# Impacts of an improved seed policy environment in Eastern and Central Africa

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**Acronyms and abbreviations**

| | |
|---|---|
| ADC | Agricultural Development Corporation |
| AMPROSEM | Association Malgache des Professionnels des Semences et Plants, Madagascar (Malagasy Seed Trade Association) |
| ASARECA | Association for Strengthening Agricultural Research in Eastern and Central Africa |
| ARIPO | African Regional Intellectual Property Organization |
| CBD | Convention on Biological Diversity |
| CGIAR | Consultative Group on International Agricultural Research |
| CIAT | International Centre for Tropical Agriculture |
| CILSS | Comité Inter-Etate pour la Lutte contre la Sécheresse au Sahel |
| CIMMYT | International Maize and Wheat Improvement Centre |
| CIP | International Potato Centre |
| COMESA | Common Market for Eastern and Southern Africa |
| COPROSEBU | Collectif des Coopératives et Compagnies des Producteurs des Semences du Burundi (Burundi Seed Trade Association) |
| DRC | Democratic Republic of Congo |
| DUS | Distinctiveness, Uniformity and Stability |
| EAC | East African Community |
| EASCOM | Eastern Africa Seed Committee |
| ECA | Eastern and Central Africa |
| ECAPAPA | Eastern and Central Africa Programme for Agricultural Policy Analysis |
| ESTA | Ethiopian Seed Trade Association |
| FAO | Food and Agriculture Organization of the United Nations |
| GAMS | General Algebraic Modelling Systems |
| IITA | International Institute of Tropical Agriculture |
| IPPC | International Plant Protection Convention |
| ISTA | International Seed Testing Association |
| KARI | Kenya Agricultural Research Institute |
| KEFRI | Kenya Forestry Research Institute |
| KEPHIS | Kenya Plant Health Inspectorate Service |
| KSC | Kenya Seed Company |
| NARO | National Agricultural Research Organization of Uganda |
| NARS | National Agricultural Research System |
| NCA | National Certification Agency |
| NDA | National Designated Authority |
| NPT | National Performance Trials |

| | |
|---|---|
| NTB | Non Tariff Barriers |
| OECD | Organization for Economic Co-operation and Development |
| PAAP | Policy Analysis and Advocacy Programme |
| PBR | Plant Breeders Rights |
| PVP | Plant Variety Protection |
| RADA | Rwanda Agricultural Development Authority |
| SEM | Spatial Equilibrium Model |
| SPS | Sanitary and Phytosanitary Standards |
| SSTA | Sudan Seed Trade Association |
| STAK | Seed Trade Association of Kenya |
| STAR | Seed Trade Association of Rwanda |
| TASTA | Tanzania Seed Trade Association |
| UEMOA | Union économique et monétaire ouest-africaine |
| UPOV | International Union for the Protection of New Varieties of Plants |
| USTA | Uganda Seed Trade Association |
| WTO | World Trade Organization |

**Preface**

The strategic objective of the Policy Analysis and Advocacy Programme (PAAP) of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) is to create an enabling agricultural policy environment to facilitate agricultural transformation in the Eastern and Central Africa region. Countries in Eastern and Central Africa (ECA) employ different laws, regulations and procedures to promote and regulate a given sector. In this instance, PAAP's main objective is to rationalize and harmonize agricultural input and output policies, laws, regulations and procedures.

Rationalization and harmonization of seed policies, laws, regulations and procedures in ECA has been ASARECA's longest initiative dating back to 1999. This work was started by the precursor to PAAP - the Eastern and Central Africa Programme for Agricultural Policy Analysis (ECAPAPA). The process involved national studies on key constraints and consultation on opportunities for improvements and dialogue between the countries to reach common agreements. From 2002, individual countries have been modifying their policy environments to conform to the common agreements through review of policies, laws and regulations.

This discussion paper documents achievements of seed harmonization in ECA to date. Very often important experiences and lessons learned from such work are not recorded and they get lost or forgotten. Successive projects find themselves at a loss as to where to start and how to proceed. Apart from tangible outputs such as changes in regulations, processes and approaches used to achieve them are equally important and provide critical lessons for new initiatives. Lack of such information leads to false starts or duplication of efforts and wastage of resources.

This discussion paper aims at filling that knowledge gap. It documents key achievements, processes followed and highlights key experiences and lessons. Deep gratitude is due to the many institutions and individuals who have contributed and still continue to work so hard in this initiative. A few deserve special recognition; the ASARECA Secretariat, the National Agricultural Research Institutes (NARIs), the Eastern Africa Seed Committee (EASCOM), Seed Trade Associations, breeders and regulators in the ministries of Agriculture and Trade. The United States Agency for International Development has steadfastly supported this work since inception in 1999. This is the longest project undertaken by ASARECA and has been continuously supported by USAID. For that commitment, we express our heartfelt thanks. We recognize the stewardship of Dr. Peter Ewell and Mr. Hudson Masambu and we cannot thank them enough.

Seyfu Ketema
Executive Director, ASARECA

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## Executive Summary

This discussion paper assesses the impacts of an improved seed policy environment in the Eastern and Central Africa (ECA) region using a case study of formal trade in seed maize in Kenya, Uganda and Tanzania that employs a spatial equilibrium model (SEM). The data used in this study was derived from a regional survey of key informants undertaken in August 2009. It is complimented by secondary data on seed production, consumption, prices and elasticity parameter estimates that were derived from various sources. The quantification of the trade and welfare impacts of seed policy harmonization involved a before and after comparative analysis. The paper commences by reviewing the progress made in the harmonization of seed policies in ECA region with regard to five thematic areas agreed for harmonization.

Over the past five years, considerable progress has been made in the harmonization of seed policies within the ECA region (Table 1). This follows the agreements (Annex II) that were reached in 2002. For example, the length of the variety release period has been reduced from three or more years to only two seasons. This has greatly improved availability of improved seed varieties and increased private sector participation in the variety release process. In countries where variety release data was available for the period before and after the harmonization project, the growth in the number of seed companies and the total number of seed varieties released was quite substantial.

The seed certification procedures in the region have been standardized to the OECD standards. Kenya and Uganda have acceded to the OECD while Tanzania has applied for membership. The standardized certification procedure has greatly improved the working relationship between regulators and seed companies in the ECA region. However, the failure to establish interagency certification for seeds in transit may be hampering seed trade. Within the harmonization period, quarantine pest lists have been revised for Kenya, Uganda and Tanzania. The crops for which lists have been developed include, maize, rice, wheat, sorghum, beans, soybeans, ground nuts, sunflower, Irish potatoes and cassava. Unlike Kenya, Tanzania and Uganda, the other ASARECA member countries have not revised their quarantine pest lists. However, the Eastern Africa Seed Committee (EASCOM) is in the process of reviewing and updating the quarantine pest lists for the countries that have not yet revised them.

The ECA countries are at different stages of developing Plant Variety Protection (PVP) systems. While Ethiopia, Kenya and Tanzania have PVP laws based on the International Union for the Protection of New Varieties of Plants (UPOV) 1991 Convention, only Kenya has an operational PVP system that is compliant with the UPOV 1978 Convention. Uganda on her part has a draft PVP legislation that is awaiting parliamentary debate. Burundi, Rwanda, Sudan and Madagascar do not have *Sui Generis* systems based on the UPOV (1991).

All ECA countries have put in place elaborate import/export documentation procedures. As a result of the measures taken with regard to harmonizing the phytosanitary measures applied in the ECA region, the time taken to process seed import/export documentation has been reduced, lowering the cost of doing cross border trade. However, while Burundi, Madagascar, Sudan, Tanzania and Uganda have put in place measures to unify and simplify their cross-border trade documentation procedures, the plant import/export documentation procedures in Kenya and Ethiopia have remained largely rigid.

The relevance of the seed trade associations in a harmonized seed policy regime largely depend on how well they meet their set objectives in the face of rapidly changing seed industry. When judged against the objective of promoting regional formal seed trade, the seed associations have achieved a great deal of success. Local seed production tripled from 43 thousand tones to about 122 thousand tonnes between 2002 and 2008. In addition, seed imports into the region almost doubled from 9 thousand tones to about 15 thousand tonnes over the period under analysis. Over the same period, intra-ECA seed imports have more than tripled as seed exports from Kenya and Uganda have gradually increased from less than a thousand tones to more than three thousand tones. Moreover, the harmonization of seed policies in the ECA region has seen a general increase in seed price stability for maize seed in the entire region which benefits commercial farmers.

The results of the welfare analysis give compelling evidence in support of an improved seed policy environment. While improved policy environment requires in contributions from many players and actors, it is assumed that harmonization of policies, laws and regulations is a critical addition to this process. This implies that, the implementation of the seed policy harmonization would lead to improvements in welfare in the ECA region. In all cases, the gainers from the policy change can potentially compensate the losers. On the basis of the compensation principle, seed policy harmonization can be recommended as a potential welfare improving policy. These findings lend credence to the calls for policy makers within the region to fast track the implementation of the pending harmonized seed policies, laws and regulations in their respective countries.

Critical areas that need urgent attention are the need to:

- establish interagency certification for seeds in transit within the ECA region
- hasten the setting up of PVP systems in all ASARECA member countries that are compliant to the UPOV 1991 convention
- simplify the seed export/import documentation in most countries
- fast track the enactment of various seed policy bills into laws in the ECA countries.

**Table 1. Progress in implementation of harmonization agreements in ECA countries**

| Policy milestone | Achievements by country to date | Work in progress |
|---|---|---|
| Enacted legislation (Seed Act) that accounts for harmonization agreements; | Burundi (Seed Act 2009), Kenya (Seed Bill revised in 2010 and draft Plant Act 2008; Madagascar Seed Act 1994 reviewed in 2010, Rwanda (Seed Act 2003), Tanzania (Seed Act 2003), Uganda (Seed and Plant Act 2006) | Review of: Sudan Seed Act 2006; Uganda draft Plant Variety Protection Bill of 2008; Ethiopia Seed Proclamation of 2006 revised in 2010; |
| Finalised seed Act implementing regulations; | Kenya (NPT Regulations 2009); Tanzania (Seeds Regulations 2007); Uganda draft Seeds Regulations of 2010 to implement the Seed and Plant Act of 2006, | Rwanda, Burundi, Ethiopia, Madagascar |
| Finalised Plant Breeders Rights Act in accordance with UPOV 1991 and its implementing regulations | Ethiopia (PBR Proclamation 2006 requires significant revisions); Kenya (UPOV 1978), Tanzania and Uganda (largely UPOV 1991 compliant) | Burundi, Rwanda, Sudan, Madagascar, Eritrea, DRC have no *Sui Generis* systems based on UPOV (1991) |
| Autonomous certification agency | Kenya Plant Health Inspectorate Service (KEPHIS), Tanzania Official Seed Certification Institute (TOSCI) and Plant Breeders' Rights (PBR) Office in Tanzania in 2005 | Uganda considering autonomous seed Service to oversee variety evaluation, release and registration<br>Ethiopia's certification agency is under review with the seed proclamation based on the experiences of the other countries |
| National Seed Trade Association | Burundi (COPROSEBU) 2009, Sudan (SSTA) 2008, Ethiopia (ESTA) 2005, Rwanda (STAR) 2003 revived in 2010, Kenya (STAK) 1982, Madagascar (AMPROSEM), Uganda (USTA) 2003, Tanzania (TASTA) 2002, DR Congo revived the Interprofessional Association of Seeds Producers of Congo (AISC) in 2010 | |
| Acceded to OECD and ISTA seed testing rules | Kenya | Burundi, Tanzania and Uganda are in the process of acceding to OECD and ISTA<br>Ethiopia, Madagascar and Rwanda considering<br>South Sudan is shifting from the American classification system to OECD |
| Developed quarantine pest list | Burundi, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania, Uganda | Validation and publishing |
| Simplified export/import documentation procedures | Burundi, Sudan, Madagascar, Tanzania, Uganda | Kenya, Ethiopia |

## 1. Introduction

Most economies in sub-Saharan Africa (SSA) are agriculture based. Consequently, any sluggish growth in agricultural production translates into slow growth and low per capita incomes (ASARECA, 2005). In Eastern and Southern Africa, national average yields of maize (the main staple) are about 1.5 tons per ha compared with a global average of 4.5 tons per ha (ASARECA, 2005). This can be partly attributed to limited development of commercial seed markets given that less than 10% of the seed planted is purchased from the formal market (Rohrbach et al; 2003). Seed markets in the region are small and highly fragmented; with closed national markets dominated by a few international companies and parastatals, and restrictive laws, regulations and policies. As a result, many released seed varieties have never been widely disseminated.

The commercial seed sector in Africa is limited in terms of volume. It accounts for less than 2% of the estimated levels of international seed trade. It is also restricted to a narrow range of crops led by hybrid maize, and small amounts of cash crops such as sunflower, cotton, soybeans, wheat and vegetables. It is estimated that half of the traded quantity occurs within countries of southern Africa (Rohrbach et al; 2003). Moreover, transactions costs within and across borders are high because of differing regulatory and trade arrangements across countries. These end up being used as non tariff barriers.

To create an enabling environment for private sector participation in seed trade, many African countries are investing in the creation of a versatile policy environment to transform farming from the common quasi-subsistence nature to market oriented commercial entities. This started in the late 1980s with partial liberalization of key sectors. This transformation is being augmented through collaboration with development partners and regional economic blocs (RECs) in the region namely the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), and the Southern African Development Community and the apex African Union (AU). All RECs are pursuing the establishment of common regulatory structures to reduce transactions costs and promote increased trade and this applies to use of improved seeds. COMESA's customs union was declared in June 2009 and a customs union at EAC that will allow free movement of labour capital, goods and services in the five States comes into effect on 1st July 2010.

This paper describes the process, results, and lessons learnt in developing and operationalizing a seed trade policy harmonization agreement in eastern and central Africa. This initiative started with three countries: Kenya, Uganda and Tanzania in 1999 and has now spread to the ten ASARECA

member countries[1]. The aim of the paper is to share experiences in order to identify areas that need modification to make the process more efficient and relevant.

### 1.2. Study methods

The study uses a combination of extensive literature reviews, secondary data collection and a regional survey of key informants undertaken in August 2009. A review of the seed industry documents and secondary literature on the implementation of the seed policy harmonization project in the eight participating countries is undertaken. This included review of country specific seed policy documents to document the extent of progress towards seed policy harmonization, extent of translation of policy into practice, institutional frameworks and gaps that exist.

