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EVALUATION OF SANITARY AND PHYTOSANITARY (SPS) TRADE POLICY CONSTRAINTS WITHIN THE MAIZE AND LIVESTOCK/ANIMAL-SOURCED PRODUCTS VALUE CHAINS IN EAST AFRICA

LEO
Leveraging Economic Opportunities

LEO REPORT #12

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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ACRONYMS

AATF	African Agriculture Technology Foundation
ACTESA	Alliance for Commodity Trade in Eastern and Southern Africa
ADC	Agricultural Development Corporation
AGOA	African Growth and Opportunities Act
APTECA	Aflatoxin Proficiency Testing for Eastern and Central Africa
ARP	Agriculture Research and Policy
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
AU	African Union
AUC	African Union Commission
AU-IBAR	African Union Inter-African Bureau for Animal Resources
BecA-ILRI	Biosciences Eastern and Central Africa - International Livestock Research Institute
BFS	Bureau for Food Security
BMGF	Bill and Melinda Gates Foundation
CAADP	Comprehensive Africa Agricultural Development Program
CABI	Center for Agriculture and Biosciences International
CDC	Centers for Disease Control
CODEX	Codex Alimentarius Commission
COMESA	Common Market for Eastern and Southern Africa
CIMMYT	International Maize and Wheat Improvement Center
CVO	Chief Veterinary Office
EAC	East African Community
EAPIC	East Africa Phytosanitary Information Committee
FAO	Food and Agriculture Organization of the United Nations
FTF	Feed the Future
GDP	Gross Domestic Product
IGAD	Intergovernmental Authority on Development
IITA	International Institute of Tropical Agriculture

ILRI	International Livestock Research Institute
IPPC	International Plant Protection Convention
KALRO	Kenya Agricultural and Livestock Research Organisation
KEPHIS	Kenya Plant Health Inspectorate Service
MCMV	Maize chlorotic mottle virus
MDG	Millennium Development Goal
MLN	Maize Lethal Necrosis
NCPB	National Cereals & Produce Board
NEPAD	New Partnership for Africa's Development
OIE	World Organization for Animal Health
PACA	Partnership for Aflatoxin Control in Africa
PANVAC	Pan-African Veterinary Vaccine Center
PVS	Performance of veterinary services
REC	Regional Economic Community
SADC	Southern African Development Community
SCMV	Sugarcane mosaic virus
SDG	Sustainable Development Goal
SME	Small and Medium Enterprises
SMP-AH	Standard Methods and Procedures in Animal Health
SPS	Sanitary and Phytosanitary Standards
STDF	Standards and Trade Development Facility
TAD	Transboundary animal disease
UBS	Uganda Bureau of Standards
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WFP	World Food Program
WHO	World Health Organization
WTO	World Trade Organization

EXECUTIVE SUMMARY

USAID Bureau for Food Security (BFS), Trade, Investment, and Governance requested ACDI/VOCA assemble a team of three consultants to evaluate sanitary and phytosanitary (SPS) trade policy constraints within the maize and livestock and livestock products value chains in East Africa. The team was asked to build a priority list and an action plan to address SPS trade policy constraints for these two important East African agricultural value chains.

The USG Feed the Future (FTF) initiative targets 19 developing countries, of which five are located in East Africa, i.e., Ethiopia, Kenya Rwanda, Tanzania and Uganda. The USAID Regional Mission for East Africa FTF Strategy targeted both the maize and livestock value chains. All five bilateral missions also targeted maize in their country FTF strategies. Only Ethiopia targeted livestock in its FTF strategy. Kenya and Rwanda targeted the dairy value chain. Neither Tanzania nor Uganda included livestock or dairy projects in their FTF strategies.

Agriculture is critical to East African economies, contributing from 30 to 45 percent of the overall GDP and employing from 60 to 85 percent of the population. Women provide 70 percent of the agricultural labor yet they have little control over farming decision-making, resources or income. The livestock and the maize value chains are two key agricultural sectors contributing to food security in East Africa. Maize is a staple food for many people in the region, i.e., Tanzania, Kenya, Uganda and southern Ethiopia. Maize is also a key feed concentrate, critical to fattening beef cattle in feedlot finishing facilities, and for dairy cattle, poultry and swine as valuable sources of energy and protein. The region struggles to produce sufficient maize to feed its people, and consequently there is little maize available for livestock feed. Quality livestock feed is in short supply in East Africa.

In good years, both Uganda and Tanzania may export maize to Kenya, which is a net importer of maize due to inadequate production for its own needs. Free maize trade in the East African Community (EAC) is limited by government concerns about maize shortages and periodic maize export bans, high tariffs, documentation, inspection and testing fees, and other practices that lead traders to go around official channels. Consequently, much of maize trade is informally traded across borders and may not meet the quality or health standards of the importing country.

Plant diseases and pests do not respect national borders, but rather environmental, geographical and natural boundaries. To address plant health issues, a regional approach must be taken that helps regulatory harmonization efforts and effective regulatory implementation, and that marshals national plant health experts where the disease or pest-infested area is located to address the situation. It is futile for one nation to try and eradicate a disease or pest if the neighboring country does not. This report recommends capacity building support at a regional and national level. A regional umbrella organization with plant health experts must be in place to support regulatory harmonization efforts, help to ensure effective implementation, and support national level experts on plant issues as they arise.

EAC is the appropriate Regional Economic Community Organization to focus on SPS policies and regulations for safe maize trade. Working with the EAC on capacity building activities to strengthen laboratory diagnostics and quality assurance, as well as methods to augment surveillance for plant disease and control of product contaminates such as aflatoxin, provides opportunities for USAID to partner with both financial and technical support.

The first recommendation from this report is for the SPS Advisor position to be filled as quickly as possible to fill the SPS leadership void in the region. Leadership is needed on a number of SPS issues, including as identified within this report, a USAID SPS strategy across the region that links the work of the regional and bilateral USAID missions together with the strategies of the AU, AU regional economic communities (RECs) and national governments to ensure complementary goals and more effective and efficient project implementation. The SPS Advisor should work closely with USAID missions in the region to enhance their understanding and appreciation of the need for SPS technical assistance and to engage donors who are implementing SPS-related projects to develop complementarity. The SPS Advisor should work to enhance the enabling environment at the national levels to facilitate the adoption of policies, tools and mechanisms that will increase agricultural productivity, expand farmer incomes and economic growth, and enhance regional trade.

SPS Advisor priority actions include the following:

- Build contacts and alliances with the USAID regional mission, bilateral missions, USDA and other US government agencies to enhance the coordination and communication on USG SPS technical assistance.
- Build contacts and alliances with the regional East African organizations, national governments and SPS regulatory agencies within the region to ensure full communication, coordination, and ownership by the recipients. This includes support for regional actions to resolve SPS constraints.
- Build contacts and alliances with international organizations such as the WTO, IPPC, the World Organization for Animal Health (OIE), CODEX, FAO, the Center for Agriculture and Biosciences International (CABI) and AUC and bilateral donors to coordinate efforts, build upon existing projects, minimize duplication of SPS activities and help to ensure gaps are addressed.

This report identified two maize health issues that urgently need strategic SPS interventions. Maize Lethal Necrosis (MLN), which affects maize production and infects seed stocks, has emerged as a serious threat in East Africa. The virus poses no human health risk, but devastates the maize plant and yields. The other issue is fungal mycotoxins of which aflatoxin has long been recognized as a leading food and feed safety risk in maize in East Africa. This fungal agent produces toxins which in high doses poses serious threats to both humans and livestock health.

This report outlines an action plan needed to deal with these important maize SPS issues. Interventions are needed at the farm level and throughout the value chain. National policies, legislation, regulations and implemented surveillance and control programs need to be strengthened to include implementation of country-wide surveillance for aflatoxin with field testing. Surveillance and diagnostics require financial support and cooperation between maize farmers, local government bodies and other private-sector members, such as, cereal traders and millers. At the level of the national government, there is need to build laboratory diagnostic capacity. An extensive training program for personnel to maintain and use new state of the art equipment for identification of plant pathogens and identification and quantification of fungal contaminates in maize is needed. Urgent attention is needed to build acceptance for use of binders in human diets to reduce mycotoxin absorption in individuals who are forced to use mycotoxin-contaminated maize. Capacity building programs to raise awareness about the MLN disease threat to maize and the importance to health of mycotoxins is needed for farmers and other key players in the value chain. Government SPS regulators at county and national levels would benefit from training in rapid field test kit use and surveillance methods. Further capacity building for plant health research and regulatory services diagnostics and risk assessment

would improve disease detection and food safety. Training on regulatory rule-making and disease control program implementation are needed.

It is important to note, that while the report identified MLN and aflatoxin as the priority SPS issues for the maize value chain, these should be seen as a plant disease or a mycotoxin that needs to be resolved *today*; but there will be another devastating disease, pest or mycotoxins that will devastate the maize value chain in the future. To ensure the region is ready to address the next MLN or aflatoxin, the goal of the SPS technical assistance is to build a plant health system that can readily address the *next* disease, pest or mycotoxin that devastate the production of smallholder farmers.

SPS priorities for the maize value chain include the following:

- MLN
  - Research on the epidemiology of MLN
  - Development of MLN-resistant maize
  - Further development of local capacity
  - Strengthen SPS technical capacity and systems
  - Assist in the review, revision and implementation of national plant heath laws, regulations and standards that are based on science, consistent with international standards (WTO and IPPC) and harmonized across the region
  - Support local efforts with funding and technical guidance such as ASARECA on developing an integrated regional strategy and coordination of MRL efforts

- Aflatoxin
  - Create a regional aflatoxin coordinator position
  - Support financially and coordinate (providing advice and guidance) with the Partnership for Aflatoxin Control in Africa (PACA) on projects in East Africa
  - Assist in the review, revision and implementation of national laws, regulations and standards that are based on science, consistent with international standards and harmonized across the region
  - Support the systematic surveying and monitoring and the enforcement mechanisms at the national level and harmonized across the region
  - Support the biocontrol of aflatoxin
  - Provide training to smallholder farmers
  - Develop low-cost drying systems for on-farm use
  - Conduct additional research

Despite its crucial role in Africa's economy, food security and livelihoods, the livestock sector has remained under-developed and inadequately supported by national governments, international development agencies and private donors. The East African livestock value chain is faced with a number of constraints including inadequate availability of animal feed stuffs and a heavy burden of animal diseases which require more intensive and targeted SPS interventions through support to animal health programs throughout the livestock value chain. Recognizing the importance of East African SPS constraints to livestock production, OIE has provided all East African countries with teams of international experts and detailed analysis of the performance of veterinary services (PVS) followed by gap analysis. These reports outline critical SPS interventions needed to support the livestock value chain. The appointed USDA SPS advisor for East Africa can use these documents as justification to develop future USAID investment in SPS interventions needed to augment growth of the livestock value chain, increase food security, regional trade and promote food safety

throughout East Africa. SPS interventions by veterinary animal health staff in each EAC country can enhance animal production by reducing losses and poor weight gains caused by animal diseases. Veterinary public health is a key to safeguarding human public health by tracking animal diseases transmissible to humans (zoonoses) and protecting consumers from food-related health risks, and through improving access to both domestic and international markets.

East African countries cannot fulfil their livestock economic growth goals without adequate agricultural and livestock policies and legislation that support the availability of veterinary services at the producer level, through market channels, and at abattoirs and export gathering points. Such programs require both national and regional government financial support as well as targeted programs by donor communities. New livestock policies that provide a seamless approach to veterinary service delivery, making use of federal, state and private veterinarians as recommended by OIE, are now outlined in individual country veterinary services strategic plans. These strategic plans need support from agencies such as USAID for the effective implementation of needed SPS interventions.

EAC countries each have active domestic livestock trade but limited interregional trade. The historic patterns of live animals trade regionally and internationally is from non-EAC countries such as Sudan, Ethiopia and Somalia and Somaliland to the Middle East. The Intergovernmental Authority on Development (IGAD) portfolio of countries and goals to support these livestock countries fit well within the patterns of livestock trade in the region. There is some limited trade of livestock from Uganda and Tanzania to Kenya and some export of pork and processed meat products back to Uganda and Tanzania and Rwanda from Kenya. The EAC has deferred most aspects of livestock policy, projects and capacity building to the African Union Inter-African Bureau for Animal Resources (AU-IBAR), IGAD and the Common Market for Eastern and Southern Africa (COMESA). This latter group must continue to coordinate their efforts to develop and implement harmonized SPS standards. A livestock SPS steering committee such as the one convened by AU-IBAR and IGAD, with members from key stakeholders, will continue to guide development of uniform standards and disease control programs across trading blocks. The RECs can guide individual countries as they implement SPS disease control programs through capacity building activities and the promotion of adoption of the AU-IBAR standard methods and procedures for targeted diseases of livestock. COMESA Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA) has developed a plan for a Center to deliver capacity building activities for their member states. This concept paper is being reviewed, but not yet funded.

USAID bilateral missions have supported several projects for dairy and livestock value chains. The current USAID Feed the Future projects visited in Kenya and Ethiopia have very minimal SPS interventions for the livestock value chains. This is an area which needs more emphasis if the livestock value chain is to grow to meet rising demand for livestock-derived products and if export markets are to be pursued with quality products. The East African Regional USAID program has funded, through AU-IBAR, the Standard Methods and Procedures–Animal Health (SMP-AH) project. This AU-IBAR project has enabled IGAD countries plus Tanzania to develop harmonized regional policies for priority livestock disease trade and control. SMP-AH is an area in which USAID could continue to build momentum by completing phase one of this project and instigating a second phase to work with AU-IBAR, IGAD and the RECs to guide implementation of the programs for disease surveillance, diagnostics and control for the nine priority diseases. USAID needs to support implementation of these SPS standards at the host country level. Starting with financial support for one priority livestock diseases identified by AU-IBAR members, such as peste des petits ruminants in sheep and goats, USAID would help support implementation of a disease control program which would boost food security, domestic and export markets, and women livestock producers' household income. A new disease

control program modelled on the AU-IBAR Rinderpest eradication program could be implemented using AU-IBAR, RECs and national veterinary services, and following the standards developed in the USAID-funded SMP-AH.

