overlaps in the authority of different regulatory bodies that deal with the testing of agrochemicals and fertilizers. Increasing resources available and strengthening both the TPRI and the TFRA through

measures such as skills training and better laboratory facilities would enable institutions to fulfill their duties and address the prevalence of counterfeit fertilizers and agrochemicals.

Another possible solution would be to increase training for both farmers and dealers on how to check for fake fertilizer. Awareness of counterfeit plant products could also be shared across the sector in other ways. In practice, some inspectors are collecting samples from importers who are charged fees for testing, but they are not widely distributing the results, whether negative or positive. Sharing the results and traceability of the fertilizer or plant product would provide more clarity to those using these inputs, and, since most fertilizer is imported, setting up stronger systems to increase traceability would also help ensure quality of goods to consumers.

Import Measures for Fertilizers and Agrochemicals

Like seeds, any importer of agrochemicals must apply to obtain an import permit for pesticides and fertilizers. In addition, every importer of a pesticide must pay a cess or tax of 0.5 percent of the FOB ("Free on Board") value of the pesticide (Plant Protection Regulations, 1999). Refunds of the tax paid to the Registrar can occur only if the import failed to go through and proof is presented. The Tanzania Bureau of Standards is mandated to check on the quality of imported fertilizer upon arrival.

Any fertilizer that is imported or exported also needs to be accompanied by a radioactivity analysis certificate issued under the Protection from Radiation (Control of Radiation Contaminated Foodstuffs) Regulations, 1998 by the Tanzania Atomic Energy Commission (TEAC). This requires sampling and analysis by the TEAC, and the process can take between one and three working days. The cost of a radioactivity analysis certificate is approximately:

- 35,000 Tshs. for FOB less than or equal to 20 million Tshs.;
- 0.2 percent of FOB for FOB above 20 million Tshs. and up to one billion Tshs.; and
- Two million Tshs. for FOB about one billion Tshs.

Each extra copy of the certificate for the same consignment costs an additional 10,000 Tshs. (Tanzania Ministry of Industry and Trade, n.d.).

For agrochemicals, companies pay a one-time import permit payment per shipment that can be expensive over the course of a year. One company reportedly spent U.S. \$7,000 per year simply on import permits for agrochemicals. In addition, the process to import agrochemicals and fertilizers can be lengthy. New steps in the import process are sometimes added without warning, and, other times, inspections are skipped at the port. A company

reported that clearance of goods could be delayed because the port authorities may apply import rules inconsistently. Companies also report difficulty when regulations change without notice or publication, contributing to confusion among port authorities and companies. Advance notice and improved communication of changes in procedures or fees would help companies comply with requirements and facilitate trade.

Like agrochemicals and seeds, a fertilizer dealer who imports or exports fertilizer must also receive a permit from the TFRA under Section 25(1) of the Fertilizers Act. Further, fertilizer or fertilizer supplements may only be imported through a prescribed port or point of entry. However, the primary delays and challenges in the importation process reportedly arise from the port operations and handling procedures at the Dar es Salaam port. Costs can be driven up by high demurrage charges (\$20,000 per day) and by fertilizer inspection and sampling, which is not conducted on board and requires unloading and storage. Unloading can sometimes take up to a week per vessel due to slow loading of trucks. Fertilizer is often re-bagged as it is unloaded, and this process of unloading and re-bagging can result in leakage of up to four percent (AGRA, 2014). There is also a shortage of storage capacity at port warehouses, and costs may be further driven up because many trucks don't use proper covers (tarpaulin covers), despite a requirement to do so, which often results in damage to fertilizer and increase liability for the importer.

The Fertilizers Act requires that imported fertilizer and fertilizer supplements adhere to the requirements for composition and efficacy specified in the registration application; possess all chemical, physical, and other properties so specified; comply with the prescribed requirements; and are packed in a sealed container that is marked or labeled in the prescribed manner with the prescribed particulars (in case of fertilizer containing bone or any other substance derived from the carcass of an animal, such fertilizer shall be authorized by a permit issued under the Animal Diseases Act, 2003). Notably, the Minister, upon consultation with the Board of Directors of the TFRA, may waive the established restrictions and set alternative conditions in writing to permit the importation of any consignment of fertilizer or fertilizer supplements that does not comply with the requirements under the law. Thus, the Minister, after consultation with the TFRA Board and by Order published in the *Gazette*, can prescribe the types of fertilizer or fertilizer supplements that may be exempted from requirements of the Act or Regulations (Section 50, Fertilizers Act).

Import delays may occur if the TFRA Director instructs that a sample of imported fertilizer be taken for quality testing. During the testing period, the sample fertilizer must remain where the sample was taken unless written consent is obtained from the TFRA Director. However, the law does not require TFRA to adhere to a particular time frame that would ensure that the fertilizer analysis is conducted expediently and without unnecessary delay

to the importers. Currently, the TFRA lacks an official laboratory to properly and quickly test all imported fertilizers, and the TFRA is not authorized to accredit public or private laboratories to undertake fertilizer testing. This limited capacity of TFRA may lead to delay in the release of fertilizer to the industry.

Regional Measures

When the Comprehensive Africa Agriculture Development Programme (CAADP) set a target of six percent annual growth in agricultural productivity, the African Union Heads of State recognized that such a target would require significant increases in fertilizer use. The African Union and New Partnership for Africa's Development (NEPAD) convened the 1996 Fertilizer Summit in Abuja, Nigeria, which resulted in the Abuja Declaration on Fertilizers (AFAP, 2014), to identify the key constraints to increased fertilizer use and develop an action plan to accelerate the accessibility and availability of fertilizer and improve incentives to use fertilizers by smallholder farmers.

Regional fertilizer harmonization has moved forward to a greater extent in some regions but has been slower to progress in others. There have not been any concrete developments regarding regional fertilizer regulation in the EAC and SADC, although the SADC Declaration on Agriculture and Food Security highlights the need to make maximum use of available capacity to manufacture fertilizers within the region (SADC, 2013).

Steps to implement the Abuja Declaration have been taken through other regional bodies. For example, COMESA, in partnership with the African Fertilizer and Agribusiness Partnership (AFAP), has undertaken a review of national policies and regulations on fertilizer importation, manufacturing, distribution and use, with the aim of developing recommendations for the establishment of a harmonized regulatory framework for the region. Ultimately, the COMESA initiative is also aimed at facilitating free trade of fertilizers across borders in the region, but a process will need to be put in place over time to reach this goal. AFAP is working with the private sector to develop greater private sector involvement in the fertilizer industry.