In addition, secondary data sets on the trends in seed production, trade and consumption before and after the implementation of the seed policy harmonization project in each of the eight participating countries were compiled. The secondary datasets were used in the calibration of an Economic Surplus Model that was used to quantify the welfare impacts of seed policy harmonization within the ECA region. The economic surplus model provides quantitative measures of the welfare impacts of a policy change, which helps to weight the benefits and costs of a particular policy change. It is calibrated to the price and quantity values for a particular base year using demand and supply elasticity estimates. To solve the model, estimates were compiled for the quantities of seed maize supplied and consumed in the three select countries that had complete data sets before and after seed policy harmonization, their corresponding prices, their price elasticities and transfer costs. A glossary of terms used in this paper is provided in Annex I.

The remainder of the discussion paper is organized as follows. Section 2 provides an overview of the status of the seed policy harmonization process in the ECA region with an emphasis on trends in variety evaluation, release and registration procedures; seed certification processes; phytosanitary measures; plant variety protection and import/export documentation procedures. This is followed by an analysis of the trends in seed trade flows across the ECA region in Section 3. Section 4 provides the results of the welfare impacts of improved seed policy environment on trade in maize across the three first phase countries namely; Uganda, Kenya and Tanzania, while Section 5 reviews the role of seed trade associations in a harmonized seed trade regime. Finally, a summary of the major findings, conclusions and recommendations are provided in section 6.

[1] Burundi, Democratic Republic of Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda are the ten countries of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA).

## 2. Status of seed policy harmonization in Eastern and Central Africa region

ASARECA's seed policies project involved both the rationalization and harmonization of seed laws in the ECA region. The original focus of the project was on 'harmonization', but equal effort was placed on 'rationalization', ensuring that national policies and regulations were effectively conceived and transparently managed, a prerequisite to regional harmonization. On the one hand, rationalization aims at changing the way business is done so as to increase efficiency or reduce waste. It focuses on how a country conducts business in a given sub-sector and determines what should be done to make it more efficient. As an example, an import consignment into Uganda required four officers from different departments (Uganda Revenue Authority for import permit; Ministry of Agriculture for phytosanitary certification; national seed certification, and national drug authority for seeds destined for medicinal purposes) to clear it at the port of entry in Entebbe Airport in Uganda.

With rationalization a single officer clears the cargo on behalf of all departments. On the other hand, harmonization is the process of bringing together, regionally; different national approaches (policies, laws, regulations and procedures) into a unified strategy. This allows commodities and factors to move freely across national boundaries thereby improving domestic and foreign investment through expansion of markets beyond national borders (Minde and Waithaka 2006).

The rationale for the rationalization and harmonization of seed policies, laws, regulations and procedures is that the seed industry in the region faces many different standards and regulations in each country, which are costly to meet. These high costs, coupled with relatively low effective demand, make it unprofitable for either local or international seed companies to make the investments required to provide the quantity, quality and variety of seed needed to support an expanding agricultural base in the Eastern and Central Africa region. Most of these costs take the form of non-tariff barriers – regulations, procedures, administrative and technical requirements imposed by the governments of these countries, and place discriminatory demands on importers, exporters, domestic producers and traders.

The ultimate aim of rationalization and harmonization is to increase the flow of seed across national boundaries. This increases the choices of quality seeds available to farmers, leading to increased productivity, increased incomes and food security. Many issues must be considered in effective regulation; a few key ones are highlighted here. Regulatory reform implies broad-based participation and is as much a function of policy direction as technical rules. Often, there is a great difference between regulations on paper and their implementation (Tripp 2005).

Regulation is needed in situations where markets are unable to provide sufficient information, either for consumers to make informed choices, e.g., seed quality, or to protect against negative externalities, e.g., the spread of plant disease. Effective regulatory reform requires strengthening of producer and consumer capacities through discussions and debate among a wide range of stakeholders (Tripp 2005).

The road that begins with regional agreements, moves to modifying national legislation and regulation, and quickly results in new procedures and protocols that have an immediate impact on seed trade is not smooth. The regulator's principal purpose should be to encourage seed system development rather than be an agricultural police force. Modification of laws and regulations obviously takes time, but changes in attitude and interpretation are often as important and as difficult to achieve. In addition, many regulatory reforms imply changes in institutional responsibilities and the establishment of new protocols that require additional resources. Regulatory reform and regulatory harmonization can be exceptionally complex. Projects that address these issues must accept a long time frame and be ready to accommodate inevitable delays in effecting legal and regulatory change; and recognize that policy and resource support for implementation (even for procedural changes that require little or no high-level approval) is as important as any changes on paper.

The harmonization approach adopted by any initiative depends on the relevant regional economic community to which the countries subscribe. ASARECA member countries function in the ambit of two RECs – the East African Community (EAC) and COMESA. All ASARECA countries are members of COMESA with the exception of Tanzania[2] and only five states[3] (Burundi, Kenya, Rwanda, Tanzania and Uganda) are members of EAC. In the context of the EAC, once agreements are reached and published in the EAC gazette, they supersede national legislation. Multiple memberships to different RECs posed a challenge to the nesting and approval of the ASARECA countries harmonised seed agreement by a high political organ such as the EAC. For COMESA, countries have to domesticate the agreements in their national instruments and mechanisms. The latter was adopted for the ASARECA seed policy harmonization process.

The Southern African Development Community (SADC) process for developing the technical agreements was initiated in 2004-2006 and was broadly similar to that used by ASARECA in 2000. the agreement focused on: i) SADC crop variety testing, registration and release system; ii) SADC seed certification and quality assurance system, and iii) SADC quarantine and phytosanitary

[2] Tanzania is a member of SADC
[3] Burundi and Rwanda joined the EAC in 2007.

measures for seed (SADC 2006). In contrast however, the SADC harmonized seed regulatory system was approved by Ministers responsible for food, agriculture and natural resources in the SADC region in 2007, this was followed by the signing by the ministers in 2008 of a memorandum of understanding to provide the legal framework to enable countries amend their national legislation and coordinate their actions in implementation of the harmonized seed regulatory system. However, to date, SADC countries are yet to fully align their national legislation and implement the provisions of the protocol. National authorities maintain full control of the implementation of the agreements while the SADC Secretariat simply plays a coordinating and facilitating role (SADC 2006). In western Africa harmonization is led by the Economic Community of West African States (ECOWAS) in collaboration with West African Economic and Monetary Union (UEMOA) and the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS).

In 2010, COMESA adopted the process followed by SADC, through the COMRAP; a programme aimed at harmonising seed policy for COMESA member countries. The agreement is expected to be in place and approved by the COMESA Council of Ministers by August 2011. It is worth noting that the harmonisation agreement is only one step towards seamless regional seed trade; countries still have to domesticate the agreements in their national instruments and mechanisms. Moving the regional agreement to practice will require addressing issues related to capacities and performance of the national and regional seed systems at various levels.

**The ASARECA Seed Policy harmonization Project**

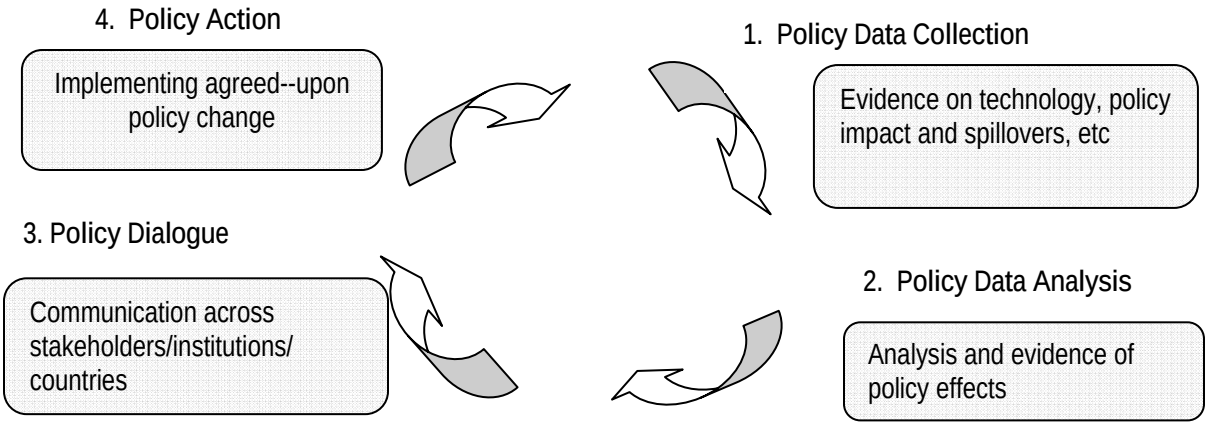
The second phase of the rationalization and harmonization of seed policies, laws and regulations in the Eastern and Central African (ECA) region is being implemented by the Policy Analysis and Advocacy Programme (PAAP). The first phase of this project was initiated by the former Eastern and Central Africa Programme for Agricultural Policy Analysis (ECAPAPA) in 1999. The ECAPAPA project came into being in response to the recognition that seed trade in sub-Saharan Africa (both domestic and regional) was constrained by regulations and policies that were established when most plant breeding and formal seed production were in the hands of the public sector. Each country developed its own seed certification regime. Procedures for variety testing and approval constituted a significant barrier to seed trade and inhibited the spread of new varieties beyond national boundaries. This led to delays in release and often rejection of useful varieties that did not meet the criteria and procedures (ECAPAPA 2004 and ECAPAPA 2002).

The seed policy harmonization project began with extensive analyses of seed systems in the first phase countries of Kenya, Tanzania and Uganda. The project also involved a wide range of national and regional level activities and meetings that developed an agenda for seed regulatory reform.

National efforts were augmented by regional workshops that discussed modalities for regional coordination and implementation.

To bring about desirable changes in the seed industry, sub-sector participants worked though a four stage policy cycle process (**Error! Reference source not found.**).

**Figure 1. Policy change cycle**




Adapted from: Mukhebi et al., 2001.

In the policy data collection stage, constraints were identified and agreed upon and country data on constraints and concerns in the seed industry were collected by national resource persons. This information was analyzed in the next stage - policy data analysis - by the resource persons in collaboration with other experts. International standards in the major seed categories were compared with existing and proposed regional standards. The process also involved a range of international experts in seed evaluation, registration, certification, plant variety protection and phytosanitary issues. The end results were different options on the way forward, on benefits and costs, and even on identification of winners and losers. By and large these two stages were technical and scientists played a leading role.

The policy dialogue stage was essentially a political process where changes suggested by technical teams were communicated to a broad range of stakeholders: about 50 and 60 participants at national and regional level respectively. These included multidisciplinary sets of scientists, the business community, seed companies, transporters, stockists, government technocrats, politicians and policy makers. This was a highly interactive effort that required constant dialogue with policy makers and formation of coalition of supporters, and several rounds of discussions with the full range of stakeholders, to reach consensus on a common course of action. Discussions were initiated at the national level where stakeholders agreed on issues of rationalization as well as issues for harmonization that should be carried forward for discussion at regional forums.

A detailed country analysis was conducted for each country that identified policy constraints and the existing policy and practice in relation to a particular constraint. The national and regional workshops deliberated to validate the constraints and developed consensus on required course of action either in terms of changes in procedure or revision of existing Acts and regulations or institutional structures. The workshop also assigned institutions backed by technical working groups to ensure that these changes were effected. The workshops culminated in the 2002 seed policy harmonization agreement (see Annex II).

It is widely held that policy making is a problem solving process which is rational, balanced, objective and analytical and that decisions are made in a series of sequential phases that start with identification of a problem and end with a set of activities to solve or deal with it (Sutton, 1999; Omamo, 2003; Omamo, 2004). However, in reality, policy making is very different. It is a political process as much as it is an analytical or problem solving one.

The fourth stage in the policy cycle, policy action, dwells on implementation of the agreements reached. Experience in the seeds project shows that to achieve effective policy change the following must be in place:

i. facilitation, building and empowering of public-private partnerships; bringing private sector and public/regulatory authorities together to discuss and reach consensus on what has to change, why and how on key issues for the sub-sector under study.
ii. observation of the importance and differences amongst technical (technical personnel to discuss issues based on science), political (get buy-in from different parties including civil society) and legislative (once agreement is reached, legal protection to guard against backsliding) stages in the process of reform
iii. dialogue at two levels: national (to deal with, and differentiate between rationalizable and harmonizable issues) and regional (to discuss issues that need to be harmonized)
iv. nurturing of transparency, participatory inter-institutionality and multi-disciplinarity
v. differentiation between administrative/procedural and legislative issues in discussions and consensus building. For administrative/procedural issues, implementation of desired changes can proceed under existing legislation, but with improvements in administrative procedures. For legislative issues, desired changes have to wait until requisite laws are considered and accommodated in the existing legislation

The policy-change-cycle model has proved replicable in similar situations, e.g., informal dairy in ECA and up-scaling of sustainable land use and management at landscape level in the highlands of eastern Africa.

In 2001 more countries referred to as second phase countries were added to the agenda and a Seed Regional Working Group drawing members from the public and private sectors was formed and mandated to coordinate implementation of the agreements reached (ECAPAPA 2002). The five areas that were agreed for harmonization (Annex II) include: i) variety evaluation, release and registration process; ii) seed certification process; iii) phytosanitary measures; iv) plant variety protection; and v) import/export documentation. Actual implementation was envisaged at the national level since this is where laws and regulations are housed.

In 2004, the Seed Regional Working Group was transformed into the Eastern Africa Seed Committee (EASCOM) with expanded coverage, broader mandate and responsibility. EASCOM's functions were defined to include: review of seed policies, laws and regulations; strengthening of national seed and plant breeders' associations; operationalization of harmonized agreements; development and maintenance of data bases; capacity building; and representation in regional economic blocs such as the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA). The membership of EASCOM comprises four representatives from each of the ten countries of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), covering policy, regulation, seed trade, and plant breeding. Currently, implementation of the harmonization agreements is coordinated by EASCOM in eight ASARECA member countries - Burundi, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda.