USAID has the opportunity to make a substantial impact on the success of the livestock value chain through SPS interventions. Supporting AU-IBAR and National Veterinary Services policy development and implementation should address gaps identified by the OIE reports. Disease surveillance should start at the producer level with farmer training in disease recognition called "syndromic surveillance," community animal health worker training and support for private veterinary services delivery. A more robust local and federal veterinary service that supports surveillance, diagnostics and trade certification in-country as well as for export markets requires infrastructure and training for state and federal veterinarians. This training needs to be sustained and not delivered as one-off workshops. The turnover of veterinary staffs in government veterinary services is high in East Africa, and thus training has to be continually and repeated given to sustain successful SPS programs. Working with RECs and the AU-IBAR and IGAD will ensure policies are harmonized at livestock state ministry levels. Implementation will require donor support for animal health in order to achieve international SPS standards that are needed throughout the livestock value chain.

SPS priorities for the livestock value chain include the following:

- Policy harmonization for livestock disease
- Modernize veterinary services legislation to support policy
- Strengthen SPS laboratories to support surveillance, trade and food safety
- Livestock disease surveillance
- Improve livestock disease control to support livestock value chain
- Protect consumers and export markets through establishment of an African food safety authority

As livelihoods improve in highland areas and arid and semi-arid pastoralist areas, and a larger middle class develops in urban centers, there is predicted to be a great increase in demand for meat and dairy products by consumers in East Africa (M. Herroro et el., 2014, African Livestock Futures). With rapid population growth, urbanization and improved economic circumstances there are new opportunities in East Africa for both domestic markets and regional markets for meat and dairy products. Likewise, if more emphasis is placed on domestic SPS interventions in terms of disease control programs and better feed stuffs, including maize and fodder for livestock, this should enable more livestock to survive, thrive and enter the livestock value chain. As the livestock value chain grows in volume and quality there will be opportunities for increased domestic trade, regional trade and some international trade with targeted markets in the Middle East and with other continental neighboring countries. International markets are highly competitive in the Middle East and Gulf States. Australia, New Zealand, India, Pakistan and Brazil serve as growing competitors who are penetrating the same markets in which IGAD countries such as Sudan, Somaliland, Puntland, Somalia, Ethiopia and Kenya also wish to gain and maintain access. Quality and consistent meat and dairy products that meet importing countries SPS standards is the name of the game if East African countries wish to compete in international markets.

I. EVALUATION PURPOSE & EVALUATION QUESTIONS

ACDI/VOCA provided short-term technical assistance to help guide the Agriculture Research and Policy (ARP) Policy Division and East Africa regional mission to:

1. Identify SPS-related constraints building on the 2013 US government inter-agency SPS assessment affecting regional trade of maize, livestock and animal sourced products in East Africa region;
2. Map current initiatives to address these constraints;
3. Identify gaps in the policy cycle regarding technical areas and deficient institutional capacity that are not currently being addressed; and
4. Generate a set of actionable recommendations for regional and country level interventions with five or more priority needs identified.

II. PROJECT BACKGROUND

A. AGRICULTURE IN EAST AFRICA

Agriculture is key to East African economies, contributing 30 percent of GDP and employing over 60 percent of the population. Women provide 70 percent of the agricultural labor, yet they have little control over farming decision-making, resources or household income. The livestock and the maize value chains are two key agricultural sectors contributing to food security in East Africa. Maize is a staple food for many people in the region, particularly in Tanzania, Kenya, Uganda and southern Ethiopia. Maize is also important as an ingredient in feed concentrates critical to fattening beef cattle in feedlot finishing facilities, and as an energy and protein source for dairy cattle, poultry and swine. Two key constraints to livestock production in East Africa are the lack of quality animal feeds and animal disease. The volume of production of maize in East Africa varies with weather conditions but most countries in the region struggle to produce enough maize to feed their own people, and thus there is little maize remaining available for use as a livestock feed supplement. Maize trade in the EAC is limited by production countries restricting the export of maize.

African Union (AU) heads of state and government adopted in June 2014 the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. They committed to ending hunger in Africa by 2025. The Malabo Declaration contains six key commitments to transform agriculture across the continent:

1. Continue to pursue the values and principles of Comprehensive Africa Agriculture Development Program (CAADP) process;
2. Enhance public and private investment in agriculture and allocate at least 10 percent of public expenditure to agricultural development;
3. End hunger in Africa by 2025 by doubling current agricultural productivity levels and halving post-harvest loss;
4. Halve poverty by 2025 through inclusive growth;
5. Triple intra-African trade in agricultural commodities and services by 2025; and
6. Enhance resilience of livelihoods and production systems to climate variability

Thus the AU leadership and African heads of state have made a significant and ambitious commitment to agricultural growth, alleviating poverty and increasing the economic wellbeing and nutrition of their people. This commitment will need a coordinated transparent inclusive approach of the AU, development partners, host countries and producers. More importantly this commitment made by leaders must translate down to individual country commitments in order to achieve the needed progress in food production to alleviate poverty, promote economic growth, and provide nutritious and safe food for the people of all African nations.

The AU Commission (AUC) and the New Partnership for Africa's Development (NEPAD) Planning and Coordinating Agency were charged with developing an implementation strategy and roadmap to present to the Ordinary Session of the minister-level Executive Council on January 26-27, 2015. The AUC and RECs are working together to facilitate the acceleration of economic integration to boost intra-Africa trade in food and agriculture and to simplify and formalize current trade policies and practices.

The Council of Minister's support for the region's livestock sector is clearly shared by CAADP which has noted that: "Livestock production supports food security and the provision of employment, income, food, fuel, farm power and a variety of merchandise goods." (CAADP Pillar 1 Framework, 2009) Increased livestock-sourced foods also comprise an element of the CAADP-supported Food Based Dietary Approach.

CAADP has also drawn attention to the need to improve crop-livestock systems, feed quality and availability, risk management (particularly risk arising from animal disease), and increased access to veterinary services. As a mechanism for ensuring greater food security in the region, CAADP has called for the promotion of intra-regional trade in livestock commodities by facilitating linkages between countries with growing demand for livestock products, and major livestock-producing countries. As a precursor for this increased intra-regional trade, the Framework notes the need for "harmonization of sound phytosanitary and animal health (sanitary) and food safety (sanitary) legislation across countries in each sub-region" (CAADP, Pillar 3 Framework, 2009). In some African countries there is a separate Ministry of Agriculture and Ministry of Livestock and Fisheries. Consequently in some countries the CAADP plans did not emphasize the importance of livestock to that country's economy or livelihood. In some cases the livestock value chain was minimized and was not reflective of the importance of livestock. Often times the USAID Feed the Future strategies reflected the strategies of the country CAADP plans, again, not acknowledging the contribution of livestock to food security or the livelihoods of poor people.

Population growth combined with intensified urbanization also means more attention needs to be paid to food safety and quality issues. The current CAADP momentum that is projected to expand agricultural markets four-fold by 2030, coupled with the focus on cross border infrastructure, trade facilitation and the supermarket revolution, all provide new opportunities for regional small and medium scale enterprises (SME) to engage in agribusiness activities such as processing, food retailing, trade logistics and distribution. SPS measures are key to unlocking this potential and pending opportunities for regional SMEs, but a failure to address and harmonize SPS measures creates gaps that constitute barriers to domestic and regional trade in East Africa.

B. IMPORTANCE OF SPS TO COMMODITY TRADE

Issues related to food safety and animal health are referred to as sanitary, and plant health as phytosanitary. Sanitary and phytosanitary issues refer to any measure, procedure, requirement, or regulation taken by governments to protect human, animal, or plant life or health from the risks arising from the spread of pests, disease, disease-causing organisms, or from additives, toxins, or contaminants found in food, beverages, or feedstuffs. SPS measures were originally developed to protect animal and plant health the food supply chain and ultimately human health in countries around the world. It was not until the 1994 WTO Agreement on Sanitary and Phytosanitary Measures that an international spotlight focused on these systems. The first right identified under this agreement is the right for a nation to take SPS measures necessary for the protection of its domestic human, animal, or plant life or health.

Having a plant health system that addresses aflatoxin before it harms human or animal health, or addressing MLN, a fairly recent disease, before it harms healthy maize and reduces yields, provides opportunities for economic gain for smallholder farmers and especially women. Using maize as an example, Tanzania and Uganda export their surplus maize to neighboring countries, such as Kenya. A robust plant health system will help reduce the presence of aflatoxin as a food safety issue and help to resolve MLN as a plant health issue, both of which if solved, will result in huge domestic economic gains.

A robust SPS system provides a foundation for other agricultural technical assistance projects to have more effective and long-term impacts. Without SPS systems, there is a high risk that extensive production losses to the maize and livestock value chains due to pests or diseases could spread to neighboring countries in the region. Likewise, well-managed SPS systems that have interventions along the value chain, will increase the amount of maize and livestock entering each value chain and provide improved food security, economic growth, and additional opportunities for domestic markets and trade regionally and internationally.

The WTO SPS Agreement encourages governments to "harmonize" or base their national measures on the international standards, guidelines and recommendations developed by WTO member governments in other international organizations. These organizations include, for food safety, the joint FAO/WHO Codex Alimentarius Commission; for animal health, the OIE; and for plant health, the FAO International Plant Protection Convention (IPPC). WTO member governments have long participated in the work of these organizations—including work on risk assessment and the scientific determination of the effects on human health of pesticides, contaminants or additives in food; or the effects of pests and diseases on animal and plant health. The work of these technical organizations is subject to international scrutiny and review.

Frequently, international standards are so stringent that developing countries have difficulties implementing them nationally. Although a number of developing countries have adequate food safety and veterinary and plant health services, most in Africa do not. The most important non-tariff constraints to trade are caused by importing country's standards on food safety and animal health and plant health.

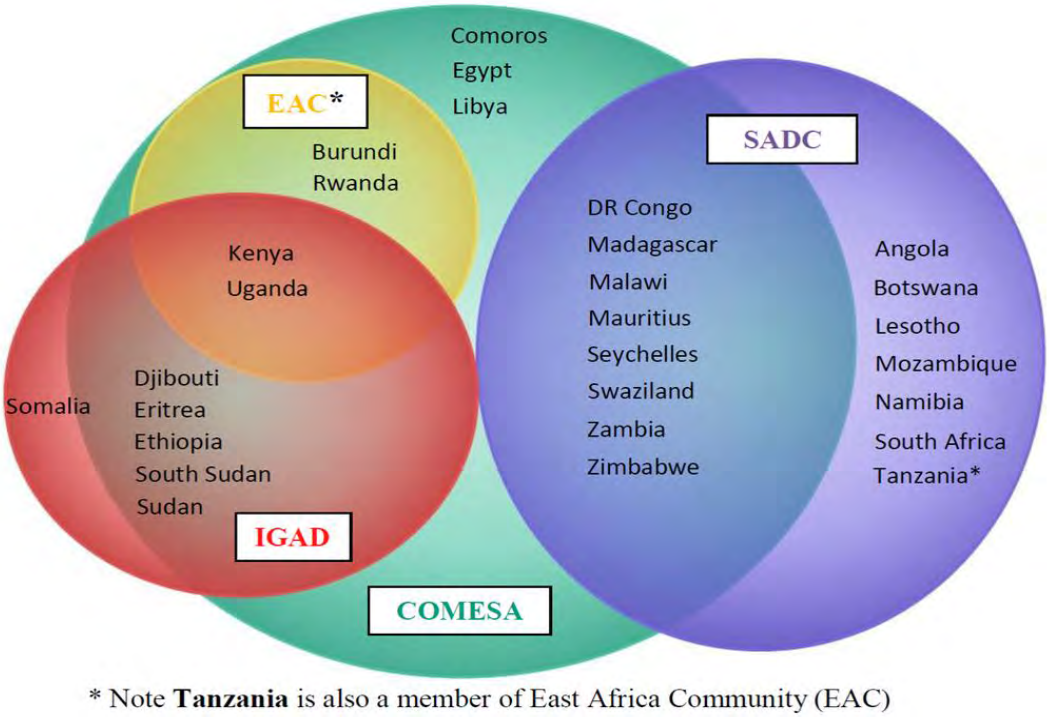
Lack of government investment in the agricultural sector to meet the obligations of the SPS Agreement presents a challenge to improve the health situation of their people, livestock and crops. Many developing countries have officially adopted international standards (including those of Codex, OIE and the IPPC) as the basis for their national requirements, thus avoiding the need to devote their scarce resources to new rulemaking already conducted by international experts and negotiated by WTO member country governments. The SPS Agreement encourages countries to participate as actively as possible in these organizations, in order to contribute to and ensure the development of further international standards which address their needs. While some governments may have adopted international standards more generally, there is still a need for harmonization regionally; efforts should be made to encourage the use of international standards in any harmonization efforts to avoid undermining the SPS agreement. Capacity building in this area is a continuing need.

C. SPS AND EAST AFRICA

About half of the East African countries are members of the WTO, i.e., Kenya, Tanzania, Uganda, Rwanda and Djibouti. Ethiopia is an observer and neighboring countries such as Sudan and South Sudan, Eritrea, Somaliland and Somalia are not yet members. However these countries all participate in the OIE, which is a much older organization (1924) than is the WTO. The East African WTO members participate when possible in the international standards-setting bodies of Codex, OIE, and the IPPC. The African Union also identified SPS issues as a key barrier to trade. AU hosts four key institutions that deal with SPS issues. These are AU-IBAR, the Inter-Africa Phytosanitary Council, Pan African Veterinary Vaccine Center (PANVAC) as well as PACA. IGAD and AU-IBAR have taken a lead on the implementation of capacity building and project implementation related to livestock. Intraregional trade in agricultural products is low and could be greatly strengthened through regional approaches to regulations. This protection starts at the domestic level and first requires strong SPS programs. The AU is working to implement an improved SPS policy environment continent wide, and is thus the lead and a key partner with which USAID should work.

Under the umbrella of the African Union there are established RECs with overlapping mandates, and countries that are members of more than one community. The three most relevant for this discussion on livestock and maize are COMESA, IGAD, and the EAC (see figure 1).

Figure 1. Overlapping Membership of the East and Southern Africa Regional Economic Communities



Notes on figure 1:

- 16 out of 19 (84 percent) of the COMESA member states are represented in the other African communities.
- Eight out of 14 (57 percent) of SADC member states are also COMESA members.
- Two of the five EAC member states (Kenya and Uganda) are also members of IGAD.
- Tanzania, although situated centrally within the region and a member of both the EAC and SADC, is not a member of COMESA.
- The AU, not shown, includes all the countries shown on this chart.