In West Africa, there have been ongoing harmonization efforts through ECOWAS to build an integrated regional market for seeds and fertilizers. These efforts are aimed at developing trade rules and quality control procedures to increase availability and market choice, reduce prices, improve buyer confidence, and make trade in seeds and fertilizers easier, faster, and less expensive. In early 2015, new regulations had been mostly agreed upon within ECOWAS (Keyser, 2015). It could be helpful to study these regional developments as discussions move forward within the EAC and SADC.

Table 10: Fertilizer and Agrochemicals Frameworks and Implementation Challenges

Legal and Regulatory Framework	Implementation Challenges
<i>Tanzanian National Framework</i>	
<p>Fertilizers Act, 2009, and Fertilizers Regulations, 2011</p> <p>Fertilizers Act subject to ongoing review</p>	<ul style="list-style-type: none"> ✓ Need for systems audit to review inconsistencies and gaps in the current Fertilizers Act and Regulations ✓ Registration and licensing processes for fertilizers reported to be complex, lengthy, and costly ✓ Penalties for counterfeit fertilizer not consistently enforced ✓ TPRI and TFRA require more resources to properly fulfill duties ✓ Need to prepare guidelines for TFRA for authorization of private seed laboratories to assist in the regulation of fertilizers ✓ Implementation of trade and transport measures can be an issue, and importation process lengthy and often erratic ✓ Inconsistent notification of changes in regulations or fees ✓ Challenges at port (unloading required for inspection, leakage, lack of storage capacity, high demurrage charges) can cause delays and additional costs ✓ Across inputs value chains, stakeholders' awareness of their legal rights is very limited ✓ Capacity building of law enforcement actors (inspectors, legal officers, prosecutors, and magistrates) is necessary ✓ Need to translate law and regulations into simple language that can be understood properly by farmers and

	<ul style="list-style-type: none"> ✓ other stakeholders ✓ Need to develop guidelines for the private sector to ensure internal quality compliance
Plant Protection Act, 1997 Plant Protection Regulations, 1998 Tropical Pesticide Research Institute Act of 1979 Plant Protection Act, 1997 is under review with likelihood of separation between plant health and plant protection substances Tropical Pesticide Research Institute Act, 1979 is under review	<ul style="list-style-type: none"> ✓ Undertake systems audit to realign the current regulatory functions of PHS, TPRI, and other regulatory agencies such as TBS, TFDA, and Department of Veterinary Services ✓ Registration process for plant protection substances reported to be complex, lengthy, and costly ✓ Reported delays in field testing of pesticides, which take at minimum three cropping seasons ✓ TPRI lacks sufficient capacity to do testing efficiently ✓ Inconstancies and gaps in the current Laws (Plant Protection Act, 1997 and TPRI Act, 1979) need to be harmonized ✓ Capacity building of law enforcement agents (inspectors, legal officers, prosecutors and magistrates) is necessary ✓ Need to strengthen the Office of the Registrar of Pesticides and empower inspectors
<i>Regional Frameworks</i>	
In July 2013, the EAC announced its intention to harmonize regional fertilizer policies within two years	<ul style="list-style-type: none"> ✓ No regional fertilizer policies at this time
Currently no SADC agreement on fertilizers	<ul style="list-style-type: none"> ✓ SADC Declaration on Agriculture and Food Security highlights the need to make maximum use of available capacity to manufacture fertilizers within the region but no steps to implement this goal have been developed

Chapter 8

Key Decision Points and Next Steps

The development of this Legal Guide relied heavily upon stakeholder consultations with both the public and private sectors throughout Tanzania, and it is part of a larger process to foster a dialogue around issues of seed and input law and regulation. A set of key decision points emerged from the substantive analysis and consultations; these decision points and possible next steps were discussed and vetted during stakeholder workshops in July and December 2015 in Dar es Salaam, and turned into a set of actionable recommendations and a Roadmap for further collaborative work between the public and private sectors. This chapter summarizes the recommendations and Roadmap that resulted from this unique collaborative process. The recommendations and Roadmap reflect suggestions from both the public and private sectors to develop further Tanzania's seed system in line with the New Alliance Commitments. All decision points highlighted can act as force multipliers for change, improving the enabling environment for seeds, fertilizer, and agrochemicals in the short-term and bringing about transformational change over time.

Key Decision Points and Next Steps

Each of the recommendations and action areas identified below addresses a critical knowledge or implementation gap in the existing legal and regulatory system and helps build a process for dynamic seed and input sector growth.

Recommendations to Encourage Market Development

(1) Establish Seed Stakeholder Platform

During the course of the consultations conducted in development of the Legal Guide and Recommendations, the need for aggregating functions and data across value chains was highlighted. At the July and December 2015 stakeholders workshops in Dar es Salaam led by SCL, MAFC, and NML, public and private sector stakeholders agreed on the need to build out a Seed Stakeholder Platform, which could initially be coordinated by SCL and TASTA, with input from the Seed Unit, providing an avenue for longer-term capacity development for TASTA.

A Seed Stakeholder Platform will be established to bring together public and private sector stakeholders across the seed value chain and provide a forum for regular meetings and information exchange. The Platform will fulfill a much needed function by allowing issues to be identified as they arise and creating a participatory forum to develop solutions (also

providing a voice for new market entrants and small- and medium-sized enterprises). The Platform can gradually also fulfill various specialized functions, including intensified focus on particular crops, value chains, or geographical areas; crop innovation; data gathering and trend analysis for demand forecasting to ensure availability of reliable seed data; increased awareness of amendments to laws and regulations and of regional processes; and strengthened implementation of regulations through test cases. Initially coordinated by SCL and TASTA (and used to strengthen TASTA's capacity over time) with input from Seed Unit. ASA will also have a central function, including in generation of market demand.

SCL could take initial leadership in the process of implementation of this Recommendation, with close coordination among the various stakeholders involved, including the Seed Unit, and in partnership with TASTA. TASTA would be a central partner and could use the process to build its capacity, including through the development of proposals to obtain funding. In addition, the Seed Stakeholder Platform partners would work closely with ASA to determine its role in the Platform. Implementation should begin during the first half of 2016.

The Seed Stakeholder Platform should be developed based on input from diverse stakeholders along the seed value chain, including, the MAFC, private seed companies, producer organizations, processors, and distributors. In addition, NML could partner with SCL in the initial steps of implementation to identify stakeholder needs and expectations regarding the platform as they relate to policy, legal, and regulatory issues. As capacity develops, platform partners could also research the scalability of innovation platforms that are already being used in Arusha and Dodoma and determine their applicability in other regions.

Based on consultations and dialogue, a mechanism for data collection and dissemination should also be developed. The platform could also, once established, be used for increasing awareness of improved varieties (and the demand for these varieties), and could include for example, an innovation platform for technology adoptions (IPTA), such as has been established along the maize value chain in Burkina Faso. Stakeholders in this regard may include the African Bean Consortium (which is already linked to SUA) that is producing improved common bean varieties that could be suitable for variety release and registration in Tanzania.