**Box 1: Why EASCOM matters: mandates and achievements**

| Mandate | Achievements |
|---|---|
| 1. Influence review of seed policies, laws and regulations | Following the regional harmonization agreement of 2002, EASCOM has spearheaded the review and amendment of national seed laws, regulations and institutional frameworks in ASARECA member countries |
| 2. Strengthen national seed and plant breeders' associations | EASCOM has strengthened or backstopped the establishment of national seed trade associations (STAs):COPROSEBU in Burundi, SSTA in Sudan, ESGPA in Ethiopia, STAR in Rwanda, STAK in Kenya, AMPROSEM in Madagascar, USTA in Uganda and TASTA in Tanzania. STAs are an effective platform for awareness creation, capacity building and advocacy for policy change among seed industry stakeholders |
| 3. Develop and maintain data bases and disseminate information to stakeholders | EASCOM has a seed industry database covering Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. Plans are underway to include the other four ASARECA countries and develop a web based archive. A regional variety list and quarantine pest list have been developed for Kenya, Tanzania and Uganda. They encourage STAs to produce promotional materials for their seed industries |
| 4. Spearhead capacity | EASCOM has facilitated several trainings for the seed industry including regional |

| | |
|---|---|
| building initiatives for seed industry stakeholders | trainings on variety descriptor development, interagency seed certification procedures, sensitization on compliance to ISTA, UPOV, OECD rules, and general quality seed production courses |
| 5. Represent seed industry stakeholders in regional economic blocs | EASCOM has been proposed to lead policy harmonization for COMESA and was admitted on observer basis to COMESA's Trade Committee. EASCOM is seeking to have Memorandum of Understanding with the EAC |
| 6. Create an effective network of seed industry stakeholders in the region | EASCOM organizes annual general meetings for seed stakeholders |
| 7. Enhance seed market development | Active involvement in seed policy environment reforms in the region have resulted in growth in: participation of the private sector in the seed sectors, the number of improved varieties released, number of seed companies, and volumes of domestic and intra regional seed trade. |

EASCOM is a private – public partnership that has proved difficult to register legally as an entity. The Committee functions are hence coordinated by a regional resource person through the seed trade association of Kenya (STAK). Actual implementation is undertaken by national focal points in the relevant ministries and national seed certification agencies and by the national seed trade associations. Regional goods are developed through technical working groups appointed by the EASCOM annual general meeting.

Over the past five years, considerable progress has been made in the harmonization and rationalization of seed laws, policies and regulations within the ASARECA region. With regard to the process of harmonization, the progress made in the five thematic areas is discussed in the sections that follow. Harmonized seed policies, laws and regulations within the region, are expected to lead to an improved policy environment. This is expected to generate net welfare benefits to the region. This study attempts to quantify these welfare benefits by country and builds on work initiated in 2005 that could not be finalised due to a paucity of quantitative seed trade data in the region (Tripp 2005).

### 2.1. Variety evaluation, release and registration

The protocols and procedures for variety evaluation, release and registration have been greatly simplified. The agreement provides for standardisation of variety testing procedures in the region. Before a variety is released, the breeder undertakes evaluation at the testing locations until a variety with potential for release is identified. The breeder then enters the variety into the National Performance Trials (NPT). NPTs are field experiments in multiple locations in which the new varieties are compared with the best existing commercial varieties in the area where the new variety is going to be grown and at least one breeding station. The National Certification Agencies (NCA)

then validates the trials for two seasons in the NPT before the variety is released by the National Variety Release Committee (NVRC) and or listed in the national variety catalogue. Under the harmonization agreements, if a variety has already been released in another ECA member country it is tested for only one season if combined with sufficient data on previous testing from similar agro-ecological zones. The agreement further stipulates participation of the private sector in NPTs; concurrent farm trials where these are mandatory and standardisation in the number, function and composition of members to the National Variety Release Committee (NVRC).

These provisions are now legally constituted and fully operational in two ASARECA member countries - Tanzania[4] established variety release regulations in 2007 and Kenya[5] in 2009. Two additional member countries Uganda[6] and Burundi[7] have draft regulations in place that are yet to be enacted by parliament; however there is evidence that the regulations have been employed nevertheless to facilitate quick release and registration of new varieties on the national catalogue. Rwanda enacted a Seed Act in 2003 with all the provisions of the agreement but still has no stipulated variety release regulations; however, three ministerial decrees were promulgated in 2011 to fill this gap in the interim. Ethiopia and Sudan have the most cumbersome variety release procedure that takes 10 to 15 years or more. However, for Ethiopia, the Seed Proclamation No. 206/2000 was reviewed to incorporate the provisions of the ASARECA seed harmonisation agreement and is expected to be enacted in 2011.

The harmonization process has resulted in: a reduction in the testing period from three to two seasons; greater access to improved varieties; and increased private sector participation in the release process. The length of the variety release period has been reduced from three or more years to only two seasons. Efforts are currently underway to update the regional variety catalogue that was first developed in 2005 for Kenya, Tanzania and Uganda. The updated catalogue will list varieties that have been released in more than one ASARECA member country, hence enhancing access to information on the varieties available for farmers on the market in the region.

In countries where variety release data was available for the period before and after the harmonization project, the growth in the number of seed companies and the total number of seed varieties released was quite phenomenal. Between year 2000 and 2008, fourteen 14 seed enterprises released a total of 140 varieties in Kenya (Table 2). This represents a growth rate of 270 percent as compared to the 38 varieties released between 1981 and 1999. There were 74 registered seed

[4] Seeds Act of 2003 and Seeds Regulations of 2007
5 Legal Notice 25 of 27th January 2009. Government Printer, Nairobi, Kenya
[6] Seeds and Plant Act of 2006 and draft implementing regulations 2009
[7] Juvent Baramburiye 2010. Baseline seeds study for Burundi. Harmonization of policies, laws and regulations in the seed sector. juventbamburiye@yahoo.fr

enterprises in Kenya as at September 2009. Four of these are public seed enterprises i.e. Kenya Agricultural Research Institute (KARI) Seeds Unit; Kenya Seed Co/Simlaw Seeds; Agricultural Development Corporation (ADC) Seed Potato Project and Kenya Forestry Research Institute (KEFRI) Seed Centre. The rest are private seed companies, owned by locals or are subsidiaries of multi-national corporations.

**Table 2. Trends in variety release of the 10 selected crops in the ECA region**

| Country | Number of varieties released | | % released by private sector | Number of seed companies 2009 |
|---|---|---|---|---|
| | 1995 – 2000 | 2001 – 2008 | | |
| Burundi | 18 | 40 | None | 3 (2 private) |
| Ethiopia | 46 | 574 | 0.03 | 76 (70 private but only 24 active) |
| Kenya | 38 | 140 | 30 | 74 (70 private) |
| Rwanda | NI | 12 | none | * |
| Sudan | NI | 172 | none | 23 (22 private) |
| Tanzania | 27 | 121 | 30 | 31 (30 private) |
| Uganda | 8 | 27 | 50 | 20 (all private) |
| Total | | 715 | | |

NI – No information

Source: EASCOM Secretariat Reports and Field Surveys, August 2009[8]

* - By April 2008, Rwanda had 102 seed producers registered as private individuals, associations or cooperatives http://www.rada.gov.rw/IMG/pdf/Liste_des_agrees.pdf.

Similarly, the involvement of private sector in the variety evaluation and release process has greatly improved, compared to the situation before 2000. For instance, out of the total of 140 seed varieties released for commercialization in Kenya, 43 of them (30.7%) represented varieties released by the private sector, while 77 varieties (55%) were released by NARI's (including Kenya Seed Company - KSC) The proportion of varieties released under collaboration CGIAR's were 20 (14.3%). In Uganda and Tanzania, 27 and 121 new varieties were released between 2000 and 2007 as compared to eight and 27 seed varieties that were released up to year 2000 respectively (Table 1). While Uganda has 20 private seed companies that accounted for 50 percent of the variety releases, Tanzania has a single public seed company, the Agricultural Seed Agency and private seed companies that accounted for 30 percent of the varieties released (Table 2).

In Burundi, Ethiopia, Rwanda and Sudan, almost all crop varieties released are developed by public breeders. While Ethiopia has a total of 76 seed companies, only six are public while the other 70 are

[8] Dr. Lemma Dessalegne, Ethiopian Institute of Agricultural Research, Melkasa Agricultural Research Centre, lemmades@yahoo.com ; Mr. Hosea Sitienei, Kenya Seed Company. hosea@kenyaseed.co.ke; Mr. Gervais Ngerrero Nkuriziza, Rwanda Agricultural Development Authority gervaisngereron@yahoo.fr; Mr. Hashim Kimomwe, Ministry of Agriculture, Food Seurity and Coopeartives, Dar es Salaam hkimomwe@hotmail.com;Dr. Ruth Ssebuliba, Executive Secretary USTA, Uganda ugandaseedtrade@yahoo.com

private, but only 24 are active. Surprisingly, the six public seed companies accounted for over 99 percent of the 243 new variety releases (Table 2). The situation is no different in Sudan where a total of 23 seed companies are registered with a single public seed company. Between 2000 and 2007, all the 172 new seed varieties were released by public breeders from the Arab Company, a state enterprise.

An analysis of varieties released and commercialized in Kenya, Uganda and Tanzania in the last five decades to 2003 showed that seven crops had regional presence in ECA. These included 20 maize varieties, four wheat varieties, two common bean varieties, two climbing bean varieties, two pigeon pea varieties, two sorghum varieties and one sunflower variety. The new variety releases from Ethiopia, Rwanda and Sudan have no presence in the ECA region; however, since the sources of germplasm for regional research are drawn from one pool, maize and wheat from CIMMYT, pulses from CIAT, potatoes and cassava from CIP and IITA respectively, breeders suspect that similar germplasm might have been released in the region with different names.

### 2.2. Seed certification process

The seed certification procedure in the region has been standardized to involve: field inspection; seed processing; seed testing; labelling and sealing; post control and post certification surveys. Common field and laboratory certification standards were developed in the ECA countries for selected commodities based on the Organization for Economic Co-operation and Development (OECD) standards. However, most laboratory testing is based on International Seed Testing Association (ISTA) rules. Certification standards were developed for at least 10 crops with a provision to expand the list; the standards provide for 4 classes and for grey label and inter-agency certification. In addition, the agreement on seed certification procedures outlines the crops under compulsory certification in the region; calls for accreditation of institutions to certify seed on behalf of the national certifying agency, a practice that was only applied in Kenya and Tanzania; and specifies provisions for a common seed tag and the protocols for inter-agency certification.

Official seed certification begins with a known percentage and the multiplication/crossing patterns are technically defined to include breeder's seed, pre-basic seed, basic seed, certified seed and standard seed. Breeder's seed is the original nucleus seed from the breeder. The harvest from the breeder's seed is called pre-basic seed, while basic seed is the harvest from pre-basic seed. Certified seed is the harvest from basic seed while standard seed is the progeny of certified seed or of a higher generation.

Burundi, Ethiopia, Madagascar, Sudan, Tanzania and Uganda have developed certification standards for at least 10 crops however some countries still have limited capacity for undertaking certification

processes. With regard to the seed classes, Burundi, Kenya[9], Madagascar, Tanzania and Uganda have adopted the four classes according to the OECD procedures. Ethiopia specifies three seed classes in the draft revised Act Breeder, Certified and Quality declared seed while Sudan on its part has been using the American classification system but is changing to the OECD. Kenya and Uganda have acceded to the OECD Seed schemes while Tanzania has applied for membership. Only Kenya has an ISTA accredited seed testing laboratory. Other countries have applied for ISTA accreditation but still have to build the required capacity. The revised Act for Ethiopia is not yet enacted but it empowers the minister to designate an accredited national laboratory for accreditation under ISTA and provides for accession to use of OECD Seed schemes. Unlike Kenya and Burundi that have made provisions for the establishment of grey label, inter-agency certification and autonomous certification agencies, the other participating countries have not.

The standardized certification procedure has greatly improved working relationship between regulators and seed companies in the ECA region. In this regard, joint certification exercises between Kenya, Uganda, Tanzania and Rwanda to build confidence and capacity on the ground were undertaken in 2005/06. The joint inspection identified the main strengths and weaknesses in the certification process amongst these NCA's. However, the failure to establish interagency certification for goods in transit might be hampering seed trade.

### 2.3. Phytosanitary measures

The international exchange of germplasm and trade in plant products is crucial in the quest for adequate food supply. In an effort to stem the introduction of foreign injurious pests, diseases and noxious weeds, the ECA countries have adopted stringent plant introduction and phytosanitary procedures. All phytosanitary measures are based on international standards as contained in the International Plant Protection Convention (IPPC) and World Trade Organisation (WTO) agreement on sanitary and phytosanitary (SPS) regulations and guidelines. Currently, apart from DRC, all ASARECA countries are signatories to the IPPC. In Kenya for example, the Plant Protection Act (CAP 324), the Suppression of Noxious Weeds (Cap 325) and the Agricultural produce (Export) Act (Cap 319) provide the legal framework through which the Plant Protection Service Department authority (the Kenya Plant Health Inspectorate Service (KEPHIS)) carries out phytosanitary regulation services.

Within the harmonization period, quarantine pest lists have been revised for Kenya, Rwanda, Uganda and Tanzania and are under validation by National Plant Protection Organizations. While Burundi and Ethiopia have developed quarantine pest lists that need to be notified to the other

[9] Kenya's Seed Act provides for eight seed classes, but the draft Seed Bill 2008 contains 4 classes in line with the OECD and ASARECA's harmonized procedures.

ASARECA countries, Madagascar and Sudan have long established quarantine pest lists. The crops for which the quarantine pest lists have been developed include, maize, rice, wheat, sorghum, beans, soybeans, ground nuts, sunflower, Irish potatoes and cassava. As a result of the measures taken with regard to harmonizing the phytosanitary measures applied in the ECA region, the time taken to process seed import/export documentation has been reduced from two weeks to at most two days in some countries like Kenya. This reduction in processing time has lowered the cost of doing cross border trade. In addition the EAC Customs Union Treaty has generally eased import/export procedures. The regional agreement made in 2002 states that the regional quarantine pests had been reduced from 33 to 3. The list updated by the experts in 2010, placed them at 22 on the basis of ten crops and not just maize which was considered in 2002.

The progress made in the harmonization of phytosanitary measures within the ECA has been hampered by a number of challenges. First, phytosanitary measures have been frequently used as non-tariff barriers (NTB's) in the ECA region by the member countries. This implies that, member countries might not be willing to eliminate NTB's even though they have committed to doing so. Secondly, most ECA member countries lack adequate capacity at border points for the provision of quarantine services. This hinders the achievement of optimal compliance to phytosanitary standards given the numerous porous border points that most ECA countries maintain. the region still needs to build capacity for a regional pest information system, establish minimum facilities at high risk entry points and improve availability and public access to information on phytosanitary issues.

### 2.4. Plant variety protection

The ECA region has agreed to develop a *sui generis* system of plant variety protection (PVP) based on the International Union for the Protection of New Varieties of Plants (UPOV) 1991 Convention. However, in most ECA countries, breeding is still dominated by the public sector and the concept of PVP is considered alien and intended to deny farmers access to new varieties. Perfect examples in this regard are Ethiopia and Sudan where seed systems are dominated by the public sector.