Trade barriers due to SPS concerns have also been identified as key issues that need to be addressed in the framework of SPS annexes of the COMESA trade protocol as well as the Tripartite Agreement between COMESA, EAC, and the Southern Africa Development Community (SADC). The East African countries have agreed, in principle, to many harmonized policies governing SPS issues regionally. The adoption and implementation of key SPS policies, moving from the continental and regional level down to the national level, is seen as key to the overall success of improving the SPS policy environment thus leading to improved SPS capacity and systems throughout the region.

All of the countries in East Africa are members of the AU and two or more RECs. AU and the RECs are committed to promoting SPS programs and developing regional SPS policies and guidelines. SPS issues have been brought to the forefront of the regional integration agenda that the RECs are promoting and to which the countries are committed. Implementing agreed-upon regional SPS policies at a national level is a challenge, but is essential to improving the overall enabling environment for trade in the region. In order for SPS policy to be fully implemented, the various actors need to be committed and understand their role in the

system. If there is a breakdown at any point due to a multitude of reasons, then policy implementation becomes difficult and often fails.

Most RECs have implemented SPS systems that are duplications of the international standards; some deviate and omit parts of the international standard or add standards that are not consistent with the international standards-setting bodies, without justification with a risk assessment. It is important that people working at the AU level in key organizations that are building harmonized standards be able to serve on the international standard-setting committees to gain experience that they can carry back to their regions. Policies can be written at the regional level, but the key next step is development of national strategies for policy implementation. There must be a seamless system whereby laws, regulations and decrees are used to implement policies. These require stakeholder buy-in and stakeholder education as to the requirements and how they will benefit from these policies.

The seven IGAD countries plus Tanzania have worked together through the USAID-sponsored AU-IBAR project to harmonize livestock disease policies for nine key diseases that impact regional trade. The details of this effective model for developing livestock policy guided by the AU-IBAR with collaboration from IGAD and EAC will be explored later in the document.

D. BACKGROUND ON THE LIVESTOCK VALUE CHAIN

LIVESTOCK AND EAST AFRICA

Livestock are an important part of the economies of IGAD countries. Excluding Somalia, livestock make up approximately 15 percent of the GDP of the IGAD member states. Ethiopia and Sudan (Sudan and South Sudan) have the highest livestock populations in sub-Saharan Africa (28.4 and 22.3 million livestock units, respectively) with the IGAD region as a whole containing approximately 68 million livestock units. Livestock products are exported from a number of IGAD states: 21.1 percent of agricultural exports in Sudan are livestock-based; hides and skins alone are Ethiopia's second biggest export; and in Somalia, exports of livestock and livestock products account for 80 percent of exports in normal years. The IGAD member states have significant pastoral and agro-pastoral populations with around 17 percent of the population in pasture-based production systems. Djibouti and Somalia have the greatest proportion of their populations in pasture-based production systems (71 and 76 percent of the populations, respectively); while Sudan, Somalia and Ethiopia have the largest pastoral and agro-pastoral populations (8.1, 7.4 and 5.1 million, respectively).

Regulated livestock trade forms the basis for export reports for East Africa. Informal cross-border trade accounts for much of livestock trade in the Horn of Africa, which is not officially reported. This is due to a number of reasons, including high tariffs, border delays, required documents, etc. These practices result in governments losing revenue from the exported animals and make it difficult to control transboundry diseases. For example, official trade data indicate that in 2011, Ethiopia exported 270,000 head of sheep. But conversations with knowledgeable sources in country reveal this number to be approximately only one quarter of the total actually traded.

Livestock productivity in the Horn of Africa is low due to poor genetics and breeding practices, disease losses and the poor availability of feed sources. Nevertheless, in this region livestock account for 35 percent of agricultural GDP and 30 percent of foreign exchange. Animal agriculture contributes significantly to the economies of countries in the Horn of Africa. Livestock economists believe that livestock can play a pivotal role in feeding poor people and providing economic stability for the Horn of Africa. This will require a

transformation of animal agriculture in the region. The overall livestock value chain must become more efficient, and this will require both nutritional and animal disease control interventions.

Structural adjustments mandated by the IMF and World Bank in the 1980s and 1990s resulted in veterinary services being dismantled in many developing countries. Previously, the national governments provided almost all veterinary services to producers. This model was believed to no longer be sustainable. Veterinary services were drastically downsized and stripped of funding and manpower. The expectations were that veterinary medicine should be delivered by private veterinary practitioners, much as the model used in Europe and North America. This model did not take into account that veterinary clinical training was inadequate in veterinary schools in the region, and there was no infrastructure or financial support for private veterinarians or a culture of producers using or paying for private veterinary service. Little was done by the donor community or governments to build the needed infrastructure to support private veterinarians' success. New graduates had no access to financial support to build private clinics, little equipment, and no easy access to veterinary drugs and vaccines, and no transportation to take them out to producers to deliver services. Well-trained veterinarians left government veterinary services for jobs with NGOs, international organizations and pharmaceutical companies, or changed professions. The private sector was unable to absorb the numbers of veterinarians graduating and seeking employment. Disease surveillance and inspection became insufficient due to inadequate numbers of government staff, and lack of vehicles or petrol. Disease control programs were disrupted due to lack of funds and manpower to execute the programs. Only through the AU Pan African Rinderpest Campaign, and its follow-on funded programs provided largely by host country participation and strong European Union financial support, were disease surveillance or vaccination campaigns possible in East Africa. FAO supported transboundary disease programs when funds were available.

There is not a large volume of livestock trade presently ongoing amongst countries of the East African Community. The historic patterns for geographic trade of livestock regionally and internationally is not focused on the trade between EAC countries. Consequently, EAC has deferred to and worked with other economic groups such as COMESA and IGAD, and allowed them to take the lead in developing livestock programs. All of these RECs are working in concert with the AU-IBAR to coordinate animal health SPS programs for the Horn of Africa. There is some traffic of livestock from Uganda and Tanzania to Kenya, and some export of pork and processed meat products back to Uganda, Tanzania and Rwanda from Kenya. AU-IBAR, IGAD, COMESA and EAC must continue to coordinate their efforts to develop and implement harmonized SPS standards. A livestock SPS steering committee of these key partners will help with the development of uniform standards and disease control programs across trading blocks. The role of RECs can be to help individual countries implement SPS disease control programs through capacity building activities, and promote adoption of the standard methods and procedures for targeted diseases of livestock. ACTESA has developed a plan for a Center to deliver capacity building activities for their member states. This concept paper is being reviewed, but is not yet funded.

LIVESTOCK AND FOOD SECURITY

Livestock and their products and byproducts are critically important to food security and economic stability. Livestock contribute an estimated 40 percent of the world's total agricultural GDP. Furthermore, the livestock sector is the most important food source supporting the lives and livelihoods of poor people around the world. With rapid population growth in developing countries, the global demand for livestock products is expected to increase by 70 percent during the next 35 years. Livestock contribute an estimated 26 percent of the global protein consumption and 13 percent of calorie intake of people. Animal source foods provide

critical protein for diets, and are rich in micronutrients such as vitamin A, vitamin B12, riboflavin, calcium, iron and zinc, which are vital to the growth and development of children. More than one billion poor people derive all or part of their livelihood from livestock. Thus, this sector provides a vital role in global nutrition and food security. Livestock convert into valuable food protein large amounts of plant byproducts and waste material from marginal lands for which there are no alternative human uses. Livestock also provide important services and products such as animal traction, family asset savings, manure for fertilizers and fuel, and fiber for clothing. Livestock are often the last resort for poor people that lack other assets or forms of income.

Global population is projected to reach 9.6 billion by 2050; this, in combination with increasing incomes and greater urbanization of populations, will greatly increase the demand for foods derived from animals. These socioeconomic changes are drivers that require creative solutions to providing increased levels of sustainable livestock production to meet the rapidly increasing demands. They will require new investments and improved sustainable husbandry practices that have a great deal of animal health improved practices to strengthening the global livestock sector. This will enable livestock producers to provide needed high value, safe food for a growing population.

The Millennium Development Goals (MDGs) have been a key initiative in providing an international spotlight on ending extreme poverty, hunger, and improving health and education, as well as stewardship of the world's natural resources. MDGs have provided a set of goals around which developed and developing country governments and heads of multinational institutions agreed to harmonize and align donor aid delivery. The MDGs have explicitly formed a basis for national development planning in many countries, with support in part from the donor community and various UN and international development agencies. Discussions are ongoing on the identification of Sustainable Development Goals (SDGs) that will follow the MDGs after 2015. Though no document has been finalized, the Open Working Group of the UN has prepared a well-developed proposal. It is likely that the SDGs will form a framework around which governments and the international community can focus and coordinate their development efforts between 2015 and 2030. Most SDGs are clearly relevant to the livestock sector's role in sustainable development. One main goal of the SDGs is to orient efficient and effective investments by international donors, governments and other institutions towards achieving specific objectives by 2030. There is an urgent need to address the visibility of livestock in these SDG proposed policies and investments.

A parallel but complementary dialog to the development of the MDGs and the future SDGs has been the development of the Global Agenda for Sustainable Livestock. This is a broad-based partnership that focuses on sustainable, livestock sector growth and needs to simultaneously address key economic challenges, widespread poverty, food insecurity and global threats to animal and human health, societal needs, and ecosystem health. The Agenda partnership is a platform for identifying high priority livestock development goals for funding by international organizations, the public and private sectors, producer groups, academic and research institutions, foundations, NGOs, social movements and community-based organizations. The Agenda builds consensus on the path towards sustainable livestock development.

One of the four key focus areas of the Livestock Agenda is global food security and health. The Agenda promotes an inclusive approach to managing disease threats at the animal-human-environment interface that involves all stakeholders at every level in the development and implementation of animal-disease and food-safety programs. Livestock health is clearly the weakest link in our global health chain. In order for rapid growth in milk, meat and egg production to be safe and profitable, developing countries and their partners

must be encouraged to increase investment in animal and veterinary public health. This will support animal health systems and food safety system both important to supporting the livestock value chain.

A recent FAO report "World Livestock 2013 Changing Disease Landscapes" suggests international animal health investment focus on four key areas:

- reduce poverty-driven endemic disease burdens in humans and livestock
- address the biological threats driven by globalization and climate change
- provide safer animal-source food from healthy livestock agriculture
- prevent disease agents transmission from wildlife to domestic animals and humans

Providing support for animal health delivery to livestock producers in developing countries will be the most efficient means to improve livestock production and provide healthy and safe sources of food for a growing global population. Investment in research on endemic and zoonotic diseases in different production systems and environments, and evaluation of the economic impact of disease will be required at every level of the value chain. Mitigation measures will be needed along the value chain to improve livestock health and provide safe foods of animal origin for human consumption to consumers.

Training and implementation programs for veterinarians, livestock paraprofessionals, community animal health workers, producers, and other value chain actors are needed to strengthen early animal disease recognition, surveillance, diagnosis, and disease control. This can be accomplished through improved biosecurity training and implementation, vaccine development and delivery to the field and disease and food safety control programs.

Increased peri-urban livestock production poses new health and development challenges including food safety threats, environmental pollution, and increased exposure of people and animals to zoonotic diseases. As previously stated, over 70 percent of human diseases originate from animals, and expanding human populations encroach on pristine wilderness areas that are home to wildlife, thus increasing the likelihood of close human-animal interactions. Lack of adequate safe and affordable animal protein from livestock has resulted in illegal and unsustainable harvest of wildlife as food by the rural poor and unscrupulous traders.

Emerging diseases in livestock and wildlife are increasingly being recognized and found to have significant impacts on human health and the availability of animal protein. Controlling the emergence, spread and persistence of animal-origin pathogens are major international public health priorities. These must be addressed through greater investment in research, improved animal health practices, and enforced livestock trading policies and regulations in developing countries around the world. The OIE's tool for evaluation of veterinary services (PVS) and gap analysis has been successful in assisting countries to identify gaps and needs in their animal health systems. It has been an excellent first step for countries seeking to evaluate their relative strengths and weaknesses. The animal health and veterinary public health systems must be strengthened for sustainable intensification of the rapidly growing milk, meat and egg production subsectors and associated food-supply chains. Innovative and rapid new practices and research in livestock production systems are essential to increase understanding of the human–animal–environment interface, manage risk factors that exacerbate the flow of pathogens in livestock production systems and ecosystems, and improve post-harvest food safety of products destined for consumers. This will require research in different ecosystems and under different production systems such as peri-urban, smallholder zero-grazing systems, intensive production systems, pastoralist systems, and the wildlife-livestock interface in areas bordering national wildlife parks and reserves.

Many of the targeted FTF countries are decentralizing national governments and devolving power and resources at the state or county level. This decentralization focuses more emphasis on the need to support privatization of veterinary services for programs dealing with private management issues such as control of some important production diseases, e.g., mastitis, bacterial pneumonias and foot rot. Targeted transboundary livestock diseases such as peste des petits ruminants, foot and mouth disease, African swine fever and Newcastle disease that can pose important trade barriers will need to have management programs coordinated at nation levels with guidance and assistance from international organizations and donors and close coordination with livestock stakeholders and livestock traders to make the programs successful.

Most veterinary colleges in the FTF countries lack robust veterinary clinical training programs. Without extensive training and technical skill development, newly graduated veterinarians lack the clinical and technical skills needed to serve the crucial needs of the livestock industry. Furthermore they, do not gain the training in epidemiology, risk assessment or diagnostic medicine which will enable them to serve the livestock community in an optimal manner. The OIE has recently developed core competency skills that all students should complete during their veterinary medical education. Helping veterinary colleges meet these expectations will be a challenge in many developing countries due to insufficient infrastructure and clinical training.

ONE HEALTH APPROACH

Concurrently, a One Health approach, although not a new concept, has reemerged as a focus for a twenty-first-century global initiative involving health professionals, agriculturalists, ecologists, conservationists, socio-economists, development agencies and many others. This focus builds on the centuries-old notion that healthy people, healthy animals and healthy ecosystems are critical to promote food security and livelihoods around the world. The One Health approach integrates health issues into the full set of SDGs. The goals require a balanced approach to improve livelihoods, food security, preservation of environmental and natural resources, and to enhance human and animal health. One Health is a collaborative effort of multiple disciplines working locally, nationally, and globally to attain sustainable optimal health and wellbeing for humans and animals. It is the intersection and inextricable link between human health and animal health, and the connections between health and natural and man-made environments. For many individuals, implementing One Health concepts and their related socioeconomic impacts is a cultural, behavioral and paradigm shift. Many One Health concepts are driven by socioeconomic issues which include, but are not limited to: population growth; nutritional, agricultural, and trade practices; globalization; shift in land use; accelerated urbanization; deforestation; encroachment on wildlife; and climate change.