Further steps could include the development of a roster of test cases/pilot projects, which would be ideal for collaboration and could include stakeholders engaged along the SAGCOT Corridor as well as other partners, such as the Syngenta Foundation for Sustainable Agriculture's Seeds2B program.

(2) Develop DNA Fingerprinting System to Characterize and Track Public Germplasm

Technological innovation could be a particular asset in many areas along the seed value chain, and, during the July and December 2015 workshops, stakeholders highlighted that DNA fingerprinting is one such an innovation that is worth pursuing. Developing a process for DNA fingerprinting that maps the genome and makes it possible to identify and track sources of public germplasm in collaboration with the National Plant Genetic Resources Center (NPGRC) at TPRI would help keep the seed industry in step with technological advancements and help build a vibrant seed sector. This process would allow for the separation and tracking of sources of public germplasm to inform the variety release and plant breeders' rights (PBR) processes. The NPGRC could possibly house the DNA Fingerprinting and might also be granted legal status with strengthened decision-making and enforcement capabilities that would enable it to perform critical services that are part of a well-functioning germplasm resources center.

Next steps would involve evaluating the process, which is already underway, for giving the NPGRC the legal and institutional basis to undertake services that are critical to the establishment and maintenance of a germplasm resources center, including identifying any changes in legal status needed to establish the NPGC as the base for a DNA fingerprinting system. A further step would include assessing the cost and infrastructure needed for DNA fingerprinting, as well as for other key issues with regard to germplasm conservation, multiplication, and distribution.

(3) Study Institutional Arrangements for Early Generation Seed of Selected Crops

Challenges in early generation seed (EGS) (breeder, foundation, and basic seed) value chains can play a significant role in the accessibility of quality seed of improved varieties. Constraints to accessing publicly bred varieties may be compounded by policies that deter the private sector from operating at a level that allows it to fill gaps that might exist in supporting efficient models for scaling production and availability of EGS. These and other findings were highlighted in a recent study about EGS by the Bill and Melinda Gates Foundation (BMGF) and the U.S. Agency for International Development (USAID), in collaboration with Monitor Deloitte.

Policies governing the institutional arrangements for EGS can vary alongside different market variables that often exist for different crops. For example, in cases where the specific quality seed of an improved variety is very profitable, production costs are low and

demand is high and stable; the private sector would be highly involved in production and the public sector role would be minimal in such cases. In cases where demand is low or uncertain (but the crop is important to maintain food security) or production costs very high, the public sector may have an important role to play in ensuring availability along the seed value chain. This could take the form of incentives for production or mitigation of demand risks. The BMGF study provides valuable guidelines for the implementation of different models of cooperation between the public and private sectors based on different market scenarios. Maize (hybrid) is an example of a crop with high private sector investment. Rice and cassava are examples of crops where there is a strong market demand for quality seed of improved varieties, but where private sector involvement is deterred by high production costs or demand risks. Sorghum and common bean are examples of crops which are important for food security reasons but not profitable to produce, and the demand for quality seed of improved varieties is low (BMGF, 2015). Orange-fleshed varieties of sweet potato (OFSP) in Tanzania are an example of a variety with low commercial demand but high nutritional value, and formalization of the crop and improvement of varieties could be a means to improve food security. Steps are already underway for a national certification process for sweet potato inputs, improved breeding techniques and seed quality, as well as increased stakeholder investment in OFSP (BMGF, 2015).

Given the involvement of the public sector in the seed value chain and the role that public research institutes play, some systemic challenges could be addressed by facilitating involvement of the private sector in foundation and quality seed production without the National Agricultural Research System (NARS) acting as intermediaries. Other policies that are supportive of EGS value chain development include, for example, training around data collection and trend analysis for demand forecasting, application of quality assurance processes, possible tax exemptions for owners of labs and facilities, as well as a focus on improved models for accessing finance (BMGF, 2015).

The Seed Stakeholder Platform could identify steps to commence a study around EGS value chains supported by AGRA, followed by the selection of specific crops in the Tanzanian market for which there could be public-private cooperation in EGS value chains, taking into account factors such as demand, profitability, and public good of the variety, as well as the identification of stakeholders to support implementation.

A methodology could be developed to examine costs associated with maintenance and production of EGS of selected crops in order to identify areas that require public sector investment for development of EGS value chain (in collaboration with various partners, including ASA, CGIAR, and AGRA).

The implementation of this recommendation could further be supported by an analysis of the challenges within the EGS enabling environment and the identification of steps to address them, as well as an assessment of institutional models and best practices that enable greater private sector participation in EGS value chain, including, for example, the review of the 2011 MAFC Licensing Circular and the identification of specific crops which could be used as pilot cases.

(4) Apply Best Practices in Authorization of Public Varieties

Private sector access to public varieties has been highlighted as a particular issue in the Tanzanian seed industry. To address this challenge, a Ministerial Circular was introduced to allow the private sector to access pre-basic seed directly from Agricultural Research Institutes (ARIs); however, the Circular has achieved limited success and is therefore under review. The review process has included the input of various stakeholders through, for example, workshops held by the MAFC, and many recommendations provided by the private sector have been accepted. The application of best practices in authorization of public varieties would support ongoing efforts in the MAFC to improve the 2011 Circular.

Next steps for implementation would include completion of the review of the operation of the Ministerial Circular by the Director of Research and Development (overseen by the PBR Office), taking into account the challenges raised by the private sector, including clarity regarding the conditions for meeting 50 and 80 percent of demand in a region. A further step could include the application of best practices for authorization of public varieties and their applicability in Tanzania. Further steps to improve the operation of the Circular were discussed at the December 2015 stakeholders' workshop and included the possible development of a list of pre-qualified seed companies to which information could be sent regarding varieties available for authorization, as well as possible public-private collaboration (possibly through the Seed Stakeholder Platform) around the promotion of public varieties in order to generate demand, which would make the varieties more lucrative for the private sector to develop and encourage participation in the authorization program.

(5) Support Regional Implementation

By streamlining processes, regional harmonization makes the market more attractive for business and leads to increased investment. Tanzania would benefit significantly from effective, forward-looking, models for regional implementation that promote all aspects of the value chain. The development of effective models could be achieved through an assessment of Tanzania's regional obligations, clear implementation in domestic

regulations, as well as an evaluation, over the longer term, of the effect of these systems on Tanzania's competitiveness and the alignment of commitments, including through the Tripartite Free Trade Area, based on the most advantageous system.