Indeed, only 16 countries of African Intellectual Property Organization (ARIPO) have joined UPOV 1991 since January 2006. The ECA countries are at different stages of developing PVP systems. Kenya has an operational PVP system that is compliant with UPOV 1978 Convention. The Kenya Agricultural Research Institute (KARI) in collaboration with KEPHIS has established a system of licensing breeders which is competitively open to seed companies. By the end of 2006, 840 applications had been received by KEPHIS and 239 grants had been awarded, mainly for flowers. However, as is the practice in other countries that have operational PVP, the greatest beneficiaries of plant breeders rights (PBR) in Kenya are external breeders.

Ethiopia, Tanzania and Uganda have also developed PVP systems. While Ethiopia needs to revisit the current PVP Act to remove/address clauses that are not compliant with UPOV-like system, Tanzania is largely compliant with UPOV 1991 and has made significant progress in developing a PVP system. Tanzania enacted a Plant Breeder's Rights Act of 2002, which became operational in 2004, while a PBR Office was set up in 2005. Tanzania's Seeds Act of 2003 and Seeds Regulations of 2007, are in line with the harmonization agreements, but recognize quality declared seed as a special case. As of August 2008, the PBR office had received 35 applications and awarded eighteen PBR titles. In addition, a review of the PBR Act is underway to make it UPOV compliant. On her part, Uganda has a draft PVP Bill (2002), which provides for farmer's rights based on the Convention on Biological Diversity (CBD). Discussions are at advanced stages to remove the requirement for farmer's rights and place these rights under the CBD. However, to fast track the enactment of the PVP Bill, there is need for advocacy and lobbying of parliamentarians so that they expedite the passing of the bill into law.

Unlike Kenya, Ethiopia and Tanzania that have operational PVP systems and are almost UPOV compliant, Burundi, Rwanda, Sudan and Madagascar do not have *Sui Generis* systems based on the UPOV (1991). While Burundi's PVP is under establishment in the updated law under the National Seed Service of the Ministry of Agriculture, Madagascar has no legal PVP framework and is drafting a PVP law with the assistance of the Food and Agriculture Organization of the United Nations (FAO). Rwanda has a technical agreement that was developed in 2002 based on the UPOV 1991 convention. However, the Rwanda Agricultural Development Agency (RADA) that was established in 2006 is spearheading seed policy reforms. Finally, limited progress has been made in Sudan who is not a UPOV member.

### 2.5. Trade (import/export) documentation

The fifth area addressed by the rationalization and harmonization of seed laws, regulations and policies in the ECA region was trade documentation. All ECA countries trade in planting materials and therefore have put in place elaborate import/export documentation procedures. However, while Burundi, Madagascar, Sudan, Tanzania and Uganda have put in place measures to unify and simplify their cross border trade documentation procedures, the plant import/export documentation procedures in Ethiopia and Kenya have remained largely rigid. All plant import/export documentation in Kenya, Madagascar and Tanzania are undertaken by only one office. This contrasts greatly with the plant material trade procedures in Sudan where import/export documentation is undertaken by about six offices. In between the two extremes in the processing of plant material documentation lies Uganda and Burundi whose seed trade documents are processed in two and four offices respectively.

The inflexibility in the procedures for plant material import/export regulations in Kenya and Ethiopia is expected given the heavy investments in research and development that the two countries have made especially with regard to plant breeding and seed multiplication. Kenya has developed an elaborate public seed production and distribution system that is unmatched in the region. As a result, the country has set forth stringent procedures for importation/exportation of any form of plant material, such as seeds, cuttings, bud wood, fresh fruits, flowers, plantlets, timber, and agricultural produce. These regulations are enforced through the Plant Protection Act (Cap 324), The Suppression of Noxious Weeds Act (Cap 325) and The Agricultural Produce (Export) Act (Cap 319). These regulations are aimed at protecting Kenya's agriculture from foreign pests (insects, pathogens) given that agriculture is the mainstay of the Kenyan economy.

Box 2. Example of a rationalized seed import documentation in Uganda

To import seed into Uganda for either research or commercial purposes, a trader needs to apply for a plant import permit from the Commissioner of Crop Protection attention phytosanitary inspection unit based at the Crop protection department within the Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) Headquarters at Entebbe, Uganda. The application documents are then transferred to the Phytosanitary Inspection Unit (PIU) for approval, before a pest risk analysis can be carried out. Commercial seed to be imported into the country has to be verified as registered on the national variety catalogue released by the National Seed Certification Services Unit (NSCS) currently also based at the MAAIF offices in Entebbe. If cleared, the PIU then issues the plant import permit to the trader after carrying out a pest risk analysis (PRA). Clearance at the port of entry is conducted by a customs agent from the Uganda Revenue Authority (URA) who is trained in quarantine issues for clearance purposes and this requires the services of the agricultural inspector to verify the Phytosanitary documents (plant import permit and Phytosanitary certificate) and the status of the consignment, whether it complies with the required plant health standards. The two offices mandated to handle documentation for seed imports into Uganda were centralised in 2002 representing a significant regulatory shift that has lessened the length of time taken to do seed business in the country. Before the procedural change, the offices of the PIU and the NSCS were based in Kawanda but the commissioner was based in Entebbe, 46 Km apart. Currently the process takes about three working days but could be longer if a detailed pest risk analysis is required.

*Maureen Katafiire, 2010 Personal Communication*

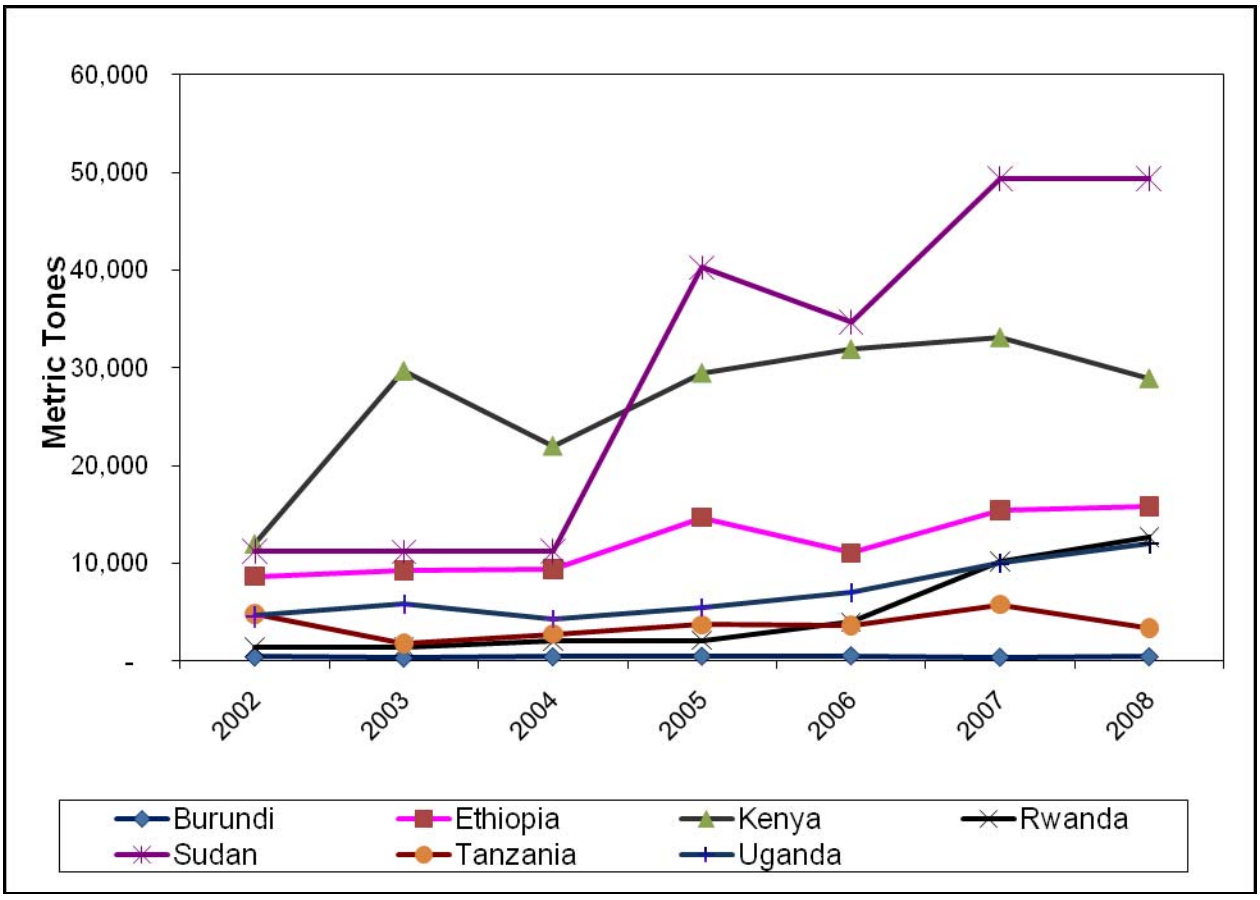
Plant import regulations in Kenya fall into three broad categories; imports under which a permit only is required, imports which must be quarantined and imports which are prohibited. While imports under the first category are permitted because the plant materials under this group are known to carry little risk, imports under the second category carry a risk of introducing dangerous organisms and must be quarantined. Importation of materials under the third category carries very high risks and for this reason, plant material included here may not be imported under any circumstances. The harmonization of seed policies and laws within the ECA region will have

profound effects on regional seed trade. A simplification of the import/export documentation procedures would be expected to increase intra-ECA seed trade. This would be expected to lead to a decline in seed prices and an increase in improved seed utilization in the region. As a result, the welfare of seed producers, traders and consumers within the region would improve. Improved seed use is in turn expected to improve the regions food security status.

### 3. Seed trade flows in ECA

The volume of local seed production in the ECA region has tripled from about 43 thousand metric tones in 2002 to about 122 thousand metric tones in 2008 (Figure 2). Proportionately, Sudan, Kenya and Ethiopia accounted for 36, 32 and 14 percent of the total seed produced over the 2002-2008 period while Tanzania produced the least amount of seed in the region at 4 percent (Figure 3). It is worth noting that the full situation is not captured due to paucity of data. A case in point is the huge informal trade between countries e.g., Uganda and Southern Sudan.

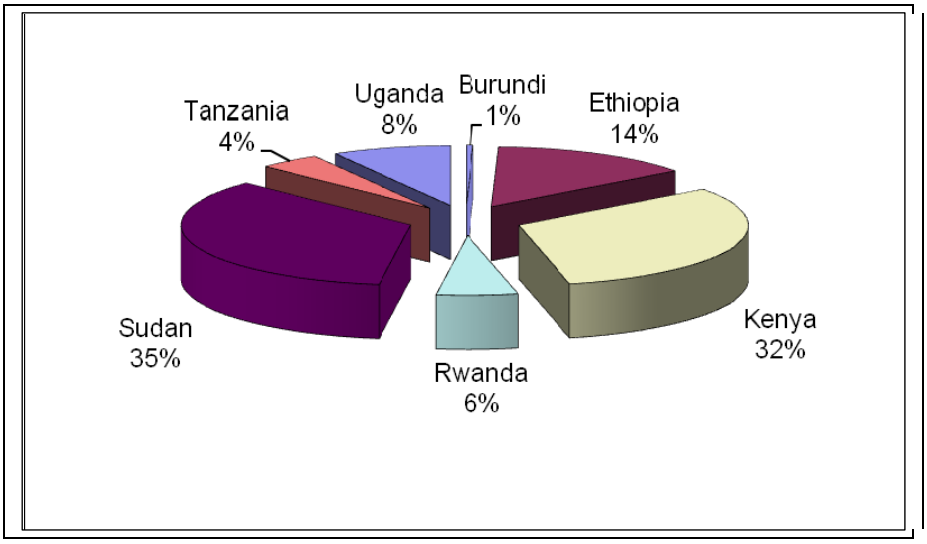
**Figure 2. Domestic seed production in the ECA**




Source: EASCOM Secretariat Reports and Field Surveys, August 2009

In Kenya, the volume of local seed production has increased over years to about 30 000 tones per year, while Sudan's domestic seed production has shot to close to 50, 000 tones per year. The observed fluctuations are a result of competition from imports, changes in demand, grain prices and carry overs.

**Figure 3. Local seed production shares in the ECA region**




Source: EASCOM Secretariat Reports and Field Surveys, August 2009

The bulk of the domestic seed production in the ECA region is dominated by seed maize. In the entire region, seed maize production accounts for about 40 percent of the local seed production, while in Kenya, Uganda and Tanzania, seed maize production accounts for 87, 75 and 71 percent respectively (Table 3). On the other hand, seed maize production in Sudan (the largest local seed producer in the ECA region) accounts for less than one percent. In Sudan, sorghum accounts for over 70 percent of the local seed production.