Over 70 percent of new diseases identified in the past 10 years have their origin in pathogens of animals. Many of these pathogens are zoonotic and thus are threats not only to animal but also human health. Recent examples illustrate the need for a One Health approach, such as periodic outbreaks of Rift Valley Fever in East Africa, which can be devastating to livestock and wildlife and cause morbidity and mortality in humans. Similarly the spread of several new strains of highly pathogenic influenza virus that have killed poultry, wild birds, humans and swine around the world and caused economic devastation in many countries are a constant risk. The emergence and spread from camels to humans of a new corona virus has killed people on several continents and is affecting trade of camels from East Africa. The recently disastrous outbreak in West Africa of the Ebola virus is yet another example of a zoonotic disease carried by bats which spread to humans through consumption of infected wildlife. The latter is another constantly reemerging zoonotic disease that strikes in poverty-stricken nations and by extension impacts people in Europe and the United States and

increases fear around the world. These diseases illustrate the rapidity with which highly pathogenic diseases can emerge/reemerge and rapidly spread.

E. BACKGROUND ON THE MAIZE VALUE CHAIN

Maize is a staple food crop that significantly impacts economic growth and food security at a local, national and regional level in East Africa. It is the primary crop in Kenya, where nearly one in two acres cultivated is planted to maize. However, Kenya's maize production never meets its domestic consumption needs and imports must come from within the region or if not available, from South Africa or the United States. It is the major crop in Tanzania, particularly in the Northern and Southern Highlands. Tanzania generally has an annual surplus of maize, but production varies year-to-year due to rain availability. In Tanzania, the major areas of production are the Southern Highlands which supply much of the country's domestic needs and exports to surrounding countries. Maize production in north Tanzania is mostly traded with Kenya. The government of Tanzania closely monitors domestic consumption needs and will impose export restrictions if maize supplies become limited. For Uganda, maize is an important cash crop, but it is generally not the staple (*matoke*, or green banana, is the staple crop) except in the east of the country. Uganda produces more maize than can be consumed domestically and exports its surplus to Kenya, and at times to Rwanda and other neighboring countries. Rwanda generally produces enough maize to meet its domestic consumption needs and imports from Uganda to meet any domestic deficit. In Ethiopia, maize is a major staple in the Rift Valley. The country produces its domestic consumption needs and exports to Djibouti. Ethiopia is a provider of maize to the WFP, which maintains large stores in the country in preparation for any food shortage emergencies.

As Kenya is such an important player in the regional maize market, it is valuable to understand the situation in the country. In Kenya, each person consumes on average 98 kg of maize per annum,[1] which is half a pound of maize per person per day. Kenya has a population of approximately 43 million people, but production is only between 25 to 35 million 90 kg bags per year (depending on rainfall). Of the maize produced, over 60 percent is sold through the informal sector. Kenya has an annual shortfall of approximately 8 to 18 million 90 kg bags, which is generally for human consumption. This does include the increasing demands of the animal feed industry (approximately one-third of the feed is a grain, usually maize). This deficit must be imported, which is mostly through informal trade, with relevant food safety (aflatoxin), phytosanitary and quality concerns.

To meet increased human consumption and growth in the animal feed market, production can be increased through a number of means including improved seed. Current popular varieties sold are over 30 years old. Germplasm exists that can double and triple production per unit area and include traits such as drought tolerance. To bring a new variety online takes over six years and at a substantial cost. This compares with South Africa, which takes around two years to bring a new variety to the farmers.

Maize will remain the major staple in the region, but the focus is now shifting from being only on the quantity of food required, to include the quality of food, particularly in the informal sector. The SPS focus has usually been on the formal sector (export markets) as required by importing governments EU, Middle East or USA (African Growth and Opportunities Act—AGOA).

The government controls the seed industry through the Kenya Seed Co. (59 percent government equity), which produces approximately 28,000 metric tons of hybrid seed per year sold domestically and into Uganda,

[1] Tegemeo Institute

Rwanda and Tanzania. The government also plays a major role in maize production. Most of land on which seed (hybrid) maize is produced is on government Agricultural Development Corporation (ADC) farms. The government is also taking a greater role in the fertilizer industry with increased subsidies. There is over 230,000 metric tons of fertilizer distributed,[2] with Kenya being one of the bigger users on the African continent, with average usage at some 8 tons per hectare.

In 2014, the government of Kenya purchased maize at approximately US $360 per ton when the world price is US $180-200 ton. Maize traded in the COMESA region is duty free, but borders are often closed if there is a perceived shortfall in the exporting countries. Better monitoring and forecasting systems, including current stocks with the region, should help alleviate this problem. If there is a major regional shortfall, the only countries in the world capable of supplying white maize are South Africa and the United States, but current legislation requires segregation as genetically modified (GM) maize is not approved for consumption or production in the region. The segregated non-GM maize is increasingly difficult to obtain and costs a US $40-50 per ton premium. Maize imported from South Africa or United States is levied at 50 percent duty, which makes the local maize one of the most expensive in the world. The Kenyan government also plays a role in the purchasing market through the National Cereals & Produce Board (NCPB). The government sets the price for the Strategic Grain Reserve, which purchases and stores over 3 million bags until funding from the treasury is expended. At this point, market forces come into play. The current price for maize in Kenya is around US $300 per ton, which is still nearly double the world price.

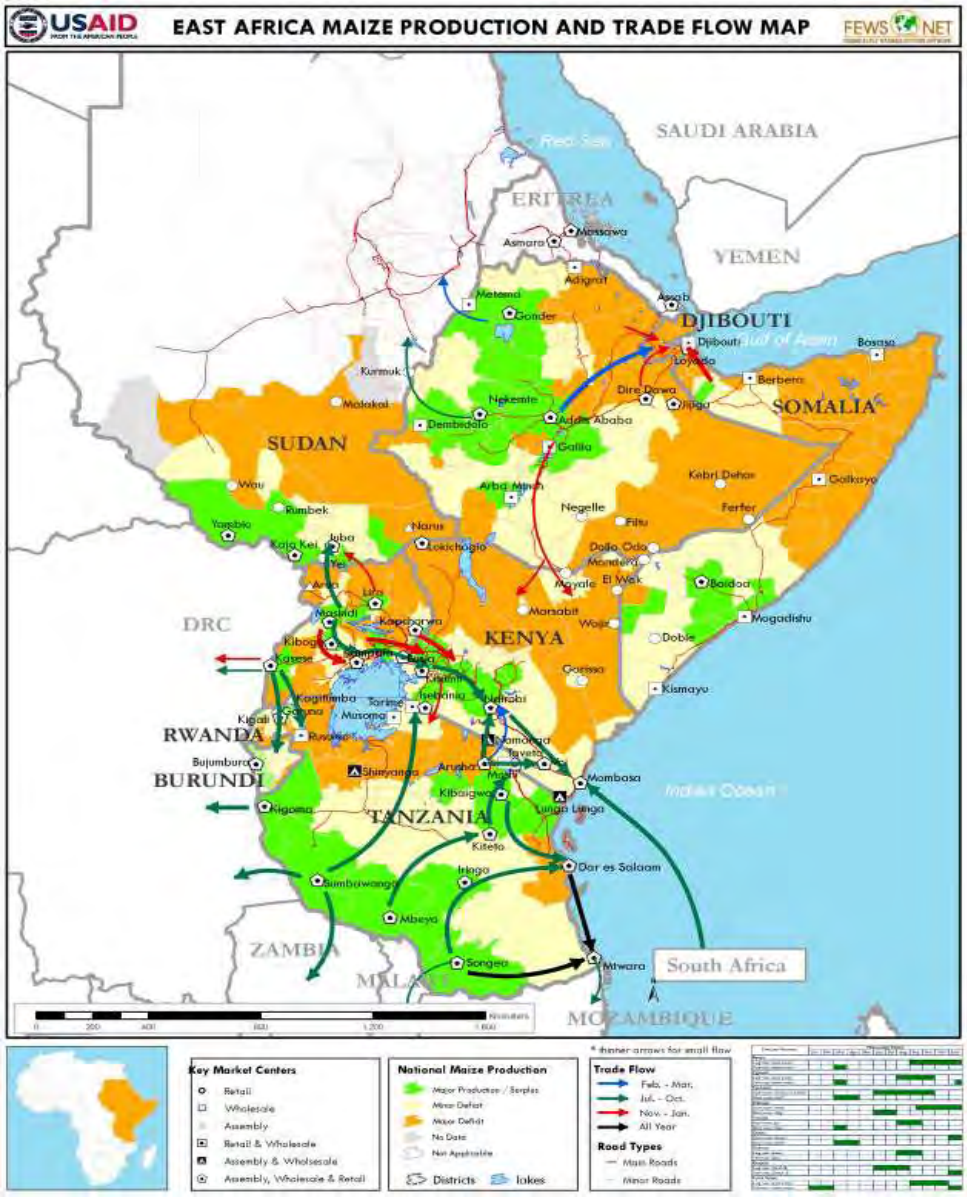
USAID FEWS NET/FAO/WFP JOINT CROSS-BORDER MARKET AND TRADE MONITORING INITIATIVE

See figure 2, below.

- Kenya is always net deficit in maize production, and imports within the region or from the Republic of South Africa or the United States when maize is not available in the region.
- Tanzania usually has a surplus of maize production but yield varies dramatically as whole crop is rain fed. Major production areas are the Southern Highlands that supply much of the country, and exports occur to Zambia and Malawi in deficit years.
- Northern Tanzania supplies Kenya except in years when government shortages result in trade bans and border closure.
- Zambia, having a large influx of ex-Zimbabwe commercial farmers, is becoming more self-reliant, and surpluses are exported to Kenya.
- Uganda is a net surplus producer. A substantial part of Uganda's crop is exported to Kenya (and was exported to Southern Sudan until the latest civil unrest). It also supplies the Democratic Republic of Congo and occasionally Rwanda.
- Rwanda produces much of its own maize.
- Maize is usually traded domestically in Ethiopia, with exports to Djibouti and some from the west of Ethiopia goes to north Sudan.

[2] Tegemeo Institute

Figure 2. Maize Production Flow Chart



F. BACKGROUND ON THE SPS ADVISOR

In support of the AGOA development objectives and the U.S. government's Feed the Future initiative, USDA and USAID have partnered for the past 12 years to implement a program that strategically addresses SPS issues throughout sub-Saharan Africa. USDA works with the governments of priority countries to strengthen SPS policy and regulatory environments and the capacity of AU lead SPS agencies, i.e., AU-IBAR. The emphasis of the program is to enhance food security through improved SPS policies, reduced pest and disease pressure on the production of animal- and plant-based products, and recommend mitigations to improve food safety in African domestic food chains. The program also seeks to increase income-generating export opportunities to regional and international markets for processed foods, horticultural products, and animal products.

The current SPS capacity building program is accomplished through the work of long-term resident regional SPS advisors, USDA/Washington program staff, and USDA's overseas offices in partnership with USAID's Washington office, and bilateral and regional missions in Africa. The USDA team also collaborates with U.S. and African universities, agricultural research organizations, private sector organizations, and NGOs to target African governments, regional economic organizations, and African agribusiness to implement the program.

The USDA activities focus on strengthening animal disease diagnosis and control procedures to support efforts of IGAD and AU-IBAR with USAID funding to develop standard methods and procedures to allow regional and uniform harmonized animal health regulations for the nine IGAD countries, which include the EAC countries. Regulations and procedures for nine priority diseases and the issue of quarantine have been identified as the highest priorities, and procedures and uniform methods to conduct surveillance, collect samples, perform diagnosis and control are being developed by technical working groups sponsored by USAID, AU-IBAR and IGAD in a joint approach. On the plant side, support is provided for plant pest surveillance and management, aflatoxin control, and biopesticide registration policies. USDA food safety outreach has concentrated on aflatoxin. Emphasis has been placed on field control of aflatoxin using biological control products (Aflasafe) and improved methods of drying and storage of maize. USDA has implemented their programs in partnership with a broad base of African governmental organizations, universities, donor implementing partners, and other international implementing partners.

In the USDA report entitled "Assessing SPS Enabling Policies in East Africa," one of the major concerns noted was the lack of regional harmonization. While this may be true in many areas of agriculture, the AU-IBAR and IGAD with funding from USAID, and with USDA guidance, have developed nine priority disease issues that affect regional trade and technical working groups are developing policies for all nine IGAD countries to follow concerning surveillance, diagnosis and control of these diseases. They also make recommendations of how to deal with these disease issues in livestock trade channels. These policies and/or processes need to now be implemented in each of the countries.

III. FINDINGS AND RECOMMENDATIONS

A. SANITARY PHYTOSANITARY TECHNICAL ASSISTANCE IN EAST AFRICA

The following is a list of the USAID and USDA SPS technical assistance projects in the East Africa region for the maize and livestock and livestock value chains.

REGIONAL ACTIVITIES

Kenya-based East Africa Trade and Investment Hub: Funded by the USAID regional mission, this was implemented by Chemonics as part of an ongoing sequential program which also include RATES and COMPETE. The project developed harmonized guidelines for sampling, testing, and grading procedures and methods for the new East African States 2013 Staple Food Standards in July 2014. The new program, DAI Trade Africa: East Africa Trade and Investment Hub (2014-2019), has several project goals, including a strong SPS initiative to increase EAC interregional trade in staple foods by 40 percent. The project builds on the policy environment with EAC integration trade and investment.

Maize Lethal Necrosis: USAID and USDA are providing funding to several MLN activities with the Kenya Agricultural and Livestock Research Organisation (KALRO), the Kenya Plant Health Inspectorate Service (KEPHIS) and the National Research Institutes in the region. Work has been driven from Kenya for the past three years, since MLN was initially identified by KALRO (ex KARI) in 2011. CIMMYT (the International Maize and Wheat Improvement Center) experts are working in the quarantine unit at the KALRO research station in Naivasha to test all local maize varieties for susceptibility, along with promising germplasm from the United States. CIMMYT is allowing the private sector to screen their seed varieties at the facility as well.