As initial steps, a matrix would be developed and disseminated mapping different regional obligations, and a procedure agreed upon for the implementation of regional rules. Based upon this matrix, MAFC would be able to clarify regulatory guidance on variety release and registration under the ASARECA/ECAPAPA and SADC agreements, and further steps could then also be taken toward providing clear regulatory guidance to link national regulation with regional processes, including a clear process for the introduction of varieties in Tanzania that are listed in the SADC variety catalogue. This step could also include the identification of regional best practices in implementation of the Tripartite Free Trade Area (TFTA) among the EAC, SADC, and Common Market for Eastern and Southern Africa (COMESA). Over the longer term, an evaluation of the effect of these systems on Tanzania's competitiveness and an alignment of commitments based on best practices and commercial advantage could be developed. Such an evaluation process could also encourage alignment and implementation of the TFTA.

Tanzania could also take a regional lead while simultaneously achieving its New Alliance objectives by taking steps to advance the implementation of the EAC and SADC SPS requirements. This would help to significantly reduce non-tariff barriers and increase transparency in trade policy and rules. An additional step in support of the advancement of regional efforts would include encouraging a clear regional commitment for data sharing.

In addition, testing the regulatory steps in practice will help ensure a workable process for implementation. Tanzania's leadership in variety release and registration under the ASARECA/ECAPAPA agreement could be highlighted, and additional test cases could be pursued. Conducting test cases would also be particularly valuable in testing implementation of the SADC HSRS.

(6) Facilitate Trade of Seeds, Fertilizers, and Agrochemicals

Farmers in Tanzania rely heavily on imported fertilizer and pesticides and would benefit significantly from a greater variety of high-quality seed on the market. Costly and lengthy border procedures push up the price and affect the availability of seeds, fertilizer, and agrochemicals on the market.

The international trade (including WTO) term "trade facilitation" refers to easing the movement of goods across borders. Easing cross-border trade procedures in Tanzania for

seeds, fertilizers, and agrochemicals will encourage investment and significantly speed up the time it takes for inputs to reach the market. This could be achieved by building measures focused on seed, fertilizers, and agrochemicals into trade facilitation efforts underway, e.g. making paperwork available online and tracking seed, fertilizer, and agrochemical product and trader registrations through the electronic single window system being developed (which would also contribute to addressing counterfeit trade and enhancing transparency in customs processes.) Measures to facilitate internal trade, e.g. between regions, could also significantly improve the distribution of quality inputs. Measures should also be developed to facilitate trade locally within Tanzania. Such measures could include programs aimed at training and registration of local distributors.

Next steps would include an assessment of incorporating seed, fertilizer, and agrochemicals trade into existing trade facilitation efforts. This could be done through collaboration with current programs and include private sector stakeholders, donor projects, and relevant authorities, including the Ministry of Industry and Trade and the Tanzania Revenue Authority.

Further steps could include initially, ensuring that paperwork required for trade in inputs is available online, and eventually that such paperwork is integrated into the electronic single window system currently under development, as well as developing measures to track registrations for seed, fertilizer, and agrochemicals trade. Test cases could be conducted to support efforts to identify and address non-tariff measures in the region.

Assess measures to facilitate trade in seeds, fertilizers, and agrochemicals within Tanzania, including through establishing systems for training and registration of local distributors.

Recommendations to Streamline Regulatory Rules and Processes

(1) Streamline Regulatory Processes Across Value Chain Functions

While the processes for variety release and registration, seed certification, trade and fertilizer and agrochemical registration in Tanzania have been improved, there may be aspects of these processes that could be further streamlined and simplified, particularly for certain crops. At the July and December 2015 workshops, participants agreed that regulatory processes along value chain functions require multiple steps that need to be continually assessed and streamlined.

Regulatory processes along each stage of the inputs value chain (including variety release and registration, seed certification, trade, and fertilizer and agrochemicals registration) require multiple steps that need to be continually assessed and streamlined by regulatory

institutions. Challenges encountered by stakeholders along regulatory processes could be raised through the Seed Stakeholder Platform. Streamlining regulatory processes would support implementation of the New Alliance Commitments.

The Seed Stakeholder Platform will fulfill a central function in the implementation of this recommendation by providing a forum for stakeholders to raise regulatory procedural challenges faced by the industry; by identifying and raising awareness of challenges as they arise the Platform can immediately feed the needs of diverse stakeholders into procedural assessments being undertaken by the Ministry. Examples of these challenges were raised in the December 2015 workshop and included a need for transparency in the variety release and registration process, as well as a need for streamlining and simplifying the import process. The Platform will also be significant in dissemination of information regarding regulatory processes, including regional processes.

Implementation of this recommendation would include the Ministry conducting a sub-sector set of activities to comprise a systems audit on each stage of the process, including procedures and regulatory requirements. Processes and steps should be evaluated and compared in order to identify best practices. Information regarding procedural challenges identified by stakeholders could be fed into the Ministry's procedural assessments through the Seed Stakeholder Platform. Procedural assessments should also include detailed evaluation of steps required in trade and registration of fertilizers, agrochemicals, and other vital inputs, for example soybean inoculant.

A suggested path for implementation could include identifying existing steps that are most efficient and most functional, as well as sharing local and regional best practices across the public and private sectors. Best practices in the Tanzanian system, (e.g. in the PBR registration process mentioned above), could also be evaluated in order to derive lessons learned and complementary application.

(2) Develop Capacity Within the Tanzania Official Seed Certification Institute (TOSCI)

TOSCI plays a pivotal role in the process of getting seeds to the market, yet by all accounts TOSCI could benefit from additional capacity in a number of areas to fully carry out its broad mandate of field inspections, seed testing, labeling, and enforcement. Among these, developing an operation program for authorizing private third parties to conduct field inspections and seed testing has been highlighted as a priority through the consultations and workshop held in developing this Guide. Equipping TOSCI with the tools (including clear guidelines) and capacity to accredit private third parties to conduct field inspections and seed testing, consistent with the Seeds Act and Regulations and regional seed

initiatives, could have a significant impact throughout the seeds value chain. Building this capacity would generate multiple benefits, including: (1) ameliorating the pressure on TOSCI inspectors to cover such a large area (10,000 ha of seed fields); (2) reducing the costs of TOSCI's operations; (3) allowing the private sector to streamline field operations; and (4) eliminating duplicative payments for private enterprises to have their fields inspected (USAID, 2013). As part of this process, private sector seed inspectors would be trained and accredited by TOSCI to conduct inspections, and written training guidelines would be published and disseminated by TOSCI. TOSCI's capacity would need to be enhanced so that it can establish a transparent system for accreditation, working with seed companies to develop and maintain a quality management system. Seed inspectors would have to be well trained in seed descriptors, isolation distances, and other factors that impact seed inspection and quality control.