**Table 3. Proportionate share of maize in local seed production**

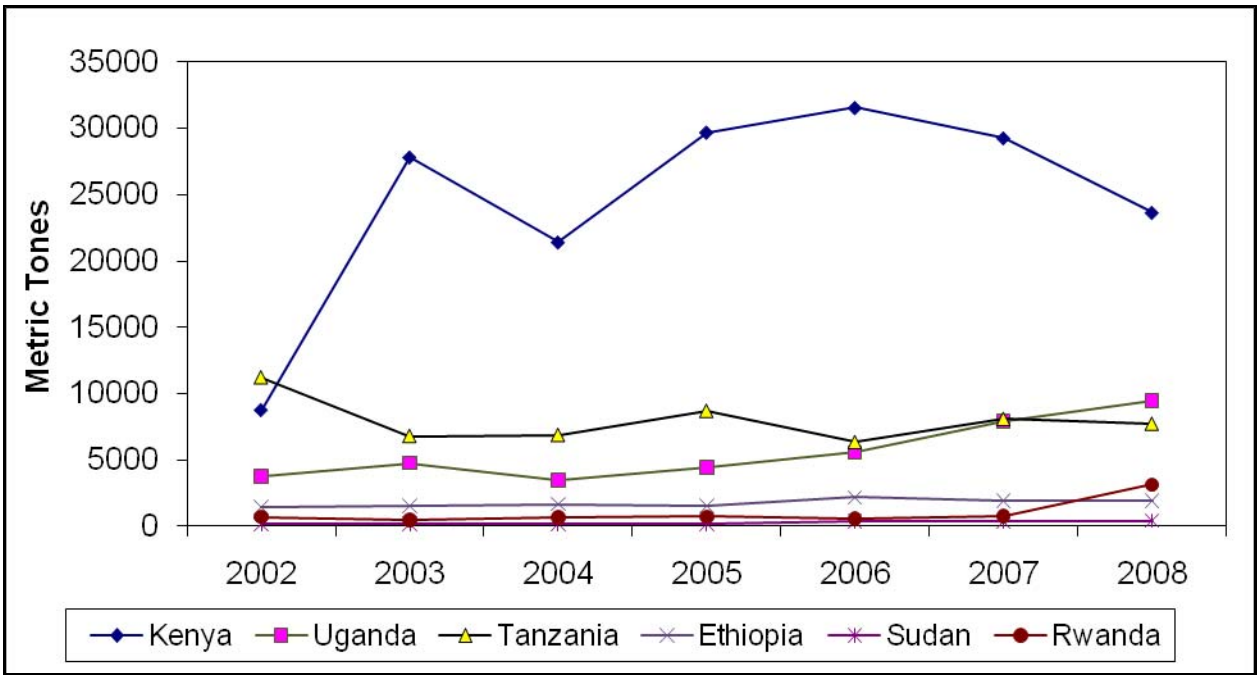
| Country | Country share of total ECA seed production % | % of seed maize in local seed production |
|---|---|---|
| Burundi | 1 | 6 |
| Ethiopia | 14 | 15 |
| Kenya | 32 | 85 |
| Rwanda | 6 | 10 |
| Sudan | 35 | 1 |
| Tanzania | 4 | 71 |
| Uganda | 8 | 75 |

Source: EASCOM Secretariat Reports and Field Surveys, August 2009

Local seed maize production in the ECA region has increased from about 18 thousand metric tones in 2002 to about 40 thousand tones in 2008. In Kenya (the dominant seed maize producer), seed maize production has increased from below 10 thousand tones in 2002 to close to 30 thousand tones in 2008. A similar trend was observed in Uganda where domestic seed maize production

tripled from about 3 thousand tones to 9 thousand tones (Figure 4). However, seed maize production largely stagnated in Tanzania, Rwanda, Ethiopia and Sudan.

**Figure 4. Domestic seed maize production in the ECA region**




Source: EASCOM Secretariat Reports and Field Surveys, August 2009

The harmonization of seed policies in the ECA region has also had phenomenal impacts on regional seed trade flows. Except for Ethiopia that imports only vegetable seeds, the other ECA member countries witnessed increases in seed trade. Kenya, Uganda, Tanzania, Sudan and Rwanda are net seed importers. As expected, Tanzania, the regions smallest seed producer, was the regions largest seed importer (Figure 5). Tanzania's dominance in seed imports is closely followed by Kenya that is also a large seed producer (Table 4).

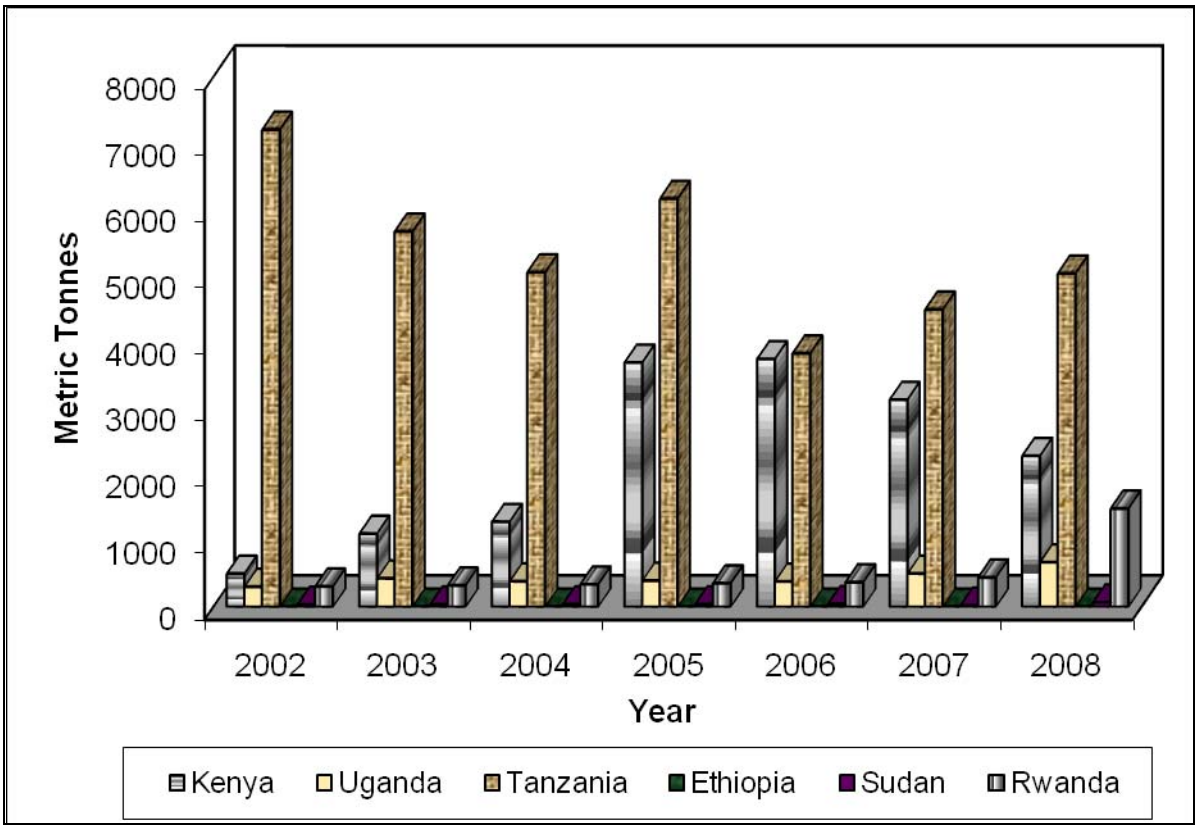
**Table 4. Proportionate share of seed maize in imports**

| Country | Country share of total ECA seed Imports % | % of seed maize in total seed Imports |
|---|---|---|
| Ethiopia | 0 | 0 |
| Kenya | 33 | 59 |
| Rwanda | 6 | 80 |
| Sudan | 4 | 8 |
| Tanzania | 53 | 88 |
| Uganda | 4 | 10 |

Source: EASCOM Secretariat Reports and Field Surveys, August 2009

Seed imports into Kenya, Uganda, Tanzania, Sudan and Rwanda on the aggregate increased from 9 thousand tones in 2002 to close to 15 million tones (Figure 5). However, the bulk of these seed imports originated from outside the ECA region (mainly Southern Africa and Europe) with minimal imports being sourced from Kenya and Uganda.

**Figure 5. Seed imports in the ECA region**

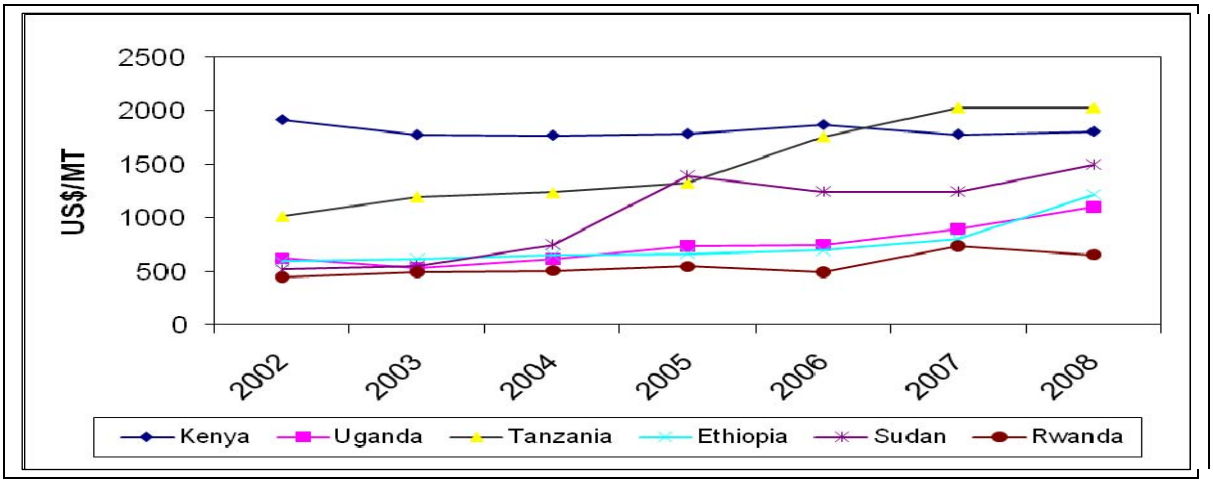



Source: EASCOM Secretariat Reports and Field Surveys, August 2009

Maize seed imports account for over three quarters of the total seed imports into the ECA region (Table 4). In Kenya, seed maize imports account for just under 60 percent of the total imports while seed maize accounts for 88 percent of Tanzania's seed imports (Table 64). The bulk of seed imports into Kenya comprise hybrid seed maize and various vegetable seeds, from Europe, U.S, South Africa, Zambia, Zimbabwe and Uganda. The imports have been bridging the supply gaps in the market. Some of the imported varieties are very superior and have maintained/increased their market niches. In Sudan, the bulk of the seed imports are from Europe and southern Africa. However, Rwanda that has recently witnessed an upsurge in seed imports sources its imports from Kenya, Uganda and Tanzania.

Over the same period, seed exports from Kenya and Uganda have gradually increased from less than a thousand tones to more than three thousand tones. The major destination for these exports is the ECA market with Rwanda being the largest importer of seeds from Kenya and Uganda. The proportions of seed exports from Kenya are as follows; maize 78%, barley 12%, wheat 4.6%, pulses 1.5% and sorghum/millet 1.2%. Vegetable seed export accounts for only 0.4%. Other export seed crops include lawn pasture and oil crops.

**Figure 6. Trends in nominal seed maize prices**




Source: EASCOM Secretariat Reports and Field Surveys, August 2009

An analysis of price trends for maize seed for the period under consideration shows an increase in price stability over time. Over the six years under analysis, seed maize prices in Kenya, Uganda, and Ethiopia have generally stagnated, while they have increased in Tanzania and Sudan (Figure 6). The Tanzanian price increase is much more pronounced when the prices are evaluated in the local currency. It is expected that harmonization of seed policies would increase market access for seed maize which in turn would lead to stabilized prices.

## 4. Welfare impacts of improved seed policy environment in the ECA region

### 4.1. The economic surplus model

To assess the welfare impacts of the improved seed policy environment, a spatial equilibrium Model (SEM) was developed. The SEM was popularized by Takayama and Judge (1971) following the seminal work of Samuelson (1952). The SEM consists of *n* regions (or countries), and these regions are separated by distance, thus the name spatial equilibrium model. The SEM is used frequently to determine the effects of trade policy changes on quantities, prices and welfare (Devadoss et al, 2005). It provides quantitative measures of the welfare impacts of a policy change, which helps to

weight the benefits and costs of that particular policy change. It is calibrated to the price and quantity values for a particular base year using demand and supply elasticity estimates. The model comprises of three main equations; supply, demand and the welfare objective function along with its optimality conditions and market clearing equations. The General Algebraic Modelling Systems (GAMS) package was used to solve the model.

Following Devadoss et al, 2005, the supply and demand functions for the SEM can be specified as:

$$y_i = \alpha_i p_i^d + \delta_i \quad i=1,\ldots,n \qquad (1)$$

$$x_i = \beta_i p_i^s + \omega_i \quad i=1,\ldots,n \qquad (2)$$

where $\alpha, \beta,$ are own price coefficients, $\delta$ and $\omega$ are additive constants, $p_i^d$ is regional demand price, $y_i$ is quantity demanded, $p_i^s$ is regional supply price, and $x_i$ is quantity supplied in the i[th] region. The supply and demand functions are incorporated into the SEM specification, which provides the welfare objective function and the market clearing conditions mathematically as follows:

$$W = \sum_{i=1}^{n}(a_i - b_i y_i)y_i - \sum_{i=1}^{n}(c_i + d_i x_i)x_i - \sum_{i,j} x_{ij}t_{ij} - \sum_{i,j} x_{ij}\left(\rho_j^d - \rho_i^s\right) + \sum_{i,j} x_{ij}\left(\rho_j^d \frac{1}{1+\delta_{ij}} - \rho_i^s\right) \qquad (3)$$

subject to

$$\sum_{j=1}^{n} x_{ij} \le x_i \quad \text{for all } I \qquad (4)$$

$$\sum_{i=1}^{n} x_{ij} \ge y_j \quad \text{for all } j \qquad (5)$$

$$c_i + d_i x \ge \rho_i^s \quad \text{for all } I \qquad (6)$$

$$a_i - b_i y_i \le \rho_i^d \quad \text{for all } I \qquad (7)$$

$$(1+\delta_{ij})(\rho_i^s + t_{ij}) \ge \rho_j^d \quad \text{for all } i \text{ and } j \qquad (8)$$

$$y_i, x_i, x_{ij} \ge 0 \quad \text{for all } i \text{ and } j \qquad (9)$$

where $x_{ij}$ is the quantity of a commodity (seed) transported from country *i* to *j*, $t_{ij}$ is unitary transportation cost from *i* to *j*, $y_i$ is quantity demanded in country *i*, $\delta_{ij}$ is import tariff imposed by region *j* on imports from *i*, $\rho_i^d$ is country demand price, and $\rho_i^s$ is country supply price. The SEM employs a non-linear optimization technique to maximize the net social welfare, (equation 3), subject to a set of linear constraints (equations 4 to 9). Equation (4) states that the total quantity of a commodity transported from country '*i*' must be lower or equal to national production in that country. Equation (5) states that the total quantity of a commodity transported into a country must

be greater than or equal to quantity demanded in the destination country. Equation (6) shows that the regional supply price must be greater than or equal to the specific country supply price. Equation (7) is similar to equation (6) but relates to demand; it implies that regional and national demand prices must be equal if national demand is positive. Equation (8) is a market clearing condition showing that market supply price in *i* plus transportation cost adjusted for harmonization must be greater than or equal to market demand price in *j*. The last constraint shows that demand, supply and transported quantities are non-negative.

### 4.2. Model calibration

The welfare impacts of an improved seed policy environment within the ECA region are computed from a SEM of seed maize trade in Kenya, Tanzania and Uganda. The model comprises of four blocks of equations: prices, supply, consumption and market clearing identities for maize at the retail level. The General Algebraic Modelling Systems (GAMS) package was used to solve the equations. It is calibrated to reproduce the 2000 base values, when the seed policy harmonization agenda began. To solve the model, estimates were compiled for the quantities of seed maize supplied and consumed in the three select countries, their corresponding prices and their price elasticities.