Aflatoxin: There are numerous technical assistance activities that are addressing aflatoxin. Most are being developed and implemented in Kenya, since the original International Food Policy Research Institute (IFPRI)-run **Aflacontrol Survey** took place on maize (Kenya) and groundnuts (Mali) with Bill and Melinda Gates Foundation (BMGF) funding. A consortium of interested stakeholders was formed with governments of the United States, Canada, United Kingdom, Switzerland, the Netherlands, Finland, and Germany. The **Aflastop Storage Drying for Aflatoxin Prevention** maize storage and drying program funded by USAID and the BMGF will offer farmers and traders practical technological options to storing and minimizing the risk of aflatoxin contamination. The BMGF also initiated funding on research to create a **low-cost diagnostics test** for aflatoxin. The aflatoxin test kit was piloted in 2013, however funding ceased as it was redirected to develop test kits for bacteria in milk. The test kit was initially coordinated by Diagnostics for All. **Aflasafe**, funded by the BMGF, through PACA, leverages funds from several other donors including USAID and USDA; it is run by the International Institute of Tropical Agriculture (IITA). The project is currently developing and testing Aflasafe biological control products for 11 sub-Saharan African countries and assisting the World Bank AgResults Aflasafe commercialization pilot in Nigeria. The program has taken proven technology from the USA whereby local atoxigenic strains of the aflatoxin causing fungi (*A. flavus*) are isolated, formulated, and applied to crops where they competitively exclude toxin producing fungi. The

Aflasafe project has also developed and proposed protocol for aflatoxin sampling in maize and groundnuts, which it expects to begin piloting in 2015.

KENYA – USAID BILATERAL MISSION

REGAL-AG (**Resilience and Economic Growth in Arid Lands–Accelerated Growth**) is a livestock project implemented by ACDI/VOCA (2012-2016) in two counties in northern Kenya: Isiolo and Marsabit. The program focuses on improving the enabling environment by working with pastoralist communities to advocate for improved national policies and additional changes in legislation that will expand critical services and markets. REGAL-AG has prepared policy briefs on transportation and community land tenure for the livestock cattle, camels and goat, red meat, hides and skins, and camel milk industries, and has a large community contracting component.

REGAL-IR (**Resilience and Economic Growth in Arid Lands–Increased Resilience**) is a cooperative agreement implemented by ADESO (2012-2016) operating in five counties in northern Kenya: Turkana, Garissa, Wajir, Isiolo and Marsabit. The project focuses on developing local communities. The SPS activities under this project include an activity with SIDAI offering quality veterinary drugs through their super service centers in the rural areas.

Feed the Future Innovation Engine is a project implemented by Land O' Lakes (2013-2016) that is working with crops such as potatoes. Livestock and maize value chains are not included in this project.

Kenya Agricultural Value Chain Enterprises (KAVES): The project is implemented by Fintrac (2013-2017) focusing on the maize and dairy industries. KAVES is currently collaborating with AATF (African Agricultural Technology Foundation) on Water-Efficient Maize for Africa to develop drought tolerant hybrids through demonstration and farmer capacity building. The project is also addressing post-harvest losses with hermetic bags, which could also potentially help with aflatoxin reduction and prolonging shelf life of milled flour. The project is also working with diary projects on chilling to extend the shelf life of milk. KAVES is working in 22 counties—16 in west Kenya and six in eastern/southeastern Kenya.

Kenya Semi-Arid Livestock Support: This is a USDA Food for Progress-funded project with Land O' Lakes (2013-2016) in six counties in the semi-arid zone of east and southeast Kenya. The project is working to increase agricultural productivity and expanding the trade of agricultural products domestically, regionally and in international markets. There is a specific activity focused on post-harvest handling and processing of maize, which involves substantial SPS activities.

TANZANIA – BILATERAL USAID MISSION

With Feed the Future funding, ACDI/VOCA is implementing the **Nafaka project** in the maize and rice value chains (2011-2017) in the districts of Kilombero, Kongwa, Kiteto, Mvomero, Mbeya, Iringa and Zanzibar Island. However, the program has a minimal SPS component.

UGANDA – BILATERAL USAID MISSION

Enabling Environment for Agriculture: This program is carried out by Chemonics and is focused on the coffee, maize and beans value chains. The program started its work with the Ministry of Agriculture, which has recently restructured. The project does not have specific SPS expertise, but wishes to work with the new structure to focus on the seed sector by improving seed certification.

The USAID Mission intends to support the Ugandan branch of PACA through the Makerere University on aflatoxin and Aflasafe projects, and is also working with the Uganda Bureau of Standards (UBS) on the dissemination of maize standards and cross-border enforcement.

RWANDA – BILATERAL USAID MISSION

USAID is working on capacity building related to the SPS framework in Rwanda, with external training in the specific area of mycotoxin contamination.

ETHIOPIA – BILATERAL USAID MISSION

Agricultural Growth Program–Agribusiness & Market Development (AGP-AMDe) implemented by ACDI/VOCA, is working in the seed industry and across six value chains.

There are also a large number of projects in Ethiopia focused on the livestock value chain covered later in the report.

B. FINDINGS AND RECOMMENDATIONS RELATED TO THE USDA SPS PROGRAM POLICY ADVISOR

Three regional SPS advisor positions in Africa were created under AGOA to address concerns related to the difficulty African nations had in exporting fresh plant products to the United States, and the need to address any SPS issues that would block such trade. The first appointed East African regional SPS advisor was posted at USAID in Uganda in September 2004, and transferred to the USAID Regional Mission in Kenya in September 2007. In November 2008, he concluded his tour of duty and returned to the United States. During his tenure, the advisor established relationships with the plant health experts in each of the East African nations, and provided training and targeted assistance to address the phytosanitary constraints on East African exports to the U.S. This work resulted in the approval of plant product exports to the U.S. The advisor worked with the African Union Inter-African Phytosanitary Council and guided the establishment of the East Africa Phytosanitary Information Committee (EAPIC) in April 2006. Under the EAPIC project umbrella and with the SPS advisor's guidance, the East African nations conducted surveys to identify harmful plant pests in the region, and developed pest lists and mitigation measures. This information was entered into the EAPIC database, conformed to the IPPC and COMESA data requirements ensuring full compatibility. The database remains the singular regional repository for data and pest information for use by East African nations. Over time, the SPS advisor's focus was shifted from expanding African horticultural exports to the U.S. under AGOA, to enhancing regional trade capacity among African nations and potentially with Middle East nations and the EU, thereby addressing regional food security objectives under the Feed the Future initiative.

The first advisor completed his tour in 2008 and was replaced by a temporary SPS advisor who concentrated on working with AU-IBAR and IGAD to identify priority livestock disease issues that were trade barriers in the region and affected legal export of live animals and products out of the Horn of Africa to the Arabian Gulf countries. A series of workshops on regional trade were convened which included stakeholders who were livestock exporters and animal health officials from both East Africa and Gulf countries. Livestock disease risk assessment training was provided to encourage more science and transparency in the decision process for export of livestock. This activity matured into a USAID-funded project with AU-IBAR on Standard Methods and Produces, a program to harmonize disease control and trade for the IGAD region. This project is ongoing and scheduled to end in 2016. A second permanent SPS advisor was posted for four

years at the Regional Mission in Nairobi and managed the USAID commitment to COMESA and worked closely with AU-IBAR on harmonizing trade for livestock.

The East Africa SPS policy advisor position is currently vacant, but it is expected to be filled by the summer of 2015. The position description modifies the role of the SPS advisor from a technical SPS expert that often led and provided onsite technical training to a position with a policy background that can strengthen the SPS enabling environment, liaise with national and regional officials, help coordinate SPS strategy development for the region, and bring forth the technical experts to implement the activities.

C. RECOMMENDATIONS FOR SPS ADVISOR

The SPS advisor position should be recruited as quickly as possible to fill the SPS leadership void in the region. Leadership is needed on a number of issues, but in particular on the maize and livestock value chains to develop a USAID SPS strategy across the region that links the work of the regional and bilateral USAID missions together with the strategies of the AU, AU RECs and national governments to ensure complementary goals and more effective and efficient project implementation. The SPS advisor should work closely with USAID missions in the region to enhance their understanding and appreciation of the need for SPS technical assistance and to engage donors who are funding SPS-related projects to develop complementarity. The SPS advisor should work to enhance the enabling environment at the national levels to facilitate the adoption of policies, tools and mechanisms that will increase agricultural productivity, expand farmer incomes and economic growth, and enhance regional trade.

One of the first acts of the advisor will be to familiarize themselves with the current SPS projects in the region, and network and establish contacts with the principal stakeholders in the U.S. and national governments, regional organizations (AU-IBAR, IAPC, EAC, IGAD and COMESA) and other key local parties.

During 2015, as the SPS advisor's knowledge and network of stakeholders grows, the incumbent should work to build alliances and contacts with the international organizations such as the WTO, IPPC, OIE, CODEX, FAO, the Center for Agriculture and Biosciences International (CABI) and AUC and bilateral donors to coordinate efforts, build upon existing projects, minimize duplication of SPS activities and help to ensure gaps are addressed. For example the Standards and Trade Development Facility (STDF) will soon announce a livestock SPS technical assistance project in Ethiopia to facilitate regional trade (STDF/PPG/477). This project could build upon the current USAID livestock projects in the country being implemented by ACDI/VOCA as well as the USAID SMP-AH project implemented in collaboration with AU-IBAR and the proposed projects within this report if the linkage is made between USAID and the STDF.

By 2016, the SPS advisor should lead the coordination with USAID regional and bilateral offices and the efforts of other donors to help link current projects into a broader strategy that facilitates food security, economic growth and regional trade. Two examples of where donor coordination is urgently needed are aflatoxin and livestock disease standards.

Aflatoxin: The ultimate solution to resolving the aflatoxin issue and ensuring safe maize for human and livestock consumption includes the coordinated efforts of the many donors and their activities in the region. The solution must include national regulatory systems consistent with international standards and harmonized across the region. The regulatory system is only one element of the solution, but does serve as an umbrella that benefits all the other areas of work. The key areas of work require implementing a broad spectrum of activities across the value chains in a coordinated manner across each nation and the region. The SPS advisor

should contribute to a coordinated effort with other national and regional representatives, PACA, the USG and other donors to continually review the SPS needs and current activities conducted and identify activities to fill any gaps to improve the safety of maize.

SMP-AH: The SPS advisor should work closely with AU-IBAR to complete the development and validation of the nine standards for priority livestock diseases and standard for quarantine. The harmonized standards would then require implementation at national levels. The SADC region is also interested in developing a similar approach for their countries, and leadership would be needed to ensure the RECs harmonize their approaches. Developing a livestock stakeholder steering committee to advise the RECs and to ensure that a tripartite approach minimizes the overlap of training and implementation would be important for the EAC, IGAD and COMESA. The SPS advisor should work with key development partners such as DFID, EU, World Bank and USAID to ensure programs are complementary and coordinated.

Table 1. Action Item in Years 1 and 2 for the SPS Policy Advisor

Year	Activity
2015	Hire and place the SPS advisor in the Nairobi office by mid-summer. The SPS policy advisor: • Establishes a network and personally visits each of the key contacts within USAID, USDA, implementing partners, each East African Nation (animal, plant and food safety ministries, and donor liaison office), the EAC, IGAD, COMESA, AUC and other donors implementing projects. • Participates and assists on previously identified SPS training events and workshops. • Ensures that SPS activities are implemented and deadlines are met for the maize and livestock and livestock products value chains. • Works with stakeholders to review identified SPS needs and priorities at the national and regional levels.
2016	Working with stakeholders, the SPS advisor: • Assists the bilateral USAID Missions in developing SPS strategies and defining priority activities that complement the BFS and the regional USAID Mission's policy and regulatory activities. • Provides training as outlined under the strategy document. • Utilizes the donor networks to share information and coordinate efforts.

D. MAIZE VALUE CHAIN PRIORITY: AFLATOXIN

Aflatoxin is produced by the mold *Aspergillus flavus* and is highly toxic to humans and animals. High exposure to aflatoxin leads to serious illness and can cause death in humans and animals. In lower doses, aflatoxin is linked to liver disease and cancer, stunting in children and suppression of the immune system. It is estimated that aflatoxins cause between 5 percent and 30 percent of all liver cancer in the world, with the highest incidence of 40 percent occurring in Africa.[3] In East Africa, maize is a staple food crop for humans and is consumed as part of the daily diet. In addition to the direct consumption of maize, aflatoxin consumed by humans is expressed through the breast milk and for animals it is concentrated in the milk and in the meat products and eggs.

Numerous initiatives in the region by various donors are seeking to mitigate aflatoxin along the entire maize value chain. PACA, which is an organization that originated with COMESA, AATF, IITA, USAID, BMGF,

[3] http://www.aflatoxinpartnership.org/

USDA and other stakeholders, launched a comprehensive program to formulate polices, identify solutions, and support the implementation of programs to address health, agriculture, and trade issues related to aflatoxin contamination in the staple food supply. PACA seeks to amalgamate often disjointed donor initiatives in aflatoxin control. Based at the AUC headquarters in Addis Ababa, PACA's work has made positive steps in unifying aflatoxin control initiatives primarily by creating a platform through which projects and governments can integrate aflatoxin control research and knowledge transfer. Current initiatives aim to reduce contamination by addressing pre-harvest and supply chain contamination points. The IITA, for instance, has developed Aflasafe products, a natural inoculant which allows naturally occurring atoxigenic strains of the *A. flavus* fungi to competitively exclude toxic strains of *A. flavus*. Other initiatives, such as ACDI/VOCA's Aflastop and AgResults and CIMMYT address post-harvest handling and storage issues. Aflatoxin is difficult to identify visually on post-harvest grain that looks clean. Studies by the BMGF- and USAID-funded Aflastop project in Kenya revealed that grain in areas considered safe in Kenya contain dangerous levels of aflatoxin in stored "clean" grain, and that normally grain containing less than 13.5 percent moisture is likely to inhibit aflatoxin development.

Expanding the sampling of maize by 30-fold through co-regulation with third party verification, a collaborative pilot project conducted by the Texas A&M AgriLife Research at the Biosciences eastern and central Africa—International Livestock Research Institute (BecA ILRI) Hub in Nairobi, successfully implemented a process verified aflatoxin testing program at two commercial maize millers through adoption of a statistically validated sampling system for incoming maize and flour. The sample processing and aflatoxin testing following a protocol developed by AgriLife was funded by BFS and used by USDA. The millers' results were verified at the AgriLife ISO 17025 accredited laboratory.