Including the private sector in seed inspection would introduce a complementary aspect of self-regulation into the public inspection process that has worked well in other dynamic seed systems and would create additional incentives for private sector participation in Tanzania's seed sector. It is notable that third-party certification is recognized by both the OECD and the SADC agreements, and some best practices and new technologies could help Tanzania implement these changes in a new, dynamic way. For example, the South African National Seed Organization (SANSOR) has developed seed inspector and seed sampler training materials that could be helpful in establishing an inspector accreditation program in Tanzania. An ICT component to monitor seed inspectors would also significantly enhance TOSCI's capacity to establish and maintain an accreditation program and would bring much needed transparency and traceability to the process.

Growing demand for certified seed is increasingly outweighing TOSCI's ability to deliver and in order to effectively maintain the capacity to meet growing demand, TOSCI's ability to incorporate future market estimates into its strategic planning will need to be enhanced. This could be an area for collaboration between the Seed Stakeholder Platform and TOSCI.

In addition to helping with centralized seed certification, a well-established and monitored inspector accreditation system could also support the QDS system and perhaps enable QDS to apply beyond limited geographical areas. The application of this type of monitored inspector accreditation system to QDS would particularly help to address current challenges that exist in the implementation and enforcement of QDS rules. QDS would be significantly strengthened through the formal training and accreditation of sufficient field inspectors and stricter application of QDS rules. This may require increased awareness around QDS rules (and possibly the formalization of QDS rules through regulatory frameworks), which could be included in the role of Agricultural Legal Aid Clinics (discussed below under "Development of Legal Training and Approaches").

TOSCI has expressed support for implementing an accreditation program and is developing plans to move forward.

(3) Streamline and Rationalize Functions of Regulatory Institutions Within Ministry of Agriculture, Food Security, and Cooperatives (MAFC)

Duplicity of functions among institutional bodies mandated with implementation of the Seeds Act, Plant Protection Act, Plant Breeders' Rights Act, Tropical Pesticides Research Institute Act, and Fertilizers Act can complicate and slow down different regulatory procedures (these include the Office of Crop Development and the various bodies, institutions, and committees discussed in the Legal Guide). Assessing the functions of institutional bodies within various regulatory processes, evaluating overlaps and ensuring alignment with key functions as set out in the above laws could be one way of ensuring streamlined functions. Additionally, strengthening the capacity of institutional bodies to fulfill their functions, and establishing a one-stop service where stakeholders can obtain information and paperwork in one place, would further streamline functions and processes.

One significant step resulting from the project consultations and workshops would be evaluating the institutional arrangement under the Seed Act and Regulations and other relevant legal instruments in order to streamline and rationalize functions and possibly suggest ways in which restructuring could be needed (for example separation of institutional functions at TPRI). This could include mapping out functions of regulatory bodies and identifying areas where collaboration would increase procedural efficiency, including, for example, regional institutions, institutions dealing with trade and customs, and the Tanzania Bureau of Standards. There is also an area for cooperation with regard to other studies already underway, for example, the study by SUA focused on institutional roles and possible overlaps in authority between national and local government would be relevant for the implementation of this recommendation. The role of the ASA will need be evaluated with a view to strengthening its support for private sector development, and a process will need to be developed to increase the capacity of ARIs.

Additional steps could include increasing the TFRA's access to laboratories and human resources, establishing a clear process for updating the Variety Catalogue, and developing a one-stop service to increase stakeholders' access to laws (including possible translation of laws and regulations into Kiswahili) and provide guidelines for farmers.

Further steps could also include developing a system to enhance transparency and ensure that fees collected are used to improve the quality of services offered, as well as developing a comprehensive proposal for capacity building with a basket of funding.

Establishing training programs for regulators and other officers involved in the enforcement and implementation of laws and regulations affecting seeds and inputs will also be important, as will the establishment of modalities for the appointment and accountability of inspectors, samplers, or analysts.

(4) Clarify Plant Breeders' Rights Language Related to Farmers' Rights and Increase Awareness

Uncertainty within the public regarding interaction between farmers' rights and plant breeders' rights could undermine efforts to formalize the seed system. This might be addressed by the distribution of information to increase public knowledge regarding this issue, possibly through Legal Aid Clinics. Clarification of the exception to breeders' rights in the PBR Act that allows small-scale farmers to engage in traditional seed saving for non-commercial purposes will be published in regulations to the PBR Act. Clarification of farmers' rights will be provided through legislation underway to domesticate the International Treaty on Plant Genetic Resources for Food and Agriculture.

Next Steps for implementation include establishing a channel of communication between civil society and the PBR Office, as agreed upon during the July 2015 stakeholders' forum, the promulgation of regulations in accordance with the PBR Act of 2012, as well as a study of best practices allowable under UPOV. An additional step includes continuation of current efforts to develop national legislation to domesticate the International Treaty on Plant Genetic Resources for Food and Agriculture, including ensuring clear guidelines regarding farmers' right, particularly farmers' rights to the use of farm-saved seed and the interaction thereof with the protection of plant breeders' rights.

This recommendation would also be supported through a public awareness campaign around farmers' rights and plant breeders' right, perhaps in collaboration with the NPGRC and Legal Aid Clinics (discussed below).

(5) Provide Guidelines to Local Government Authorities (LGAs) on Implementation of Seed and Agriculture Regulations

Under the Local Government Act (Urban Authorities) Act Cap. 288 R.E, 2002 and the Local Government Act (District Authorities) Act Cap. 287 R.E, 2002, LGAs may establish by-laws

covering different subject matters, including agricultural inputs, but challenges arise when by-laws are not in line with national legislation. The development of guidelines or model by-laws would reduce the complications of ambiguous interpretations that can lead to uneven implementation and enforcement of by-laws. Guidelines or model by-laws would also take into account roles of LGAs towards implementation of the Seeds Act, Fertilizers Act, and agro-chemicals legislation.

The application of guidelines or model bylaws in practice, as well as the implementation of workable processes for the vetting of by-laws, will require close cooperation between the MAFC, the Prime Minister's Office, and LGAs.

Next steps for implementation could include working with LGAs to identify areas in which the development of guidelines and model by-laws would be most beneficial, including for harmonization across districts and reduction of ambiguities. Guidelines for LGAs, and possibly model by-laws, including annotations, should then be developed accordingly, including clear guidelines in English and Kiswahili for the interpretation of national seed legislation in the application of by-laws, in particular regarding the cess. A suitable district could be identified for a pilot and a possible test case. An additional step would include developing measures to strengthen the advocacy role of non-state actors to prevent potential exploitation through by-laws (e.g. inappropriate application of the cess).