**Table 5. Base data for policy simulation**

| Variable | Base values | | |
|---|---|---|---|
| | Kenya | Uganda | Tanzania |
| Seed maize consumption (MT) | 8,744 | 3,750 | 11,189 |
| Seed maize production (MT) | 8,246 | 3,450 | 3,989 |
| Seed maize Price (US$/MT) | 1,920 | 625 | 1,516 |
| Transfer costs (US$/MT/KM) | 0.09 | 0.15 | 0.11 |
| Own-price elasticities | | | |
| Price elasticity of demand for seed maize | -1.50 | -0.10 | -0.90 |
| Price elasticity of supply for seed maize | 0.63 | 0.43 | 0.66 |
| Distances (km) | | | |
| Kenya | 0 | 673 | 922 |
| Uganda | 673 | 0 | 1,595 |
| Tanzania | 922 | 1595 | 0 |

Data sources for consumption, production, price and transfer cost estimates from survey

Table 5 presents the base data used for policy simulations. This data was compiled from the EASCOM survey and represents rough estimates whose reliability might be low. On average, the annual supply of seed maize in Kenya, Uganda and Tanzania was estimated at 8,246, 3,450 and 39,898 tones respectively, while consumption of maize was 8,744, 3,750 and 11,189 tones. The own-price elasticities of supply for seed maize in Kenya, Uganda and Tanzania were set at 0.63, 0.43 and 0.66 respectively while the price elasticities of demand were set at - 1.50, - 0.15 and - 0.90 respectively (Table 5). The distances represent the distances between the three EAC capitals – Dar

es Salaam, Kampala and Nairobi. The elasticity estimates were adopted from earlier studies[10]. The model accounts for transfer costs across the three countries and compares a scenario before and after the implementation of the seed policy harmonization agenda.

**Results of the welfare impact analysis**

The welfare impacts of an improved seed policy environment are quantified from a SEM model of seed maize trade in Kenya, Tanzania and Uganda. A before and after comparative analysis is undertaken using 2000 price and quantity values as the base scenario before the implementation of the harmonization agenda and 2008 as the scenario after the project. The base scenario results replicate the existing trade patterns. Since seed maize retail prices are higher in Kenya than in Uganda and Tanzania, one would expect Kenya to import maize from Uganda and Tanzania. However, in reality Uganda and Tanzania import seed maize from Kenya. The base scenario generates positive welfare impacts for seed maize trade in the three countries. At the base solution, a producer surplus of about US$ 10, US$ 6.6 and US$ 5.6 million is generated in Kenya, Uganda and Tanzania respectively (Table 6). In addition, consumer surpluses of US$ 8.5, US$ 8.6 and US$ 0.8 million are generated in Kenya, Uganda and Tanzania respectively. Overall, the combined social surplus in Kenya, Uganda and Tanzania amounted to US$ 18.5 million, US$ 15.2 million and US$ 6.4 million respectively (Table 6).

**Table 6. Welfare measures before improved seed policy environment**

| Variable description | Kenya | Uganda | Tanzania |
|---|---|---|---|
| Retail price (US$/MT) | 1,602 | 1,516 | 1,497 |
| Quantity demanded | 10,986 | 3,215 | 4,373 |
| Quantity supplied | 7,386 | 3,215 | 4,373 |
| Quantity traded ('000 MT) | | | |
| Kenya | 7,386 | 2,202 | 2,865 |
| Uganda | 0 | 3,215 | 1,397 |
| Tanzania | 0 | 0 | 4,373 |
| Consumer surplus (US$ million) | 8.5 | 8.6 | 0.8 |
| Producer surplus (US$ million) | 10 | 6.6 | 5.6 |
| Social surplus (US$ million) | 18.5 | 15.2 | 6.4 |

Relative to the 2000 base solution values, the improved seed policy environment as represented by the scenario after the implementation of the project leads to an increase in seed maize prices across all the three countries. In Kenya, seed maize prices increased by 18 percent after seed policy harmonization while in Uganda and Tanzania seed maize prices increased by 34 and 22 percent respectively (Table 6). Overall, seed maize prices in the region increased by about 25 percent after

[10] Elasticity estimates for Kenya, Uganda and Tanzania adopted from Olwande *et al*, 2009 Sserunkuuma, 2009 and Weliwita *et al*, 2002.

the harmonization of seed policies. This price increase could be explained by the inflation rates in the region that are typically in the range of 20 percent. Thus, in countries such as Kenya, seed maize prices declined in real terms. In spite of the seed price increases, demand for certified seed maize increased by 98, 175 and 85 percent in Kenya Uganda and Tanzania respectively (Table 6). This could be attributed to increased market access of high quality seed maize in the region with the harmonization of seed policies.

**Table 7. Welfare measures after improved seed policy environment**

| Variable description | Kenya | Uganda | Tanzania |
|---|---|---|---|
| Retail price (US$/MT) | 1,899 (18)* | 1,852 (34) | 2,018 (22) |
| Quantity demanded | 21,805 (98) | 8,839 (175) | 8,081 (85) |
| Quantity supplied | 24,670 (235) | 11,445 (255) | 2,608 (-40) |
| Quantity traded ('000 MT) | | | |
| Kenya | 21,805 (195) | 2230 (66) | 2,865 (105) |
| Uganda | 0 (0) | 8,839 (174) | 2,606 (0) |
| Tanzania | 0 (0) | 0 (0) | 2,608 (-40) |
| Consumer surplus (US$ million) | 12 (41) | 45(423) | 10 (1,150) |
| Producer surplus (US$ million) | 37 (270) | 20 (203) | 4 (-28) |
| Social surplus (US$ million) | 49 (165) | 65 (327) | 14 (118) |

* Figures in Parenthesis are percentage changes from the base solution

Improved seeds policy environment in the region led to a substantial expansion in seed maize production in Kenya and Uganda by 235 percent and 255 percent respectively, perhaps to take advantage of an expanded market (Table 7). However, seed production in Tanzania shrunk by about 40 percent after the harmonization of seed policies. The decline in Tanzanian seed maize production is compensated for by the increased seed maize imports from South Africa. On the other hand, Kenya's seed maize exports to Uganda and Tanzania increase by 66 and 105 percent respectively (Table 6). Consequently, the harmonization of seed policies increases consumer surplus in Kenya, Uganda and Tanzania by 41, 423 and 1,150 percent respectively (Table 7). Similarly, producer surplus for seed maize growers in Kenya and Uganda respectively increased by 270 and 203 percent but decreases by 28 percent in Tanzania (Table 7).

Overall, the implementation of the harmonized seed policies leads to an increase in social surplus of 165, 327 and 118 percent respectively, which translated to a gain in welfare of about US$ 128 million for the three countries (Table 7). Considering that seed maize only accounts for 40 percent of seeds in the ECA region, the total welfare gain would have been about US$ 320 million. Furthermore, given that the three country's account for only 44 percent of the regions seed maize industry, the total welfare gain for the entire ECA region can be estimated at US$ 727 million. The foregoing

analysis seems to suggest that the harmonization of seed policies within the ECA region would lead to improvements in welfare. Comparatively, seed maize producers in Kenya and Uganda seem to be the greatest beneficiaries of such a policy while those in Tanzania seem to be hurt. However, the gainers from this policy can potentially compensate the losers. On the basis of the compensation principle this policy be recommended as a potentially welfare improving policy. Thus, policy makers within the region should fast track the implementation of the harmonized seed policies and regulations.

## 5. Looking to the future

### 5.1 Seed Trade Associations

The formation of seed trade associations in the ECA region would definitely have positive impacts given their ability to improve access to quality seeds that have multiplier effects on seed trade and food production in the region. Nine out of ten ASARECA member countries have national seed trade associations the only exception being Eritrea. The Seed Trade Associations are: the newly formed Burundi Seed Trade Association (COPROSEBU); the revived Interprofessional Association of Seeds Producers of Congo (AISC); the Ethiopian Seed Trade Association (ESTA); the Seed Trade Association of Kenya (STAK), Malagasy Seed Trade Association (AMPROSEM) in Madagascar; the Seed Trade Association of Rwanda (STAR); Sudan Seed Trade Association (SSTA); the Uganda Seed Trade Association (USTA) and the Tanzania Seed Trade Association (TASTA)(Table 8).

**Table 8. Seed trade associations in the ECA region**

| Country | Seed Association | Contact |
|---|---|---|
| Burundi | Collectif des Coopératives et Compagnies des Producteurs des Semences du Burundi [COPROSEBU] | Mr. Cyprien Banyiyereka banyi2000@yahoo.fr) |
| DR Congo | Interprofessional Association of Seeds Producers of Congo (AISC). | Mr. Pierre Bukasa (bukasatatambayi@yahoo.fr) |
| Ethiopia | Ethiopian Seed Trade Association [ESTA] | Mr. Melaku Admasu (melakua@ethionet.et) |
| Kenya | Seed Trade Association of Kenya [STAK] | Dr. Evans Sikinyi (stak@stak.or.ke) |
| Madagascar | Association Malgache des Professionnels des Semences et Plants, Madagascar [AMPROSEM] | Mr. Eddy Randrianatsimbazafy (ofmata@moov.mg) |
| Rwanda | Seed Trade Association of Rwanda [STAR] | Mr. Gabriel Nkuliyimana (gabynku@yahoo.fr) |
| Sudan | Sudan Seed Trade Association [SSTA] | Dr. Mubarak El Mutasim ElSheikh (sud.seedasso@yahoo.com) |
| Tanzania | Tanzania Seed Trade Association [TASTA] | Mr. Bob Shuma (tasta02@hotmail.com) |
| Uganda | Uganda Seed Trade Association [USTA] | Ms. Ruth Ssebuliba (ugandaseedtrade@yahoo.com) |

The Seed Trade Association of Kenya is the oldest and relatively well established. STAK hosts the Secretariat for EASCOM and has been overseeing the operationalization of the agreements under the harmonization of seed policies and regulations in the ASARECA countries. It coordinates regional harmonization activities for the ten ASARECA member countries. STAK has been instrumental in the establishment and strengthening of national seed trade associations in the

ASARECA region. Consequently, the objectives of the national seed trade associations in the region are broadly similar and include

- providing a forum for interaction and information exchange among its members and key stakeholders;
- representing interests of the seed industry in the country, regionally and internationally;
- promoting the development of the national seed industry to improve crop production;
- improvement of communication between seed dealers in the country, region, Africa and the rest of the world by providing the necessary seed information, and holding and attending meetings and seminars
- interaction with other national and international organizations involved in seed activities, to promote interests of the seed industry
- promoting activities that lead to regulatory harmonization in the country, Africa and other regions, to facilitate movement of seed
- developing a statistical database on national seed production and trade
- promoting use of improved quality seed by conforming to national and international quality standards
- advising the relevant Government regulatory authorities on rules, regulations and general policy pertaining to seed trade;
- arbitration in any disputes between members.

The relevance of the seed trade associations in a harmonized seed policy regime will depend on how well the associations meet their set objectives in the face of the frequently changing demands of the seed industry. Since seed trade associations have been instrumental in catalyzing reforms in national seed laws, then one can argue that they are important players in improving the regions welfare. As outlined above, these associations have multiple objectives on the basis of which their success can be judged.

One area is the promoting activities that lead to regulatory harmonization at the national level of the seed policy harmonisation agreement reached in 2002. In normal situations, advocacy would be an awkward undertaking for public bodies such as breeders or regulators to undertake since they would be asking themselves to reform. Another role is strengthening internal seed laws and regulations. The seed industry is prone to fake seed and someone needs to step up and protect genuine seed producers and farmers, through strict enforcement of national seed laws. Most countries lack the legislative framework to deal with culprits and STAs can play a lead role by ensuring that their members desist from this practice. STAs have been active in building capacities of their members to conform to the requirements of the agreements as they promote use of improved seeds. When judged against the objective of promoting regional formal seed trade, the seed associations have achieved a great deal of success. Local seed production tripled from 43 thousand tones to about 122

thousand tones between 2002 and 2008. In addition, seed imports into the region almost doubled from 9 thousand tones to about 15 thousand tones over the period under analysis. Over the same period, intra-ECA seed imports have more than tripled as seed exports from Kenya and Uganda have gradually increased from less than a thousand tones to more than three thousand tones. Moreover, the harmonization of seed policies in the ECA region on seed maize prices has yielded a general increase in seed price stability in the entire region which benefits commercial farmers.

Perhaps, the greatest achievements of the seed trade associations can be inferred from the welfare changes witnessed in the region. Even though all the welfare impacts cannot be attributed to the seed trade associations directly, one can argue that the seed trade associations have partly contributed to the gains. Overall, the improvement of seed policy environment has happened in part from the efforts of STAs.

Box 2. Brief history of the Seed Trade Association of Kenya (STAK)

STAK was formed in December 1982 under the Societies Act Cap 108 of the Laws of Kenya to represent the interests of the seed sector and to promote the development of formal seed trade. The Association operated on voluntary basis until July 1999 when an independent Secretariat was set up to coordinate its activities in serving the interests of its members. STAK has been instrumental in the expansion of the number of registered seed companies in Kenya from 38 in 2000 to 74 in 2009 even though all registered seed companies in Kenya are not members of STAK. About 27 of the registered seed enterprises in Kenya are STAK members. STAK members provide about 90 percent of all the formal seed used in the country. Thus, STAK has succeeded in attaining one of its objectives since the Association strives to ensure food security in Kenya through provision of quality seed from only registered seed dealers. STAK works closely with the Regulatory Authority KEPHIS to ensure that only certified seed is sold to farmers and that farmers are not sold "fake" seeds, which frequently resurface and are a major cause of poor crop yields. STAK, in consultation with other key seed stake-holders, has been lobbying with the Government to review the Seeds and Plant Varieties Act and other Acts touching on seed, to remove clauses which restrict quick access to improved seed by farmers, and to make seed legislation to conform to a liberalized seed industry. STAK was able to garner support from the Business Advocacy Fund (BAF) to speed up processing of the Seed Policy, Seed Bill 2008 and Seeds Regulations.

### 5.2 Other Regional Initiatives on Seed Industry Policy

Since 2004, EASCOM in collaboration with the national regulatory agencies and national seed trade associations have been working towards seed policy harmonization in the region. Progress in implementation of the agreements has been uneven across the ECA countries. However, there are various initiatives in seed policy reform in the region and combined are likely to generate the required synergies for an effective policy environment for seed trade in the region.