The AgriLife project also involves branding flour using the APTECA (Aflatoxin Proficiency Testing for Eastern and Central Africa) logo "Aflatoxin Tested, Process Verified by APTECA," and market analysis performed by research partners from the IFPRI and Innovations for Poverty Action. Government agency collaborators include the Kenya Bureau of Standards and the Ministry of Health. The marketing phase of the project is expected to begin in March 2015 upon completion of a Memorandum of Understanding between the Kenya Bureau of Standards and AgriLife, and will last nine months.

According to Hell and Mutegi,[4] aflatoxin research in Africa is necessary to get policymakers in the sub-Saharan region to recognize that the increased implementation of pre- and post-harvest interventions is important for increasing food security and ensuring food safety to protect the short- and long-term health of the population. Aflatoxin constitutes a serious health concern to the entire food chain, necessitating a multidisciplinary approach to analysis, action, and solution. To maximize resources, a targeted monitoring and surveillance system for high-risk areas and their populations should collect and analyse appropriate specimens (e.g., usually food, urine, and serum) to establish baseline levels and measure the impact of interventions.[5]

Centers for Disease Control (CDC) has conducted a pilot study to evaluate the efficacy, acceptance, and palatability of a clay binder among subsistence farmers in Kenya's Eastern Province, a high risk area of Kenya with historical issues related to aflatoxin contamination and disease outbreaks. This project will determine whether the binder can be a potential prophylaxis to prevent aflatoxicosis during high-risk periods (such as

[4] Hell, K., &, Mutegi, C. (2010). Aflatoxin Control and Prevention Strategies in Key Crops of Sub-Saharan Africa. African Journal of Microbiology Research 5(5):, 459–466

[5] Strosnider, H. et al (2006). Workgroup Report: Public Health Strategies for Reducing Aflatoxin Exposure in Developing Countries. Environ Health Perspect 114:, 1989–1903.

when aflatoxicosis outbreaks occur in a village or when routine maize screening uncovers exceptionally high aflatoxin contamination). Subsequent studies would determine the effectiveness, acceptability, and palatability in other groups, such as children, pregnant women, etc.

USAID has funded CDC research on quantifying human exposure to aflatoxin in East Africa. Currently CDC is working with Uganda, Tanzania, and Ethiopia (with additional countries to follow) to test for aflatoxin adducts in the serum to determine the magnitude of aflatoxin exposure in at-risk countries, identify the populations with high aflatoxin exposure, and identify risk factors for aflatoxin exposure.

The priorities for future work on aflatoxin binders for humans include characterizing and fully documenting the full health effects from aflatoxin exposure. This includes assessing the association between aflatoxin levels and health effects such as liver cancer and stunting. Additional work should be done on evaluating the public health interventions such as binding agents that are aimed at reducing aflatoxin exposure.

Concerns and arguments have been raised on the political, ethical and practical use of binders to reduce the dangers of aflatoxin exposure to people living in Africa. These concerns and arguments follow with responses received from interviews during and after the in-country visits by the research team:

- Political – The African government at the national and local level levels and the African communities where binders are tested may view the developed world as testing "on Africans." *Response: CDC has not encountered this reaction when they have met with national and local staff or with the people within their studies. In fact, the reaction has been supportive of CDC's efforts to document the benefits of using binders.*

- Ethical – It is unacceptable to allow people to eat toxic food when we know contamination can be controlled with agricultural solutions. *Response: There have been many gains in understanding and controlling aflatoxin, but at this time, the availability of aflatoxin-safe food for all Africa people is still 10-15 years away under the best of circumstances. Until aflatoxin-safe food is available to all people, all possible options should be available to address the problem.*

- Practical – It will take too long to develop and test a binder for human consumption; it would be quicker to develop/utilize alternative solutions. *An effective low-cost, easy to distribute binder has already been developed and is available, however necessary data research is to be completed as required. All possible solutions to eliminate aflatoxin exposure or the harmful effects of aflatoxin should be explored.*

Until aflatoxin-safe food is available to all African people, those with no alternative should have the right to make their own choice on the use of binders. USAID programs should inform, educate, and empower the people on the scientifically proven benefits and harmful side effects (none have been identified) of binders, and provide them with the opportunity to choose for themselves the use of proven binders.

On the trade side, aflatoxin has become a major emerging SPS trade-related concern. This situation is not confined to intra-regional trade only, but also with other trading partners. Summarizing a common trend in policy research on aflatoxin, a USAID–Danya International[6] report presented in 2013 indicated that rising regulatory standards and lowering the limits for aflatoxin contamination around the world have had an enormous impact on the ability of developing countries in Africa to export goods. The report suggested that the primary barrier to trade in agricultural commodities is the strict aflatoxin maximum limits set by the European Union, East Africa's largest trade partner.

[6]Aflatoxin: A synthesis of the Research in Health, Agriculture and Trade, available on webpage, http://www.danya.com/portfolio/aflatoxin_report.pdf accessed January 28, 2015

RECOMMENDATIONS RELATED TO AFLATOXIN

A holistic approach must be taken that addresses critical points along the entire maize value chain, from beginning to end, and carries over into the livestock value chain. This requires technical assistance projects that are SPS in nature as well as non-SPS measures, such as good farming practices that remove opportunities for aflatoxin to flourish on the farm. The solution must include national regulatory systems consistent with international standards and harmonized across the region. Such a system would serve as an umbrella that benefits the entire value chain by setting standards for proper surveillance, drying, testing, handling, disposal and other measures. Addressing aflatoxin entails implementing a broad spectrum of activities across the value chain in a coordinated fashion within each nation and across the region. The activities begin in the field prior to planting (resistant seed) through crop growth (integrated pest management, application of biocontrol (Aflasafe), good agricultural practices), and continue through harvest (better harvesting techniques), and post-harvest (appropriate drying, and handling practices) and throughout the value chain (off-farm storage, handling, sampling and testing) until consumption by humans or livestock (additional testing, use of labelling, binders in animal feed.)

1. **Create a regional aflatoxin coordinator position**
   a. An aflatoxin coordination position should be created at the regional USAID Mission. This person would review and recommend linkages across projects, coordinate the broad spectrum of activities across the maize value chain at the national and regional level and serve as a liaison with national and regional contacts, other donors and international institutions, such as PACA.
   b. This includes an aflatoxin working group in Washington, which involves a cross section of government agencies (USAID, USDA, CDC and others) and universities and other aflatoxin experts to support efforts and provide solutions to the aflatoxin problem in Eastern Africa and across the world.

2. **Support financially and coordinate with (providing advice and guidance to) PACA on projects in Eastern Africa.** PACA is a new organization in the AU that is in need of support both financially and in guidance on carrying out its role as a regional coordinating body and coordinating activities within each country.

3. **Assist in the review, revision and implementation of national laws, regulations and standards that are based on science, consistent with international standards and harmonized across the region.** The legal, regulatory and standards review should address:
   a. The continued BFS-funded work on the registration process required for bio-pesticides, which should be significantly quicker and less costly than chemical pesticide registration processes.
   b. The continued BFS-funded work on testing and surveillance protocols, co-regulation, quarantine measures, distribution across boarders and use of biocontrol agents, such as Aflasafe.
   c. Inspection, quarantine, and disposal systems to protect humans and animals, and to safeguard the trade of maize.
   d. Drying standards for moisture content in stored maize.
   e. The laws and regulations for mycotoxin levels in food and feed based on species and adoption of binding agents in feed.
   f. The laws and regulations on the production, distribution and use of binders in animals and humans (until aflatoxin is no longer present in food for human consumption.

4. **Build capacity for governments to monitor aflatoxin in domestic and imported food supplies**.

5. **Support the biocontrol of aflatoxin**
   a. Develop economic incentives that are sustainable for the use of biocontrols, such as Aflasafe by smallholder farmers
   b. Expand the production, distribution and use of biocontrols across the region.

6. **Training to smallholder farmers on**
   a. Good agricultural practices to reduce stress on crops.
   b. Reducing damage to the kernel during harvest thrashing and handling.
   c. Avoiding on-the-ground drying in the sun.
   d. Proper storage techniques to maintain low moisture and pest free maize.

7. **Develop low-cost drying systems for on-farm use.**

8. **Support systematic surveying and monitoring, and enforcement mechanisms at the national level and harmonized across the region by:**
   a. Providing assistance and training to national governments on surveying at the farm level, and within the animal feed industry and processor levels to gather data on the location and prevalence of aflatoxin across the region.
   b. Developing a database for information collected from the surveys, which can be used to develop a risk assessment and risk mapping for the region.
   c. Providing training on using the information gathered to guide and target the highest risk areas and identifying the best use of mitigating measures to address the worst aflatoxin problems first.

9. **Conduct additional research in the following areas:**
   a. Support the ongoing evaluation of binding agents' efficacy originating from Africa at ILRI, particularly for the animal feed industry.
   b. Determine the safety risk factor for other mycotoxins in the East Africa region.
   c. Develop aflatoxin-resistant maize with CIMMYT and USDA's Agricultural Research Service through traditional breeding programs and possible transgenic approaches.
   d. Support the development of low-cost diagnostic tools for on-farm use.
   e. Support testing and laboratory facilities (CDC) and Uganda's Nutrition Innovation Lab, linking this to FTF targets for nutrition among the first 1,000 days population.
   f. Support the CDC and other researchers to quantify, establish a baseline, and identify measures to minimize the impact of aflatoxin on humans.

10. **Expand the use of co-regulation for sampling in the formal market and initiate the program in the informal sector.**

11. **Train national regulators and COMESA personnel in the methodology to develop aflatoxin proficiency samples and working controls.**

12. **Involve government laboratories in Eastern Africa in APTECA in collaboration with FAO and COMESA.**

13. **Create an Innovation Challenge Fund to develop affordable diagnostic kits for under $1 to test aflatoxin at informal market levels.** This concept was considered before, but funding was reallocated to develop a milk bacteria count test. The concept is very relevant for the informal markets and Aflacontrol surveys showed customer acceptance of the concept.

Table 2. Action Items in Years 1 and 2 for Aflatoxin

Year	Activity
2015	• Establish the regional aflatoxin coordinator position. • Further develop the aflatoxin working group in Washington to provide greater support to the efforts in the field. • Provide funding to PACA at the regional and national levels. • Begin the review of the laws. • Support the establishment of certified laboratories in ILRI and expansion into the region. • Continue support and coordinate programs for binding agents in animal feed, aflatoxin resistant maize, low-cost diagnostics, testing and research on the human health aspects. • Support training for national regulators on aflatoxin sampling and working controls. • Support initial contact and discussion with laboratories across the region in coordination with COMESA and FAO.
2016	• Link USG funded projects together and work with other donors and PACA to address needs. • Ensure that the aflatoxin working group is actively engaged with the coordinator based in Kenya and with other regional experts on problems in-country. • Complete the legal review and begin the process to update the most urgent laws, including the law on biopesticide registration. • Provide a program to support the surveying and monitoring of aflatoxin in each country and shared regionally. • Confirm initial results from the support programs (research on binding agents in animal feed, aflatoxin-resistant maize, low-cost diagnostics, testing and research on the human health aspects). • Begin development of co-regulation programs at national levels across the regions. • Train the initial cadre of regulators on sampling and working controls, and get them working across the region. Train additional staff on the same processes. • Ensure that a network of laboratories is engaged in aflatoxin in coordination with COMESA and FAO.

E. MAIZE VALUE CHAIN PRIORITY: MAIZE LETHAL NECROSIS

Maize lethal necrosis is a devastating plant disease that is affecting maize in East Africa. MLN was first found in Kenya in September 2011 and then confirmed in Rwanda, Tanzania, and Uganda in 2012, and in Ethiopia in 2014[7] and is rapidly being confirmed throughout each of these countries. MLN infection rates and damage can be high, leading to seriously effects on yields and loss of the maize crop. In 2012, yield losses of up to 90 percent resulted in an estimated grain loss of 126,000 metric tons valued at $52 million in Kenya alone.[8] This reduction in production leads to severe economic losses and dire food security situations at the smallholder farmer level, within their communities, at the national level, and across the region.

MLN is caused by the simultaneous double infection of maize plants with maize chlorotic mottle virus (MCMV) and any of the cereal viruses in the Potyviridae group, such as sugarcane mosaic virus (SCMV). When infecting maize, MCMV or SCMV alone typically produce milder symptoms. However when both

[7] Melanie (Tor) Edwards, BFS/ARP, USAID
[8] Peg Redinbaugh USDA/ARS

viruses infect the plant at the same time, a rapid synergistic reaction is produced that seriously damages or kills the infected plants.[9] The viruses are reportedly transmitted by pests, but can also be transmitted by the seed of infected plants and possibly by other vectors, which is under research. National and foreign governments, regulatory, research and extension organizations, laboratories, and the private sector are working together to control the spread of the disease and to develop initiatives to address MLN.