Recommendations to Develop Legal Training and Approaches

(1) Increase Awareness of Laws and Regulations and Improved Legal Training in Seeds and Inputs (Training and Legal Clinics and Model Legal Education Curriculum)

Throughout the consultations conducted in development of the Legal Guide, stakeholders highlighted the importance of increasing awareness of legal and regulatory frameworks for seeds, fertilizers, agrochemicals, trade, and plant breeders' rights. Limited knowledge of legal processes and access to legal assistance (leaving smallholder farmers vulnerable and undermining efforts to implement formal legal frameworks to regulate and strengthen the seed system) could be addressed through increased dissemination of information regarding laws and regulations, the provision of assistance to farmers in preparing or interpreting legal documents such as contracts (for contract farming), the provision of transactional legal services to individuals working with the agricultural sector, and the enforcement of QDS rules. This could be done in combination with the development of a legal education curriculum to train and equip lawyers with necessary facilities for effective delivery of agricultural legal services to stakeholders. These efforts could be linked to

existing networks offering legal services e.g. initiatives focused on human rights and rights of women in rural areas, and possibly to extension services.

A next step for implementation could include training, perhaps along the SAGCOT Corridor, to share the Legal Guide and ensure its dissemination and use. Additional steps include the development with MAFC of a model for Agricultural Legal Clinics that would be able to help with the provision of guidance in the implementation of by-laws and the provision of legal services at the local level. Related steps could include establishing a pilot legal clinic, possibly in Iringa; developing ways in which these Legal Clinics can work with LGAs; and assessing possible ways to link to agricultural legal aid services to existing initiatives and legal networks focused on other areas of law, and with extension services.

Additional steps could include assessing the possibility for legal education and curriculum, also in collaboration with local lawyers, universities, training institutes (such as Trapca in Arusha) and Legal Clinics. Further steps could then be to develop an appropriate model for agricultural legal aid clinics, including a curriculum, and exploring ways to link legal teaching and clinical training between law schools in Tanzania and the United States.

(2) Address Legal Aspects of Access to Financing

Farmers' access to quality seed, fertilizer, and agrochemicals is limited by challenges in accessing finance. Addressing certain legal aspects regarding delivery models and tools for financing could provide innovative solutions to challenges around e.g. institutional capability (legal structures of cooperatives), risk management (creation of collateral registry), and bankability. Through focused analysis and increased collaboration between regulators and financial services providers models could be developed to close gaps related to financing for seeds, fertilizers, and agrochemicals.

As a next step, a study could be conducted of access to finance through different delivery models and tools such as a collateral registry, lease financing, and cooperatives to manage risk and increase access to seeds and other inputs. A study would include an analysis of the rules, regulations, and eligibility criteria of different financing models. The aim of such a study would be to help identify new pathways for financing and ultimately enable organizations to better deliver access to seeds, fertilizer, and agrochemicals. Understanding the legal structures that regulate different delivery models and tools will make it easier to find ways of overcoming legal challenges that currently prevent these tools from facilitating access to finance. Additional steps would include increased efforts by the MAFC to strengthen capacity of the AGITF; as well as the development of models for increased collaboration between regulators and financial services providers, perhaps connected to legal training and legal clinics.

(3) Assess Legal Models for Equitable Contract Farming Arrangements

Contract farming can bring significant benefits to farmers or seed producers (e.g. access to inputs and insurance), however lack of awareness of contractual provisions and protections can leave farmers and outgrowers under-protected and vulnerable. Tailoring contracts specifically towards seed production can extend contractual protections and provide greater benefits for contracting parties. This work would feed into the development of a broader legal framework for contract farming already under development within MAFC and could also be connected to legal training/legal clinics.

As a next step, legal models for contract farming could be assessed, specifically related to contract seed production, including best practices for balanced contract farming arrangements and outgrower schemes for seed production. In addition, this work could be linked to the UNIDROIT-FAO-IFAD Legal Guide on Contract Farming, possibly through test cases, and could feed into the development of a broader legal framework for contract farming already underway through MAFC. Legal clinics and legal training, discussed in greater detail below, could be particularly well suited for making these links.

Summary of Key Decision Points

Recommendation	Description
Encourage Market Development	
Establish Seed Stakeholder Platform	A Seed Stakeholder Platform will be established to bring together public and private sector stakeholders across the seed value chain and provide a forum for regular meetings and information exchange. The Platform will fulfill a much needed function by allowing issues to be identified as they arise and creating a participatory forum to develop solutions (also providing a voice for new market entrants and small- and medium-sized enterprises). The Platform can gradually also fulfill various specialized functions, including intensified focus on particular crops, value chains, or geographical areas; crop innovation; data gathering and trend analysis for demand forecasting to ensure availability of reliable seed data; increased awareness of amendments to laws and regulations and of regional processes; and strengthened implementation of regulations through test cases. Initially coordinated by SCL and TASTA (and used to strengthen TASTA's capacity over time) with input from Seed Unit. ASA will also have a

Recommendation	Description
	central function, including in generation of market demand.
Develop DNA Fingerprinting System to Characterize and Track Germplasm	A well functioning germplasm resources center provides valuable functions and services necessary for development of the seed industry. By mapping the genome, DNA fingerprinting enables identification and tracking of sources of germplasm, including public germplasm (which could, for example, be used to inform the variety release and PBR processes). With sufficient legal status and strengthened decision-making capabilities, the National Plant Genetic Resources Center (NPGRC) could maintain a germplasm resources center and house a DNA fingerprinting system supported through collaboration with stakeholders such as TOSCI and SUA, regional initiatives already underway (e.g. cassava fingerprinting at Mikocheni Agricultural Research Institute), and international institutions like the Consultative Group for International Agricultural Research (CGIAR).
Study Institutional Arrangements for Early Generation Seed of Selected Crops	Challenges in early generation seed (EGS) (breeder, foundation, and basic seed) value chains significantly affect availability of high quality seed. Investment in public varieties (through, for example, the CGIAR) is not transferring readily to the private sector, and the public sector cannot always produce adequate EGS to meet demand. Developing models for institutional cooperation between the public and private sectors depending upon the demand, profitability, and public good of specific varieties could address this challenge. An agreement on institutional arrangements for EGS of selected crops could clarify a role for the private sector in EGS and contribute significantly to addressing broader challenges that exist in the Tanzanian seed sector.
Apply Best Practices in Authorization of Public Varieties	Private sector access to public varieties has been highlighted as a particular issue in the Tanzanian seed industry. To address this challenge, a Ministerial Circular was introduced to allow the private sector to access pre-basic seed directly from Agricultural Research Institutes (ARIs); however, the Circular has achieved limited success and is therefore under review. The review process has included the input of various stakeholders through, for example, workshops held by the MAFC, and many recommendations provided by the private sector have been accepted. The application of best practices in authorization of public varieties would support ongoing efforts in the MAFC to improve the 2011 Circular.