The Alliance for a Green Revolution in Africa (AGRA) initiated the Program for Africa's Seed Systems (PASS) that aims at facilitating processes in the entire seed value chain. Currently the program is providing support to breeding programs in the region including training fellowships at PhD. and MSc level and is support a Business Development and credit guarantee scheme for seed enterprises and agro-dealer networks in the region. The Program plans to undertake work on national and regional seed policy. By 2006, the Eastern and Southern Africa Seed Alliance (ESASA[11]) was proposed to further interests of the seed industry. This would be in collaboration with organisations such as the African Seed Trade Association (AFSTA), Iowa State University (ISU) and the International Crops Research Institute (ICRISAT). From 2007, the Alliance for Commodity Trade in Eastern and Central Africa (ACTESA[12]) was in the design stage as an organ with the mandate of promoting trade in the region.

The African Seed Trade Association (AFSTA) was established in 2000, out of a need to have a regional representative body for the seed industry, which could also serve to promote the development of private seed enterprises. AFSTA provides a platform for discussions and exchanges of information for AFSTA members and the seed stakeholders through for example annual congresses, an electronic newsletter and working groups to promote the African seed industry. AFSTA has 73 members from 36 countries comprising 25 private seed companies, 26 national seed associations which include the Tanzania Seed Trade Association (TASTA), Seed Trade Association of Kenya (STAK), Malagasy Seed Trade Association (AMPROSEM), Seed Trade Association of Rwanda (STAR) and Uganda Seed Trade Association (USTA)) and 22 associate members. This association provides a framework for public-private partnership and sharing of resources and information. AFSTA is registered in Kenya with diplomatic status.

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[11] ESASA was intended to bring new ideas and expertise to problems neither donors nor public sector had come up with, and to provide a forum for private public partnerships. It intended to support seed policy endorsement, technical seed sector development and seed incubators.

[12] ACTESA was initially designed as a response to high food prices in 2007/2008. In 2009 it was established as a specialized agency under the COMESA treaty with mandate to integrate small farmers into markets. Its focus is on policies, market services and capacity building,

AFSTA recognizes and supports the important role played by a vibrant private sector led seed industry in the region. Private seed companies are the major investors in the seed sector; provide a bridge between research and farmers and deliver improved seed to farmers. Although broader in terms of organizational scale of operation, the objectives of AFSTA are broadly similar to those of EASCOM, that is to:

- Promote activities that lead to regulatory harmonization throughout Africa to facilitate movement of seed
- Develop a statistical database on African seed production and trade
- Interact with regional governments and NGO's involved in seed activities in order to promote the interests of the seed industry
- Facilitate establishment of national seed trade associations in Africa
- Strengthen communication with African seed industries and with the world
- Promote the use of improved quality seed and
- Provide information to members

The Victoria Declaration by the COMESA Ministers of Agriculture following their fifth meeting held in March 2008 stated that "Member States commit to harmonizing, within two years, seed trade regulations in the region and to finalize a regional protocol for the protection of new varieties of plants within the same period." This challenged partners in ASARECA, ESASA, AFSTA, ISU and ICRISAT and the design team of ACTESA to work together to capture the two year time slot to finalize the regional protocol. The partners recognized AFSTA as the representative of the private sector, which is advocating for seed trade harmonization to facilitate the movement of seed across borders. They further recognized that ASARECA's rationalization and harmonization initiative had been both participatory and inclusive, but had not been politically endorsed. They noted that the SADC agreement was pending political approval and that the ECOWAS agreements on regional variety release and seed certification were approved in 2008.

In order to build on lessons and synergies presented by the new developments, a road map for implementation of the harmonization across the COMESA region was proposed in early 2009[13]. The road map noted that similar efforts are continued in the other Regional Economic Communities of the African Union, with AFSTA playing an enhanced role as the representative of the commercial seed sector as officially recognized by the African Union. Succinct points in this road map were:

[13] This was during a consultative meeting held on 19th January, 2009 between Peter Ewell (USAID/East Africa), Richard Jones (ESASA), Michael Waithaka (ASARECA), Obongo Nyachae (EASCOM) and Justin Rakotoarisaona (AFSTA). This was presented to COMESA Secretariat on 13th February 2009.

1. ASARECA's Eastern Africa Seed Committee (EASCOM), which was charged with implementation of the agreements arrived at under its rationalization and harmonization programme, would become a Standing Committee of AFSTA. Modalities for this change would be finalized during the next Annual General Meeting of EASCOM members
2. All financial support for seed harmonization from ASARECA or other development partners would be disbursed by AFSTA, through a Tripartite Agreement with EASCOM and national seed trade associations, who would link with regulatory agencies in those countries. AFSTA is not bound by political blocs and can readily accommodate countries outside the Eastern and Central Africa region (e.g., Libya and Egypt, who are COMESA members), as well as Non-COMESA members within AFSTA's sub-region.
3. ASARECA would play a continuing role in advocacy, and monitoring and evaluation and would seek COMESA's endorsement as a key player in the COMESA harmonization process
4. COMESA would be responsible for policy formulation and implementation between its members, but AFSTA would convene harmonization meetings on COMESA's behalf
5. The Eastern and Southern Africa Seed Alliance (ESASA) and other partners, would support COMESA in the provision of technical support for the development of appropriate harmonization agreements, and for the development of seed and associated agri-businesses to promote a competitive environment for seed trade
6. National seed trade associations affiliated to AFSTA would play a key role at national level in advocating for policy, legal and regulatory seed reforms, with back-stopping through ASARECA and ESASA to promote a competitive business environment in the COMESA region.
7. In 2010, EASCOM, ESASA and other partners will work together to facilitate the harmonized seed policies within the COMESA and SADC countries.
8. In 2011, ASARECA will consolidate harmonization efforts within the COMESA countries and plan for further action based on the recommendations of the review of the rationalization and harmonization project to be carried out in 2010.

In early 2010, this proposal was adopted by COMESA and ESASA evolved into the Alliance for Seed Industry in Eastern and Southern Africa (ASIESA). ASIESA is a COMESA-AFSTA partnership to establish/enhance a viable, sustainable and competitive seed industry in eastern and Southern African countries. It aims at empowerment of the African seed industry in three ways: individually through new and existing company capacity, skills, competitiveness, and connection to research; at corporate level by improving industry capacity and competitiveness in regional trade; and industry advocacy capacity at national and regional level.

A major development in 2010 was the launch of the COMESA Agriculture Inputs Programme (COMRAP). This is a two-year programme being implemented under ACTESA and funded by the European Commission within the "Food Facility" programme. It is designed to respond to the rising food prices phenomenon by increasing agricultural productivity through enhanced access to three intertwined factors, finance, input supply and seed quality and availability. The specific program interventions include:

- Improved Financial Services, through capacity building at banks and promoting the development of a weather indexed insurance system for smallholders;
- Strengthening the agro-dealer network, and the supply of agro inputs to smallholders by capacity building, accreditation of dealers, improving services, marketing smallholder outputs and
- Harmonization of seed regulations and standards, and improvements in the quality and availability of seeds.

Through COMRAP, it is expected that ECA and SADC countries will agree on a harmonization by August 2011.

## 6. Summary and conclusions

This paper assesses the impacts of seed policy improvements in the ECA region with reference to formal trade in seed maize in Kenya, Uganda and Tanzania using a spatial equilibrium model (SEM). The data used in this study was derived from a regional survey of key informants undertaken in August 2009. It is complimented by secondary data on seed production, consumption, prices and elasticity parameter estimates that were derived from various sources. The quantification of the trade and welfare impacts of seed policy harmonization in ECA involved a before and after comparative analysis. In addition, the paper analyses the progress made in the harmonization of seed policies especially with regard to: i) variety evaluation, release and registration process; ii) seed certification process; iii) phytosanitary measures; iv) plant variety protection; and v) import/export documentation.

Over the past five years, considerable progress has been made in the harmonization and rationalization of seed laws, policies and regulations within the ASARECA region. With regard to the process of harmonization, the progress made in the five thematic areas has been phenomenal. The length of the variety release period has been reduced from three or more years to only two seasons. This has greatly improved availability of improved seed varieties and increased private sector participation in the variety release process. In countries where variety release data was available for the period before and after the harmonization project, the growth in the number of seed companies and the total number of seed varieties released by the private sector was quite phenomenal.

The results of the welfare analysis give compelling evidence in support of the seed policy harmonization agenda. Comparatively, the implementation of the seed policy harmonization project would lead to improvements in welfare in the three ECA countries. In all cases, the gainers from the policy change can potentially compensate the losers. On the basis of the compensation principle, seed policy harmonization can be recommended as a potential welfare improving policy. These findings lend credence to the calls for policy makers within the region to fast track the implementation of the pending harmonized seed policies and regulations that take into consideration the agreements reached in 2002. However, it is important that such compensation does actually take place in the real world. In MERCOSUR, Brazil and Argentina pay into an infrastructure fund that is used for roads and rural electrification in Paraguay and Uruguay thus compensating the two countries for being swamped by their bigger neighbours.

## 7. Recommendations

This initiative provides an excellent example of how collective action involving the public and private sector partnerships as championed through EASCOM can lead to harmonisation of procedures across borders thus addressing anomalies in the policy environment for trade. However, the review shows that there are still glaring gaps in moving ASARECA member countries towards harmonisation of seed policy. Some of these include establishment of an inter-agency certification for goods in transit within the region. This was initiated in the Technical Working Groups and looks like a good approach to revisit. The second area is a deliberate move to avoid enhancement of non tariff barriers under the guise of standards, countries should hasten the setting up of PVP that are UPOV 1991 compliant. The third area relates to passage of germplasm across borders. This is still hampered by archaic procedures. ECA countries are urged to simplify the seed export/import documentation. Finally, ECA countries must endeavour to fast track the enactment of pending seed policy bills into law with the requisite regulations.

The COMESA harmonization agreement on seed policy is anticipated to become a reality in August 2011. If this happens and a mechanism that ensures that the agreements would be binding is put in place, this would shorten the time required to domesticate regional commitments. However, drawing from the SADC experience moving from policy into practice will require that the capacity for implementation of agreements and performance of national and regional seed systems is improved. Countries are at different levels with Kenya and to a large extent Tanzania leading the pack while other countries are still lagging behind. Serious progress in the widespread adoption of improved varieties will need an assessment of capacity needs for different ASARECA member country seed systems and the development of mechanisms to address identified gaps.

Given multiple memberships of ASARECA countries in different regional economic communities and the lack of a political mechanism of its own, ASARECA should pursue a legal framework for approval and endorsement of the 2002 seed policy harmonisation agreement by nesting it within existing political processes in COMESA, SADC and EAC.

The ASARECA seed initiative should revisit the use of technical working groups to deliver regional policy options for improving the sector while taking into account key factors such as neighbourliness (given that ASARECA has 10 disparate and widely dispersed/separated member countries), the regionality of the commodities in question, and consider sequencing deliverables in each of the five key areas to ensure depth in the way issues are addressed and impact.

Harmonisation and rationalisation provides a large enough market for trade in high quality seed thus enhancing access to quality seed for farmers, however it may also heighten the risk of disease transfer across borders. Current initiatives such as the interagency certification scheme and the regional quarantine pest lists- need to be finalised and mechanisms for ensuring that they are web based and regularly updated to enhance information access put in place. ASARECA can also link with other initiatives such as the eastern Africa phytosanitary information committee (EAPIC) in addressing this area while seeking other mechanisms to improve capacity for plant health services in the region.

Finally, the national seed trade associations should be strengthened and given a clear mandate on advocacy for the enactment of the harmonised agreement into national policy and legislation.

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## Annex I. Glossary of terms

| | |
|---|---|
| Accreditation | The process where the national certification agency (NCA) authorizes an entity (private or public enterprise or person) to undertake seed certification or seed testing services, which are otherwise the responsibility of the NCA. |
| Breeders' rights | Intellectual property rights granted to breeders as innovators of new plant varieties to enable them to recoup investment in variety breeding. |
| Compulsory certification | Applies to a group of crops selected as economically vital nationally and whose seed must undergo full certification before being offered for sale. |
| Essentially derived variety | A plant variety is taken to be an essentially derived variety of another plant variety if: a) it is predominantly derived from that other plant variety; and (b) it retains the essential characteristics that result from the genotype or combination of genotypes of that other variety; and (c) it does not exhibit any important (as distinct from cosmetic) features that differentiate it from the other variety. |
| First, second, third, fourth, etc, generation | Refers to inspection status of seed crops through the multiplication cycle. Breeders' seed gives rise to basic seed whose progeny is certified seed. Depending on the crop, certified seed may be classified as C1, which yields C2, which in turn yields C3, etc. |
| Intellectual Property Rights (IPR) | Exclusive rights granted to innovators to exploit their innovations to recoup investment into research. IPR may be granted as breeders' rights to cover plants, or as patents to cover industrial designs or innovations. In some countries, patents may also be granted varieties containing selected genes such as genetically modified crops. |
| Interagency certification | A system where field certification is undertaken in one country by the NCA and bulk seed is moved to another country to complete the certification process. |
| Harmonization | A process where a set of countries or regional economic blocs agree to standardize rules, procedures, regulations, standards and even laws that govern seed trade. |
| National certification agency (NCA) | The national designated authority responsible for undertaking seed certification services. |
| National variety list | A list of varieties officially released for commercial production in any one country. It is also called a National Official Catalogue. |

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| Non-tariff barriers | These are laws, regulations, administrative and technical requirements other than tariffs imposed by a partner state whose effect is to impede trade. |
| Open-pollinated crop | Crops whose mode of reproduction involves transfer of pollen either within the same plant or transfer of pollen from other plants of the same or very closely related species. It involves out-crossing. |
| Phytosanitary certificate | A certificate that is issued by the exporting country to confirm that the plant material was inspected and found free from pests/diseases of a quarantine nature in the importing country. It is a key requirement for trade in plant material (including seed) across international borders. Regulations governing issue of phytosanitary certificate are usually international but may be national. |
| Plant variety protection | These are rights given to a breeder to authorize sale of a variety she/he has bred. The grant of protection is given by the government for a limited period (usually 15–25 years) during which the breeder is expected to have recouped the investment in developing the variety protected. Only those varieties that are distinct (that is, novel), uniform and stable (that is, remain the same even after several cycles of reproduction) are eligible for protection. |
| Procedural vs. legal agreement | A procedural agreement refers to an agreement that may be effected by the minister in charge, while with a legal agreement the full legislative process is required before the agreement becomes operational. |
| Quarantine pest | A dangerous disease or pest which is found in one zone and not in another (including country) and whose movement is therefore controlled, i.e., quarantined. |
| Rationalization | Refers to a situation where laws, regulations, procedures and standards may be present in a country, but these are not well coordinated. Rationalizing these will enable these laws, regulations and procedures to be harmonized across countries. |
| Regional variety list | A list of crop varieties officially released for commercial production in any two of the three East African countries. |
| Seed certification | The process of ensuring that seed offered for sale meet the minimum regulatory standards. The standards checked include field and laboratory standards, processing, labelling and label information. The seed is usually given a 'seal' by the NCA. |