There are a number of technical assistance projects being implemented in the East African region to help address MLN. At a regional level, the EAC Secretariat developed the "Prevention and Control of Maize Lethal Necrosis Disease" as a regional strategy to address MLN. In collaboration with regional and international stakeholders, the regional organization, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) facilitated a multi-sectorial strategy that focuses on six strategic priority areas:

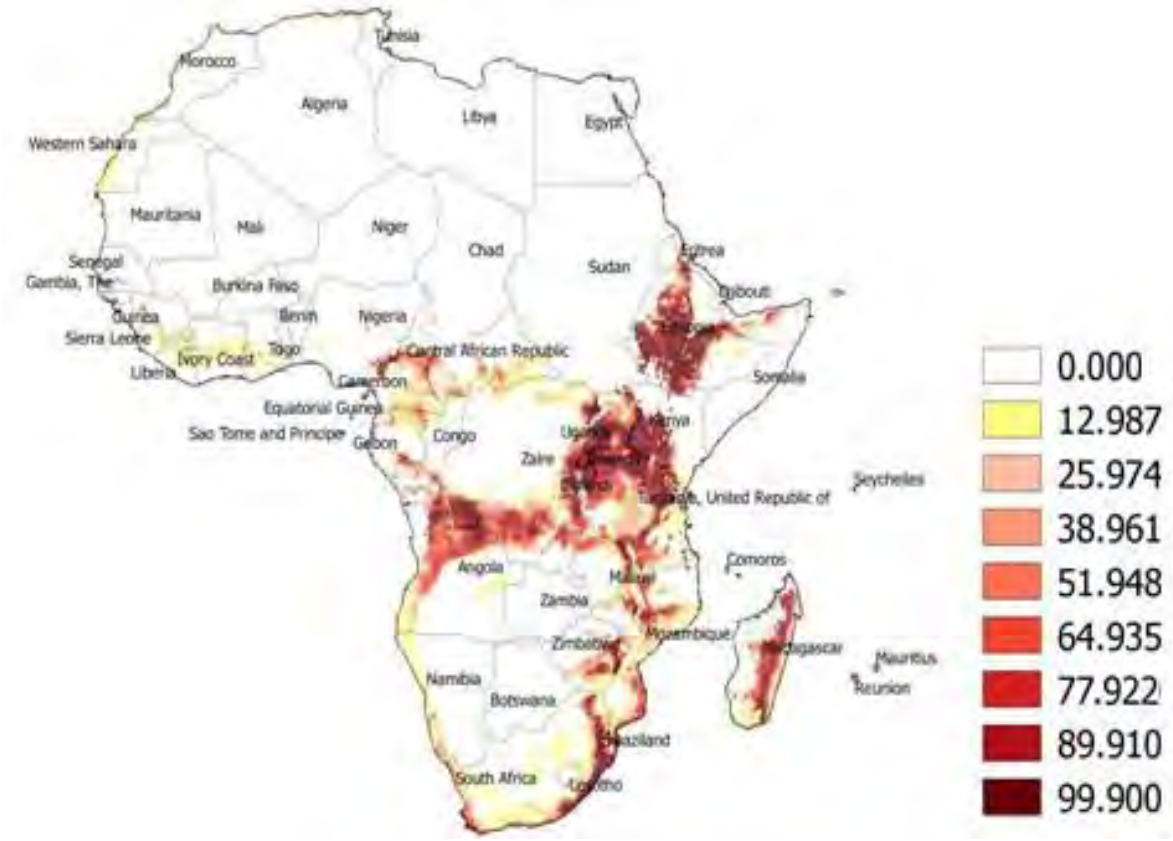
1. Diagnostics and Epidemiology
2. Breeding for MLN Resistance
3. Integrated Management of MLN
4. Phytosanitary Measures and Regulations
5. Seed Production and Delivery
6. Information and Knowledge Management

To enhance screening, in September 2013, CIMMYT and KALRO in collaboration with USAID and USDA's Agricultural Research Service virology experts, built a MLN high-speed screening facility in Naivasha, Kenya to evaluate maize germplasm against the disease under artificial inoculations.[10] To support this effort, the USDA's Foreign Agricultural Service office in Nairobi is providing technical training of four scientists from the region on screening for MLN at Ohio State University under the Borlaug Fellowship Program. The USDA's Foreign Agricultural Service office in Addis Ababa is also proposing a similar intervention for Ethiopia.

To increase the understanding of MLN, collaborative research with USDA's Agricultural Research Service as well as other international organizations like IITA and CIMMYT is being undertaken to understand the biology and epidemiology of MLN in East Africa and to develop disease management strategies, including identification of the vectors, epidemiology and MLN-tolerant maize germplasm. Surveying is taking place to identify the locations MLN is present and help to better understand how it is spread. Dr. Niblett of Venganza has developed RNAi constructs for MCMV resistance and has indicated a willingness to share this information to create transformations.[11] There is a dire need to reduce the time required to bring to the farmers new varieties of maize seed with MLN resistance. Currently it takes over six years, with high costs to bring a new maize variety online in Kenya. This compares to two years in South Africa.

[9] www.cimmyt.org/en
[10] http://www.cimmyt.org/en/
[11] Melanie (Tor) Edwards, BFS/ARP, USAID

Figure 3. Projected Suitability of MCMV and potential risk of MLN across Africa by 2020, using Agro-ecological Niche Modelling*



* Darker colors (higher index) indicates higher suitability and risk for MLN.

Source: USDA GAIN Report 12/11/2014 "Maize Lethal Necrosis–The growing challenge in Eastern Africa" Map from Melanie Edwards, BFS/ARP, USAID

On-farm management practices are being explored and researched to support projects being implemented by donors, including USAID, to promote good agricultural practices like crop rotation, destruction of infected plants, pest and weed control on the farm to help control the vectors that cause MLN and other diseases.

However, there was no reported effort to directly address the legal and regulatory systems in place across the region to identify weaknesses which must be addressed to help identify and control the disease. There is a broad project funded by USAID with COMESA to help harmonize SPS regulations across the COMESA region, but this project has not yet addressed all the necessary plant health regulations within the East African region needed to address this crisis, including standard surveying, diagnostics, quarantine measures, transport of plant materials across boarders for testing, deployment of modern breeding techniques, including the use of biotechnology, etc.

While the national, regional and international response to minimize the devastation of MLN in East Africa is impressive, MLN is an example of a disease that illustrates how having a strong regionally harmonized plant health regulatory system, where each East African nation works collaboratively, would have lessened the severity of MLN's impact. The extent of the distribution of MLN in Kenya, suggests that the disease had been present for some time before it was formally identified. A robust plant health regulatory system that

works collaboratively with other nations, with effective surveillance systems would have identified MLN earlier and implemented a regional crisis management plan. The crisis management plan would have implemented immediate quarantine zones to contain and minimize the disease, shared information across the region and with the IPPC, and helped to rally resources for an immediate response, including research on the disease and methods of control. A robust plant health system would have minimized the damage, economic loss and food security threat that quickly developed as MLN spread unabated. It is important to note that plant health systems are designed to address the normal threats to plant health in the region, in addition to crisis interventions like the one required for d.

RECOMMENDATIONS MAIZE LETHAL NECROSIS

For the long term control of MLN, robust plant health systems must be developed within each nation across the region. This requires a broad array of interventions that build and support the current national systems in place. These interventions begin with additional research on the disease and then further development of the nations' plant health systems including, a review and updating of harmonized regulations, standard surveying systems, quarantine measures, and disease resistance seed.

1. **Research on the epidemiology of MLN**[12]
   a. Characterize the pathogens causing MLN, including the continuation and expansion of the disease surveys on the presence of MCMV, SCMV and other viruses across the region, defining the virus populations and their role on disease development.
   b. Develop a better understanding of the vector and non-vector (insect, seed, soil, etc.) transmission of the viruses causing MLN.
   c. Identify major factors impacting MLN development on the farm. This includes identifying the weed, crop and grass hosts of MCMV, the effects of agronomic practices, changes in farmer practices and pesticide management.

2. **Development of MLN resistant maize** Support ongoing efforts on developing MLN-resistant seed through traditional breeding and transgenic approaches. Support CIMMYT and IITA for traditional breeding and leverage Dr. Niblett at Venganza offering to create the transformations through contracts with a private biotech or seed company or through technical assistance and institutional capacity building of national agricultural research organizations (like the Ugandan National Agricultural Research Organization).

3. **Further development of the local capacity**
   a. Support and develop low-cost diagnostic tools for MLN disease detection, including testing/laboratory facilities.
   b. Develop protocols for testing and treatment to prevent seed transmission, including seed testing (this supports the CIMMYT testing facility and construction of additional facilities), compare commercial farms with smallholders to see the impact of IPM treatments and the economic (regulatory) threshold for seed transmission.
   c. Train local researchers, extension agents and the private sector (including seed companies and farmers).
   d. Promote best agronomic and management practices to mitigate the destructive effects of MLN.

[12] Input from Peg Redinbaugh USDA/ARS

4. **Strengthen SPS technical capacity and systems**
   a. Train local staff and develop effective systems on survey/detection, screening, risk analysis, diagnostics and control/quarantine measures.
   b. Train on integrated pest and disease control and best practices to control the vectors and to decrease MLN on the farm and to improve the maize plant health.
   c. Develop reporting systems that conform to international standards.
   d. Develop inspection, quarantine and disposal systems to safeguard trade of agricultural commodities.
   e. Ensure technical officers are capable of conducting risk assessments, and are able to submit required documents for the exportation/importation of agricultural commodities.

5. **Assist in the review, revision and implementation of national plant health laws, regulations and standards that are based on science, consistent with international standards (WTO and IPPC) and harmonized across the region.** This work should be conducted in collaboration with COMESA's SPS project on regulation and standards harmonization to facilitate maize seed and grain trade, and include:
   - The registration process for new maize varieties through traditional breeding and transgenic approaches.
   - The modification of relevant biotechnology laws and regulations.
   - Testing and surveillance protocols, quarantine measures and the trade of seed and grain across borders.
   - Certification of seed.
   - Inspection, quarantine, and disposal systems to minimize the spread of MLN and to safeguard the trade of maize.

6. **Support local efforts with funding and technical guidance such as ASARECA on developing an integrated regional strategy and addressing and coordinating MLN efforts.**

Table 3. Action Items in Years 1 and 2 for MLN

Year	Activity
2015	• Begin research on the epidemiology of MLN. • Continue support for the development of MLN resistant maize. • Continue the development of local capacity on diagnostic tools. • Begin a project to develop protocols for testing and treatment to prevent seed transmission. • Provide support to the CIMMYT screening and testing facility and construction of additional facilities. • Begin the training of local researchers, extension agents and the private sector (including seed companies and farmers). • Start a program to promote on-farm practices to mitigate the destructive effects of MLN. • Begin a program to strengthen SPS technical capacity and systems a. Training local staff and develop effective systems on survey/detection, screening, risk analysis, diagnostics and control/quarantine measures. b. Training on integrated pest and disease control and best practices to control the vectors and to decrease MLN on the farm and to improve the maize plant health. c. Begin to develop inspection, quarantine and disposal systems to safeguard trade of agricultural commodities

	• In coordination with COMESA, begin the review, revision and implementation of national plant health laws, regulations and standards that are based on science, consistent with international standards (WTO and IPPC) and harmonized across the region. a. Start with the registration process for new maize varieties through traditional breeding and transgenic approaches. b. Where appropriate, review and assist in the modification of relevant biotechnology laws and regulations. c. Begin work on the testing and surveillance protocols, quarantine measures and the trade of seed and grain across borders. d. Review the laws and regulations on inspection, quarantine, and disposal systems to minimize the spread of MLN and to safeguard the trade of maize. • Begin to support local efforts with funding and technical guidance such as ASARECA on developing an integrated regional strategy and addressing and coordinating MLN efforts.
2016	• Continue supporting research on the epidemiology of MLN. Initial results should be forthcoming. • Continue support for the development of MLN-resistant maize. • Continue the development of local capacity on diagnostic tools. The first cadre of local researchers and extension agents should be fully trained. The first series of training activities should be completed on agronomic and management practices. • Continue the project to develop protocols for testing and treatment to prevent seed transmission. • Continue support to the CIMMYT screening and testing facility. Construction of smaller facilities in strategic location should be completed. • Train the first cadre of local researchers, extension agents and the private sector. Begin a second series of training activities with a new group. • Fully train the first cadre of students on the on-farm practices to mitigate the destructive effects of MLN. Begin training with a second set of students. • Complete the first training on SPS technical capacity. • Continue the program to strengthen SPS technical capacity and systems for local staff on survey/detection, screening, risk analysis, diagnostics and control/quarantine measures and on integrated pest and disease control and best practices to control the vectors and to decrease MLN on the farm and to improve the maize plant health. • Continue to develop inspection, quarantine and disposal systems to safeguard trade of agricultural commodities. Initial outcomes should be seen in 2016. • Complete the review of national plant health laws, regulations and standards. Continue to support the revision and implementation of national plant health laws, regulations and standards that are based on science, consistent with international standards (WTO and IPPC) and harmonized across the region. a. Continue working on the registration process for new maize varieties through traditional breeding and transgenic approaches. b. Where appropriate, continue to review and assist in the modification of relevant biotechnology laws and regulations. c. Continue work on the testing and surveillance protocols, quarantine measures and the trade of seed and grain across borders. d. The review of the laws and regulations on inspection, quarantine, and disposal systems to minimize the spread of MLN and to safeguard the trade of maize should be completed. Continue efforts to revise and implement the laws and regulations. • Begin to support local efforts with funding and technical guidance such as ASARECA on developing an integrated regional strategy and addressing and coordinating MLN efforts

F. LIVESTOCK FINDINGS

Figure 4. Extract from the Agriculture Value Chains targeted for East and Southern Africa by FTF.

East and Southern Africa

X = Priority
● = Secondary

Commodities/Value Chains & Geographic Focus

		Kenya	Uganda	Tanzania	Rwanda	Ethiopia[1]	Malawi	Zambia	Mozam-bique	East Africa
Geographic Focus		High-rainfall, arid & semi-arid areas	Northern & South-west regions, central "Maize Belt"	Zanzibar, Morogoro, Dodoma, Manyara, & central, northern & southern highland regions	All Provinces	Amhara; Oromia; Southern Nations, Nationalities, & People's Region; Tigray & Somali	Seven Districts in Central & Southern Regions	Eastern Province & selected peri-urban districts near Lusaka	Nampula, Zambezia & Manica provinces; Beira & Nacala trade corridors	
Staples	Rice			X						
	Maize	X	X	X	X	X		X		X
	Beans & Legumes[2]	X	X		X	X	X	X	X	X
	Wheat					X				
High-Value Crops	Horticulture	X		X				X	X	X
	Coffee		X		●	●				
	Other[3]				●	●			X	
Animals	Dairy	X			X	X	X			
	Livestock					X				X

1. Ethiopia is focusing on aggregation, marketing and processing of these agriculture commodities.
2. Legumes: Malawi- groundnuts, soy; Zambia- groundnut, soy, sunflower; Ethiopia- chickpeas; Mozambique- sesame, soy, groundnut.
3. Other high-value crops: Rwanda- avocado and pyrethrum; Ethiopia- honey; Mozambique- cashews.

Feed the Future targets 19 developing countries of which five are located in East Africa including Ethiopia, Kenya Rwanda, Tanzania and Uganda. The USAID Regional Mission for East Africa FTF Strategy targeted maize and livestock. All five bilateral missions also targeted maize in their country FTF strategies. Only

Ethiopia targeted livestock in its FTF strategy. Kenya and Rwanda targeted the dairy value chain. Neither Tanzania nor Uganda included any livestock or dairy projects in their strategies.

The livestock and the maize value chains are two key agricultural sectors contributing to food security in East Africa. Maize is a stable food for many people in the region, particularly in Tanzania, Kenya, Uganda and southern Ethiopia. Maize is also a valuable feed concentrates critical to fattening beef cattle in feedlot finishing facilities and for dairy cattle, poultry and swine as valuable sources of energy and protein. The region toils to produce enough maize to feed its people, and thus there is little maize available for livestock feed. Quality animal feed is in critical short supply in East Africa. It is desperately needed to boost both beef cattle finishing and dairy production as well as for poultry and swine.