Recommendation	Description
Support Regional Implementation	By streamlining processes, regional harmonization makes the market more attractive for business and leads to increased investment. Tanzania would benefit significantly from effective, forward-looking, models for regional implementation that promote all aspects of the value chain. The development of effective models could be achieved through an assessment of Tanzania's regional obligations, clear implementation in domestic regulations, as well as an evaluation, over the longer term, of the effect of these systems on Tanzania's competitiveness and the alignment of commitments, including through the Tripartite Free Trade Area, based on the most advantageous system.
Facilitate Trade of Seeds, Fertilizers, and Agrochemicals	The international trade (including WTO) term "trade facilitation" refers to easing the movement of goods across borders. Easing cross-border trade procedures in Tanzania for seeds, fertilizers, and agrochemicals will encourage investment and significantly speed up the time it takes for inputs to reach the market. This could be achieved by building measures focused on seed, fertilizers, and agrochemicals into trade facilitation efforts underway, e.g. making paperwork available online and tracking seed, fertilizer, and agrochemical product and trader registrations through the electronic single window system being developed (which would also contribute to addressing counterfeit trade and enhancing transparency in customs processes.) Measures to facilitate internal trade, e.g. between regions, could also significantly improve the distribution of quality inputs.
Streamline Regulatory Processes Across Value Chain Functions	Regulatory processes along each stage of the inputs value chain (including variety release and registration, seed certification, trade, and fertilizer and agrochemicals registration) require multiple steps that need to be continually assessed and streamlined by regulatory institutions. Challenges encountered by stakeholders along regulatory processes (for example, the need for transparency in the registration process and cumbersome seed import processes) could be raised through the Seed Stakeholder Platform. Streamlining regulatory processes would support implementation of the New Alliance Commitments.
Develop Capacity Within the Tanzania Official	TOSCI is making significant capacity gains, but growing demand for certified seed is increasingly outweighing TOSCI's capacity to deliver. One way of ensuring that TOSCI is equipped to meet rising

Recommendation	Description
Seed Certification Institute (TOSCI)	demand is to build TOSCI's ability to operationalize authorization of private third parties to conduct field inspections and seed testing (as recognized in the Seeds Act and Regulations and regional seed initiatives), including through development of clear guidelines and inspector training programs. In addition, monitoring technology would improve traceability and enhance TOSCI's capacity to conduct seed certification and could support broader application and stricter enforcement of Quality Declared Seeds (QDS).
Streamline Regulatory Rules and Processes	
Streamline and Rationalize Functions of Regulatory Institutions Within Ministry of Agriculture, Food Security, and Cooperatives (MAFC)	Duplicity of functions among institutional bodies mandated with implementation of the Seeds Act, Plant Protection Act, Plant Breeders' Rights Act, Tropical Pesticides Research Institute Act, and Fertilizers Act can complicate and slow down different regulatory procedures (these include the Office of Crop Development and the various bodies, institutions, and committees discussed in the Legal Guide). Assessing the functions of institutional bodies within various regulatory processes, evaluating overlaps and ensuring alignment with key functions as set out in the above laws could be one way of ensuring streamlined functions. Additionally, strengthening the capacity of institutional bodies to fulfill their functions, and establishing a one-stop service where stakeholders can obtain information and paperwork in one place, would further streamline functions and processes.
Clarify Plant Breeders' Rights Language Related to Farmers' Rights and Increase Awareness	Uncertainty within the public regarding interaction between farmers' rights and plant breeders' rights could undermine efforts to formalize the seed system. This might be addressed by the distribution of information to increase public knowledge regarding this issue, possibly through Legal Clinics. Clarification of the exception to breeders' rights in the PBR Act that allows small-scale farmers to engage in traditional seed saving for non-commercial purposes will be published in regulations to the PBR Act. Clarification of farmers' rights will be provided through legislation underway to domesticate the International Treaty on Plant Genetic Resources for Food and Agriculture.
Provide Guidelines to Local Government Authorities (LGAs)	Under the Local Government Act (Urban Authorities) Act Cap. 288 R.E, 2002 and the Local Government Act (District Authorities) Act Cap. 287 R.E, 2002, LGAs may establish by-laws covering different subject matters, including agricultural inputs, but challenges arise

Recommendation	Description
on Implementation of Seed and Agriculture Regulations	when by-laws are not in line with national legislation. The development of guidelines or model by-laws would reduce the complications of ambiguous interpretations that can lead to uneven implementation and enforcement of by-laws. Guidelines or model by-laws would also take into account roles of LGAs towards implementation of the Seeds Act, Fertilizers Act, and agro-chemicals legislation.
Development of Legal Training and Approaches	
Increase Awareness of Laws and Regulations and Improve Legal Training in Seeds and Inputs (Training and Legal Clinics and Model Legal Education Curriculum)	Limited knowledge of legal processes and access to legal assistance (leaving smallholder farmers vulnerable and undermining efforts to implement formal legal frameworks to regulate and strengthen the seed system) could be addressed through increased dissemination of information regarding laws and regulations, the provision of assistance to farmers in preparing or interpreting legal documents such as contracts (for contract farming), the provision of transactional legal services to individuals working with the agricultural sector, and the enforcement of QDS rules. This could be done in combination with the development of a legal education curriculum to train and equip lawyers with necessary facilities for effective delivery of agricultural legal services to stakeholders. These efforts could be linked to existing networks offering legal services e.g. initiatives focused on human rights and rights of women in rural areas, and possibly to extension services.
Address Legal Aspects of Access to Finance	Farmers' access to quality seed, fertilizer, and agrochemicals is limited by challenges in accessing finance. Addressing certain legal aspects regarding delivery models and tools for financing could provide innovative solutions to challenges around e.g. institutional capability (legal structures of cooperatives), risk management (creation of collateral registry), and bankability. Through focused analysis and increased collaboration between regulators and financial services providers models could be developed to close gaps related to financing for seeds, fertilizers, and agrochemicals.
Assess Legal Models for Equitable Contract Farming Arrangements	Contract farming can bring significant benefits to farmers or seed producers (e.g. access to inputs and insurance), however lack of awareness of contractual provisions and protections can leave farmers and outgrowers under-protected and vulnerable. Tailoring contracts specifically towards seed production can extend contractual protections and provide greater benefits for contracting

Recommendation	Description
	<p>parties.</p> <p>This work would feed into the development of a broader legal framework for contract farming already under development within MAFC and could also be connected to legal training/legal clinics.</p>

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Annex 1: Related Fees

General Fees for Regulatory Requirements Governing Seed

SIXTH SCHEDULE

FEES FOR SERVICES

(Made under Regulation 40 (1))