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| Seed tag | An official label or mark by the NCA that the packaged seed has undergone the full certification process. It usually has set minimum information and has a unique colour for each seed class. |
| Self-pollinated crop | A crop whose mode of propagation involves transferring pollen within flowers on the same plant. No out-crossing is involved. |
| Tariff | A customs duty imposed on imports and exports. |
| Variety evaluation, release and registration | The process of breeding new crop varieties, selecting the progeny for desirable characteristics and evaluating the selected materials under field or glass house or laboratory conditions to confirm that the selected materials contain the characters for which the cross was made and finally testing the best selected materials (or lines) under field conditions in what is called adaptability trials. The best performing materials are then put through a common evaluation trial (National Variety Performance Trial) before release. Only officially released varieties are registered or put into a national official catalogue (also called 'gazette'). |
| Voluntary certification | This is where certification is requested by the applicant and usually involves testing for laboratory standards only. |

## Annex II. Agreements for harmonizing seed policies and regulations in ECA

| Issues | Before ASARECA seed project | Results and agreements of the project | Implications of agreements and decisions to the seed sector | Status a | Implementation | |
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| | | | | | Institution(s) | Other responsible remarks |
| 1. Variety evaluation, release and registration | | | | | | |
| a. Entering the national performance trials (NPTs) | Breeders in the three countries entered materials for evaluation at national level before official approval for listing in the seed certification schedule and commercial seed producers at different stages of the variety development cycle, at advanced yield trials for Tanzania, and at national performance trials for Kenya | For both locally produced and introduced varieties, applicant will enter materials intended for release for at least one main season. These will regionally be known as variety performance trials (VPTs). Sufficient data from previous stages (advanced yield trial) will be needed. | Seed companies can do advanced multi-location testing in relevant ecological zones anywhere in East Africa and follow up entering them in VPTs.<br>This will attract more seed companies to the region because of expanded market. | Procedural | NCAs | Implementation is immediate. |
| b. Variety testing procedures for release | Different in each country. | Variety testing procedures to be standardized. | This will facilitate reciprocal regional recognition of variety testing data. | Procedural | NCAs | Standards for some crops were not completed and will be done by a selected working group. |
| c. Number of seasons for release of varieties after they enter VPTs | In all countries the number was 3 seasons; for Tanzania and Kenya this means 3 years. | One-season performance testing for both local and foreign varieties is combined with sufficient data on previous testing from similar agro-ecological zones. | The time for new varieties to be available to the farmer has been reduced from 3 years to 1 year, implying more readily available new planting material. | Procedural | NCAs | Implementation is immediate. |
| d. On-farm trials | The emphasis varied across countries, being mandatory for Uganda, required for variety release in Tanzania, and optional for Kenya. | On-farm trials recommended but should be done concurrently with VPT so that trials do not claim extra time on release of varieties. | This consensus is quite positive because when on-farm trials were done independently, it implied at least 1 year more of delay in availability of varieties. The current consensus ensures more rapid availability of varieties, by at least one year. | Procedural | NCAs | On-farm trials may also help provide information to farmers about performance before formal release. |

| Issues | Before ASARECA seed project | Results and agreements of the project | Implications of agreements and decisions to the seed sector | Status a | Implementation | |
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| | | | | | Institution(s) | Other responsible remarks |
| e. Private seed companies and breeders participating in national evaluation trials with NCA supervision for release purpose | The practice varied across the three countries from non-existent in Uganda to in the process of being considered in Kenya. In Tanzania it was already in practice. | Certifying agency will bear the overall responsibility but can accredit suitable institutions, companies or seed trade association, or individuals to carry out VPTs. | Increased acceptance of private sector role in seed evaluation and release. Because public research institutions are usually underfunded, the accreditation will help reduce the funding burden and expedite the process of availability. | Procedural | NCAs and Ministry of Agriculture | Under this agreement universities and related institutions can participate and increase the number involved in seed production. |
| f. Variety release committees | These committees varied in number, function, composition of membership, and frequency of meetings across the three countries. | Agreed that the certifying agency with some technical assistance from the applicant, the national seed trade association and an extension specialist will monitor and consider NPT/VPT results for consideration by the National Variety Release Committee (NVRC), which is the only committee. Composition of members to the NVRC is also standardized across the countries. | Speed up the release of varieties.<br>Reduce cost of meetings.<br>Increase transparency in participation.<br>Form more technical committees.<br>Increase participation of private sector.<br>All these factors will make the committee more effective. | Procedural | NCAs and Ministry of Agriculture | This will help harmonize approaches to deliberations on new varieties. |
| g. Common variety list for the region | This did not exist. | It was agreed to establish a regional variety list/catalogue. Protocols were defined. This will provide information on available new varieties in the region. | Increased availability of information of new varieties. | Procedural | NCAs and Ministry of Agriculture | Content and organization of the catalogue were also discussed. |
| 2. Seed certification | | | | | | |
| a. Compulsory and voluntary certification | Differences existed in crops multiplied under voluntary and compulsory certification. This to a large extent disadvantaged farmers in seed availability. | The workshops agreed on which crops will be under compulsory and which under voluntary certification: *Compulsory*—hybrid maize, open-pollinated maize, sweet corn, common dry bean, snap bean, sorghum, wheat, rice, sunflower, Irish potato and any other crop approved by regional certifying agencies; *voluntary*— tomato, carrot, cassava, pigeon pea, cowpea, similar crops. | Commonalities on what crops are in which category will hasten seed movement and availability across borders. Doubts about seed in the voluntary class in one country and compulsory class in another are removed. | Procedural and legal | NCAs and Ministry of Agriculture | Countries are still in favour of both compulsory and voluntary certification. |

| Issues | Before ASARECA seed project | Results and agreements of the project | Implications of agreements and decisions to the seed sector | Status a | Implementation | |
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| | | | | | Institution(s) | Other responsible remarks |
| b. Field and laboratory standards | These were different in the three countries, making acceptance by outsiders and regional trade difficult. | The workshop harmonized field and laboratory standards for hybrid maize, sweet corn, open-pollinated maize, common bean, snap bean, rice, wheat. | Having rules defined increases transparency, reduces the time seed will take from one point to the next and helps increase the number of entrants into the seed industry, resulting in increased seed availability. | Procedural and legal | NCAs and Ministry of Agriculture | The proposed working group will set standards for the crops whose standards were not set. |
| c. Seed classes | Seed classes were different in all countries, causing considerable confusion in germplasm exchange and trade in seed. | Four seed classes were accepted across the three countries—breeders, basic, certified (first and second generations) and standard. The workshops agreed on laboratory standards for each seed class for 10 crops under compulsory certification. | The reduction from 8 to 4 seed classes helped make the seed language common and easy. This will facilitate faster movement of seed for processing and for trading and will improve seed availability across the countries. | Procedural | NCAs | Standard seed had 4 different names, which caused confusion as seed moved across borders. |
| d. Accreditation to certify seed | Only Kenya and Tanzania had a provision for accreditation of certification to institutions and seed companies. | The workshop agreed on accrediting institutions, seed companies and individuals to carry out seed certification on behalf of national certifying agencies. The accreditation procedures were also agreed upon. | This will lead to more efficient use of human resources available in the seed sector. It will also accelerate the process of certification, making seed available faster than otherwise. | Procedural | NCAs | — |
| e. Common seed tag across the region | This did not exist, which led to numerous questions and delays as seed moved across borders. | The workshops agreed on a common seed tag and will design colour and content for every seed class. | This will facilitate faster movement of bulk seed and also seed for trading. With this common language, seed material will take less time to reach the intended destination. | Procedural | NCAS | — |

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| f. Interagency certification | This did not exist. | The three countries agreed to establish an interagency certification scheme. This will facilitate movement of bulk seed across borders for final processing and certification by the cooperating certification agency. | This will allow seed companies in the three countries to move freely across borders, make use of countries in production of seed and move it in bulk across boundaries for further processing. In effect it will result in more efficient use of land and human resources and facilitate increased availability of seed to farmers. | Procedural and legal | NCAs | The protocols for interagency certification were established as well as documentation necessary for bulk transfer of seed for interagency accreditation. |
| g. Informal seed sector | The three countries had different credibility, ratings, confidence, and understanding of roles of the informal seed sector. | This informal seed sector was accepted as an integral part of the wide seed sector. It has a big role in ensuring seed availability and seed choice to farmers. It was agreed it should continue to be assisted by the formal sector so that it can eventually graduate into the formal. | The built-in confidence of the role of the informal seed sector will spur availability of clean seed material to farmers. | Procedural | NCAs, Ministry of Agriculture, NGOs | The working group in collaboration with ASARECA and other partners will design strategies to assist this sector. |
| 3. Phytosanitary issues | | | | | | |
| a. Basis for issuing permits | Kenya and Uganda are still using the outdated 7th Non-Legal Draft of the Plant Protection Order of 1972 proposed by the East African Technical Committee. | It was agreed to use the revised FAO pest risk analysis procedures currently in use in Tanzania. | Seed flow across borders will be faster, increasing availability of seed, which would otherwise have been restricted on non-scientific grounds. | Procedural | NCAs and phytosanitary institutions | A provision will be made for periodic updating of restricted and non-restricted pests. |
| b. Membership in the International Plant Protection Convention (IPPC) | Only Kenya is signatory to IPPC. | Tanzania and Uganda agreed to pursue membership in IPPC. | This will increase adoption of international practices in plant protection. | Procedural | NCAs and phytosanitary institutions | Harmonization will easily be achieved since Tanzania and Uganda already follow IPPC guidelines. |
| c. Quarantine pests | At the beginning of the project there were 33 quarantine pests within EAC for 10 selected crops. | Use of CABI database reduced the quarantine pests to 3 for seed of 10 selected crops. | Faster seed flow, more seed material flows, more seed choices to farmers. | Procedural | NCAs and phytosanitary institutions | The working group will proceed to verify the remaining 3 quarantine pests. |
| d. Common list of mid- to high-risk quarantine pests in East Africa | A common list did not exist. Each country had its own. | A common list was established based on scientific evidence. | Faster seed flows and more seed choices. | Procedural | NCAs and phytosanitary institutions | — |

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| e. Pest information system in East Africa | Initially, it was voluntary and erratic-not systematized. | Workshops established a minimum pest information system based on literature, capacity in information systems, training, compulsory notification of outbreaks, and establishment and publication of pest status in the region. | Cost-effectiveness achieved in regional operations will avoid duplication of efforts across the region | Procedural | NCAs and phytosanitary institutions | — |
| f. Minimum facilities at high-risk entry points | Country facilities varied. | The workshop agreed to establish minimum facilities at high-risk entry points. | Increased confidence and trust among scientists and the broader seed sector in the seed material traded. They will have the confidence that the seed material has been subjected to acceptable minimum checks. This will facilitate faster inflow and outflow of seeds, resulting in increased seed trade. | Procedural | NCAs and phytosanitary institutions | — |
| g. Public awareness of phytosanitary issues | Countries used different methods. | The workshop agreed to use pamphlets, leaflets, posters, and farmer training along the borders, sensitize customs and immigration officers, and make in-flight announcements. | This will minimize policing, pest entry and spread within the region. | Procedural | NCAs and phytosanitary institutions | — |
| h. Mandates and powers of phytosanitary inspectors | There are differences in mandates for staff overseeing the same issues across the borders. | The delegates agreed to empower entry and post entry staff to inspect and quarantine. | Harmonized functions and powers will increase efficiency in the movement of seed. They will also help traders know what to expect as they cross borders. | Procedural | NCAs and phytosanitary institutions | The workshop agreed that efforts should be made to gradually place staff with similar qualifications at these points in the three countries. |
| 4. Seed import and export documentation and procedures | | | | | | |
| a. Import and export documents | The number, type and source of the documentation were different in all three countries. | Delegates agreed to standardize import and export documentation and procedures that will require plant import permit, quality certificate from source, quality certificate and customs clearance | Standardized procedures will increase the rate of seed movement, saving considerable time. | Procedural | NCAs, plant health and quarantine institutions | Although the process will begin immediately, implementing it will take a while because forms will have to be reconstituted and offices reorganized. |

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| b. Import tariffs and procedures | The East African countries differed in the type of tariffs, rates, and in the type of crop seeds with tariffs. | Delegates agreed to go for a uniform tariff system and procedures in accordance with the EAC Treaty article 75:1(b) and 1(c). | Uniformity in procedures will facilitate faster movement of seed across borders. | Legal | Ministries of Agriculture, Trade and Finance | Import and export procedures and requirements have become trade barriers. In some cases, the procedures are lengthy and the requirements are difficult to meet, making seed movement arduous. |
| 5. Plant variety protection (PVP) | | | | | | |
| a. Plant variety protection | Kenya has legislation on PVP. Tanzania and Uganda do not although steps towards it are in place in both countries. However, TRIPS (Trade-Related Intellectual Property Rights), to which all the three countries are signatories, requires that each country establish a PVP system by 2005. | The delegates agreed on a number of issues in PVP.<br>1) Establish national PVP laws to promote crop improvement by both private and public breeders and institutions.<br>2) Each country should develop a suitable system of PVP based on cross-referencing of international and regional PVP model law.<br>3) Establish a regional plant breeders' rights committee to work under EAC.<br>4) Establish PVP issues under the EAC's Intellectual Property Rights office.<br>5) Recognize and provide for essentially derived varieties concept in the national PVP laws. | Establishing PVP laws will promote crop improvement by both private and public breeders and institutions because of the built-in reward system. | The implementation of 1), 2) and 5) is legal, of 3) and 4) is procedural. | NCAs, Ministries of Agriculture, Trade and Finance | The NCAs and the Ministry of Agriculture will handle the procedural issues. Legal issues are to be handled by the Ministry of Agriculture in collaboration with the legal instruments in and outside the ministry. The working group to be established will steer the process. |

NCA – national certifying authority

a The agreements are in two categories: procedural are those that do not require change and legal, are those that will require change in the legislation, usually in parliament