<i>Service</i>	<i>Fee in TShs.</i>
<i>I. Charges based on the services rendered for each operation:</i>	
A: Seed field inspection made to determine the eligibility of a crop for pedigree status for each inspection:	
(1) for hybrid maize per hectare inspected	3150
(2) vegetables/pastures, up to one hectare inspected	5000
(3) vegetables/pastures, for every exceeding unit above one hectare inspected	4000
(3) for all other s of Seeds crops, per hectare inspected	2150
(4) minimum fee per field where inspected total field is less than 10 hectares,.....	20,000
B: Seed inspection and sampling:	
(1) agricultural crops per 100kg or part thereof	1,500
(2) vegetable crops per 5 kg	2000
(3) root crops per hectare or part thereof	2000
(4) minimum fee for each lot inspected (maximum of 10 tones per lot)	10,000
C: Seed testing for germination, purity and moisture:	
(1). charges for one kg for field crops of pedigree class	15
(2). charges for 100gm for vegetable crops of pedigree class	20
(3). charges on one kg for standard class Seed.....	5
(4). charges on one kg of Seed for export	20
D: Seed health testing:	
(1) charges per sample for local market Seed	20,000
(2) charges per sample for export Seed.....	50,000
F: Certificate and Tags	
(1) registration of Seed dealer.....	2500
(2) variety registration	10,000
(3) certificate of Seed testing	1000
(4) certificate for Seed import/ export	10,000
(5) certified copy of a Seed testing certificate	500
(6) label /seal per each label /seal	500
(7) DUS test certificate.....	5000
E: Non refundable fees for various application forms	
(1) Registration as a Seeds dealer.....	2000
(2) DUS test.....	2000
(3) NPT	2000
(4) Seed field inspection.....	3000
(5) Seed testing (per Seeds lot)	1000
(6) Seed transport order.....	2000
(7) Notice to import/export Seed.....	2000
F: Other charges	
(1) Conducting DUS test (for two seasons).....	500,000
(2) Conducting NPT(for one season).....	600,000
(8) Authorisation / licensing of Seeds sampler or Analyst	20,000

Note: Fees for inspect, sampling , testing shall apply mutatis mutandis on re- inspection re- sampling or testing.

Source: Seeds Regulations, 2007

Fees Related to Plant Breeders' Rights (US \$)

Application for a grant of PBR:.....	200
Application for a provisional protection:	300
Technical evaluation of a variety:.....	600
Annual maintenance fee:.....	200
Purchase of a report from a testing authority in another country:	320
Replacement of lost or destroyed certificate:.....	40
Claim of priority from a preceding application outside Tanzania:.....	20
Change of denomination:	80
Reinstatement of an abandoned application on petition:.....	80
Surcharge for late payment:	60
Application for a compulsory license:.....	70
Application for extension of the period of a grant:.....	100
Inspection of register and documents:.....	20
Duplicate page of register or documents:.....	1
Grant for Plant Breeders rights certificate:	240
Application for extension of time limit:.....	10

Source: 2008 Plant Breeders' Rights Regulations

General Fees for Plant Products and Plant Protection Substances

Fees range for different services. A fee shall be charged on every service provided under the Act, and these Regulations. Fees are charged for the following services –

- Registration of plant protection substances, and post registration control;
- Plant import and export control, and post entry quarantine;
- Training on plant protection provided by the Ministry; and
- Plant protection extension services.

Breakdown of fees for registration and post registration control. The services that require the payment of a fee on registration of plant protection substances and post registration control shall include –

- Pre-business approval in plant protection substances for
 - Manufacturers (US \$100 annually)
 - Importers (US \$150 annually)
 - Distributors / retailers (US \$50 annually); and

- Commercial operators (US \$50 annually)
- Plant protection substance registration for
 - Experimental registration (US \$1000);
 - Provisional registration (US \$1500 per registration period);
 - Full registration and renewal (US \$1000 per registration period);
 - Re-registration (US \$5000); and
 - Application for registration
- Plant protection substances sampling;
- Plant protection substances analytical and screening services in the laboratory (minimum of US \$150 per sample); and field testing (minimum of US \$2000 per product).

Breakdown of fees for import and export control.

Services that require payment of fees on plant and plant products import and export control and post-entry control include but are not limited to –

Import Fees

- Issuance of import permit (US \$5 per consignment);
- Inspection of consumption commodities is dependent upon tonnage;
 - 1 ton or less (US \$2 per consignment)
 - 1 ton to 1000 tons (US \$2 + additional tons x US \$0.20 per consignment)
 - More than 1000 tons (US \$202 + additional tons x US \$0.10 per consignment);
 - Import certification (US \$2 per consignment)
-

Export Fees

- Issuance of phytosanitary certificates (US \$15 per consignment);
- Inspection of export commodities is dependent upon tonnage (US \$ same as imports);
- Treatment supervision for exports (minimum of US \$1000 per consignment);
- Closed and post entry quarantine (US \$100 per consignment);
- Inspection or treatment of conveyances (minimum of US \$100 per consignment); and
- Conveyance certification (US \$2 per consignment).

Source: Sixteenth Schedule of the Plant Protection Regulations, 1999

General Fees for Plant Protection Services

Fees On Necessary Services Connected With Plant Protection Services			
Service	Payable Fee	Validity Of Payment	Additional Conditions
Field inspection and traveling costs			
field inspection during active growth	minimum of US\$ 20	per assignment	
traveling	US\$ 10	for distances within 10 Km	
	10 US\$ + 0.5 for each additional km		
Destruction of materials	US \$ 20	per consignment	may be more, depending on the destruction cost
training		per trainee	fee to be determined according to the cost of the course required
plant protection extension services		per farmer	fee to be determined according to the cost of the course required

Source: Plant Variety Protection Regulations, 2008

Fees Related to Fertilizer

(a) Tax and charges for fertilizer imports (US \$)

The following are the tax and charges regime for fertilizers:

<i>S/No.</i>	<i>Description</i>	<i>Chargeable tax</i>
1.	Import duty	0%
2.	Custom wharf rent -CWR	0%
3.	Charges on CIF	1.6% (at port of entry)
4.	Handling charges	US \$6 per ton (at Harbor)
5.	VAT (18%)	0%
6.	SUMATRA fee	US \$0.25 per ton
7.	Radiation Commission	0.4% FoB ("Free on Board")
8.	Pre- shipment Verification of Conformity - PVoC charges (TBS)	0.53% FoB
9.	Clearing and forwarding	US \$3 per ton

Source : Tanzania Fertilizer Regulatory Authority, 2015

(a) Application for licensing of the fertilizer dealer: US \$20

(b) Analysis fees for every components in the fertilizer:

- Total Nitrogen – US \$50;
- Total phosphate - US \$50;
- Potash - US \$20;
- Plant nutrients - US \$50;
- Moisture contents – US \$50;
- Heavy metal - US \$120; and
- Particle size - US \$20.

(c) Registration of sterilizing plant: US \$1,000

(d) Laboratory and filed test per season for new fertilizer of fertilizer supplement: US \$10,000.

Source: Fertilizers Regulations, 2011