Despite its crucial role in Africa's economy and livelihoods, the livestock sector has remained under-developed. Historically many agricultural policies in East African focus on the crop sector. The livestock's low profile in national planning that Poverty Reduction Strategy Papers (PRSPs) and CAADP plans contain only general points relevant to the livestock sector demonstrate once again that livestock and the demand by people of the region for support and for access to these products is not being adequately addressed by present policies. Government policies for the agriculture sector for many years have been targeting food security through increasing cereal crop production, and have incorporated livestock primarily in terms of its contribution to crop production.

The East African livestock value chain is faced with a number of constraints with the biggest being the huge burden of animal diseases (SPS). In order to ameliorate this problem, national veterinary services in Africa need to be empowered to play a far more prominent role in preventing and controlling emerging and re-emerging diseases that affect the public good and are barriers to food security and to domestic and international trade. Veterinary service by both the public and private sector veterinarian guidance for producers and suggested interventions can enhance animal production by reducing losses and poor weight gains caused by animal diseases. Veterinary public health is a key to safeguarding public health by tracking animal diseases transmissible to humans and protecting consumers from food-related health risks, and through improving access to markets.

The cross-border livestock trade operation in the Horn of Africa is one of the largest live animal export movements in the world, and cross-border livestock trading through the Somali regional state of Ethiopia is the oldest and the most vibrant. The Somali region of Ethiopia has the longest national border with neighboring countries—Somaliland, Somalia, Djibouti and Kenya. The cross-border movement of traded livestock and other commodities along this national border has long thrived despite political, inter-country and inter-community rivalry, armed conflicts, regional insecurity, border closures, livestock export trade bans, and other restrictive government interferences. Several reports indicate that live animal exports from Berbera and Bosaso to the Middle East have often reached a peak of 3 to 3.5 million heads per year (e.g., FEWSNET, 2010; COMESA, 2009). The observed recorded normal trend is that these numbers fluctuate between 2 to 3.5 million heads per annum. An estimated average of some 65 percent of this volume is considered to have originated from Ethiopia. The cross-border livestock marketing chains and trade routes that feed into the Berbera and Bossaso corridor involve a long distance operation of a large number of different types of actors such as herders, traders, brokers, financiers and a variety of numerous actors in the physical market place. As the marketed animals move through the value chain across vast areas to reach their destinations, they are bought and sold through both the formal and informal systems.

The Somali regional state, east and west Hararghe zones of Oromia regional state, Harari regional state, and Borana zone in Oromia region (Desta et al. 2011), are the major sources of informal cross-border live animal

outflows from Ethiopia, through the Barbara and Bossaso Corridors. Cattle may be brought all the way from Jimma and Bale zones to be traded to Somaliland (through Togowuchale and other outlets); and to Puntland (through Werder).

Clan-based trading networks are defined within the broad indigenous institutional framework that governs the conduct of operations of the entire supply chain. Business trust and smooth operations of the informal cross-border pastoral trading system are highly dependent on the clan-based networks, not only in the Horn of Africa, but also in countries such as Yemen. These networks ensure security of individual operators in this significantly complex and uncertain environment characterized by risks of failure to pay, violent attacks and livestock confiscation.

Cross-border livestock trade is a critical source of livelihood to millions of inhabitants in the Somali regional state including herders, traders, middlemen, and other market actors. The trading system is an important driver of rural community income growth and employment. Its contribution can be seen in terms of direct job creation in the livestock marketing channel and in the form of indirect multiplier effects of linkages with other income generating activities such as merchandize trade, foods and drinks selling, transportation, hay making and animal pen rentals. In addition to direct impact on livelihoods of livestock producers, this vibrant cross-border livestock trading system is significantly interconnected with other commercial activities in the region. This makes this livestock trade one of the drivers of regional economic diversification, saving and capital accumulation, even with potentially significant long-term contribution to the national economy.

The regional food security and local investment contributions of cross-border trading activities are not in fundamental conflict with national economic development objectives, though this latter is often narrowly stressed by authorities in terms of potential loss of foreign exchange and government revenues. The direct regional food security contributions of the informal cross-border livestock trading system are obtained through higher income to livestock producers generated by comparatively favorable livestock price offers, the system's key role of financing cheaper food imports, and incomes generated from a wide area of marketing activities that can be used by participants for direct food purchases.

The gross value-added in the informal cross-border livestock trading activities on the Berbera and Bosasso marketing corridors in Somali region is estimated to be as high as $144 million, which was about 4 percent of the formal national trade sector GDP for Ethiopia in 2011. Cattle and camel trade has increased substantially in recent years. In Berbera corridor alone, the volume and value of bulls traded through this system via the Togowuchale exit post increased by 410 and 650 percent respectively in 2010/11 as compared to 2008/09. The number of camels traded through the same exit post increased from 130 with a value of $43,623 in 2008/09 to 13,472 with a value of $5,604,352 in 2010/11.

These official figures for trade in fact constitute a small proportion of the total livestock moved across the border in Somali region. The large majority of the livestock that are supplied from the region to the Berbera corridor, and all livestock that exit the country through Geladin, Boh and other border towns to supply the Bossaso corridor, are traded informally and unofficially. According to the estimates of key informants who have been involved in cross-border livestock trade business for many years and key regional officials, 70 percent of cattle, 30 percent of camels and 99 percent of sheep and goats that cross the border are traded informally and unofficially, outside the official government channels.

Animal health issues are central to the cross-border livestock trading system. Periodic trade bans on livestock from the Horn of Africa have always remained a serious impediment to livelihood security in peripheral areas in the region. These bans have usually been put in place due to suspicion of some transboundry disease that

the importing country wishes to avoid. An immediate and significant effect of a ban on livestock trade is felt through a general decrease in livestock prices with a consequent negative effect on pastoralist purchasing power. This underscores the crucial importance of regional cooperation in animal disease control, livestock information management, and harmonization of livestock health and trade standards in the Horn of Africa. Robust SPS programs that have good surveillance and reporting systems will provide trading partners reassurance that there is a disease early warning system in place.

It is therefore very crucial for the government to formulate appropriate strategies that would suitably maximize the benefits of the system, minimize the losses, and thereby result in a win-win situation for all actors in the value chain, and to the growth of the household, local, regional and national economies.

It is important to harmonize cross-border livestock trade activities and animal health operations. There is a need for quick moves by the Ethiopian government to initiate dialogue with bordering countries in order to forge bilateral trade agreements which help to promote the harmonization of trading conditions for the common benefit. It is also critically important to harmonize animal health interventions to minimize transboundry diseases that affect sales at the terminal markets in the Gulf Countries.

There is an overriding need to develop a system for data collection on cross-border livestock trade so as to enable evidence-based policy dialogue. Policy should enhance increased investment by the regional government in pastoral livestock production, and productivity to ensure sustained supply of good quality livestock to the growing cross-border market without depleting the livestock resource base. Investments in value additions such as animal health interventions and supplemental feed, as well as livestock product processing facilities, could provide additional marketing outlets to pastoralist herders.

Livestock production employs close to 50 percent of Kenya's agricultural labor force. Livestock raising is the primary source of livelihoods for 6 million pastoralists and agro-pastoralists that live in arid and semi-arid parts of Kenya. Approximately 80 to 90 percent of the red meat consumed in Kenya comes from livestock that are raised by pastoralists (ACDI/VOCA 2012 Kenya End Market Analysis of Livestock). Only two percent of livestock are raised on ranches, and the remaining small percentage comes from smallholders in the highlands, where dairy production is centered. Of the total red meat supply in Kenya, it is estimated that 20-25 percent comes from livestock that originated in the neighboring countries of Ethiopia, Somalia, Tanzania and Uganda. It is important to note that Kenya is a meat deficit country. Kenya also imports small volumes of specialty meats from European countries, Brazil and the United Arab Emirates (UAE), but these are destined to high-end hotels and supermarkets in Nairobi.

The livestock value chain in Kenya is primarily geared toward its own domestic market, which consumes approximately 99 percent of domestically produced meat. Kenya has experienced an important rise in meat exports since 2005, with volumes increasing by a factor of 11 over the five-year period between 2005 and 2010. The 2009-2010 period saw the most dramatic increase, with a doubling of volumes, although the export volumes (2,500 MT in 2010) still was relatively small, accounting for only one percent of Kenya's total meat production.

The re-opening of the Kenya Meat Commission (KMC) abattoirs as an export-licensed facility for use by private exporters and private abattoirs such as Choice Meats and Farmers Choice have exported small volumes of chilled sheep and goats and cattle carcasses and processed pork products to the Gulf countries and neighboring East African countries. Farmers Choice has developed a wide selection of pork products including bacon and several types of sausages, which are traded all over East Africa, as far as West Africa and in UAE via Dubai.

Figure 5. Kenya Pork Products in a Local Nairobi Supermarket

Tanzania and the UAE are Kenya's most consistent markets for meat exports in recent years. In 2010, several new markets were opened or expanded in Somalia, Egypt the Gulf States (Qatar, Oman, Kuwait). In 2010, Middle Eastern countries (including Egypt) surpassed neighboring African countries as the largest importers of Kenyan meat.

Kenya is very minor exporter of live animals, with the number of head exported never exceeding 7,500 in a given year. A few individual ranchers export small volumes of live animals to Mauritius (cattle), Burundi (mainly goats), and Uganda. Drought conditions in Kenya, several years in a row, have disrupted the livestock supply chain resulting in Kenya not being able to deliver promised numbers of live animals to Mauritius.

Thus, for a country such as Kenya, where 99 percent of the livestock products are consumed in country, the primary focus must be on improving SPS measures that support production practices that incorporate significant animal health interventions to enable the livestock value chain to grow. Kenya livestock production is historically affected by several livestock diseases that lead to high death losses in young stock, preventing their entrance into the livestock value chain. Tick-borne diseases and trypanosomiasis have been problems in pastoralist areas, but more devastating to European breeds of cattle.

Dairy production in many parts of Kenya is hindered by East Coast Fever, an important tick-borne disease which also affects other EAC countries. This was the historical reason for the dairy industry to be centered in the highlands where risk of East Coast Fever was less significant due to fewer ticks. Despite both these disease issues, Kenya has developed a successful dairy industry (see figure 6). These diseases do take their toll on production and require strategic and costly interventions. More emphasis on projects focusing on disease prevention and control would provide opportunities to increase livestock survival, productivity and entry to the marketing chain.

Figure 6. Success of Kenya Dairy Industry as seen in a Local Supermarket in Nairobi

Ethiopia's agriculture accounts for 46.3 percent of the nation's GDP, 83.9 percent of exports, and 80 percent of the labor force. Ethiopia reportedly has the largest numbers of ruminants of any country on the African continent with some 49 million cattle, 25 million sheep and 27 million goats. Although the majority of Ethiopia's livestock is found in the highlands, 95 percent of the livestock supplied for export is supplied by the pastoral and agro-pastoral areas of Afar, Somali and Borena.

Ethiopia is a land-locked country and exports live animals to the Gulf countries and Egypt through Djibouti and several Somaliland ports. Export protocols and the desire of Ethiopia to certify their own animals from export in Ethiopian quarantines followed by trucking animals to the ports to be put on ships is contentious and requires continual negotiation with importing countries. In the past, the Ethiopian government export protocols were very cumbersome and required many steps, which discouraged producers and traders using the formal export channel. Consequently, much of the trade from the arid and semi-arid areas has traditionally gone out through Somaliland as informal trade. These animals lose Ethiopian identity and are counted as being of Somaliland origin when they are exported. This accounts for why the export numbers of Somaliland origin sheep, goats and camels is so high. The Ethiopian government strategy for the livestock sector is partially based on a desire to gain more foreign exchange through livestock international trade. The State Ministry of Livestock of the Ministry of Agriculture is finalizing a livestock sector strategic plan for Ethiopia. Drafts of the plan are available. Development of this plan has included a wide range of stakeholders and was facilitated by ILRI. The Ministry of Agriculture has also developed an excellent animal health strategy. The animal health strategy was based on the SPS gaps spelled out in the OIE PVS and Gap Analysis performed for Ethiopia. Partnering with veterinary services to implement priority animal health needs could provide USAID an opportunity to focus a project on assisting Ethiopia with the gaps in their SPS programs for livestock. Such a project would promote better livestock production, decrease death loss in the first year of life of livestock, and provide a healthier and safer food supply. There are a number of livestock projects funded by donors in Ethiopia discussed later in this report. Some effort of the donor community to coordinate funding input to animal health infrastructure could help reduce redundancy in projects and help ensure all gaps are being filled. Dairy and meat products are not yet well developed in Ethiopia. Supermarkets have limited choices of local dairy products (see figure 7), and meat products are usually bought from the

open street butchery shops. Local dairy products observed in the supermarkets were not well packaged or labeled. There are many opportunities for growth of the dairy industry as well as the livestock value chain through strengthening of SPS interventions.

Figure 7. Ethiopian Locally Produced Cheese and Yogurt available in a Supermarket

Tanzania has large numbers of cattle raised in pastoralist areas. There are a few ranching operations. Some cattle are trekked to Nairobi for slaughter. Tanzania has a growing dairy industry, which is emerging in Zanzibar with the eradication of tsetse flies on the island. Tanzania has a separate Ministry of Agriculture and Ministry of Livestock and Fisheries Development. Unfortunately, the Tanzanian CAADP Plan did a poor job outlining goals for the livestock sector. Tanzania Ministry of Livestock and Fisheries developed a livestock strategy document in 2010 which clearly reflected the Ministry's resentment in being minimized in the Tanzania CAADP plan. The OIE has done a PVS report as well as a gap analysis report for Tanzania. Gaps in SPS are clearly outlined in these reports and provide strategic opportunities for donor agencies and philanthropic organizations to invest in the livestock value chain in which many of the poorest people in Tanzania make their livelihood. Livestock production and dairy could be a very important area of growth for Tanzania. SPS interventions are needed to assist the livestock value chain to grow. USAID did not include livestock or dairy as part of its FTF strategy.

Uganda has a CAADP plan and OIE has conducted a PVS and a gap analysis for SPS issues that both hinder domestic and regional livestock trade. Some Uganda livestock are traded informally with Kenya and Sudan.

Rwanda strives to promote growth in their dairy industry, and dairy was included in the USAID FTF program. Land O' Lakes is working in Rwanda to support small producers gain access to dairy cattle and providing animal husbandry and basic animal health extension. Women also are keepers of small ruminants, swine and poultry in Rwanda. Supporting animal health inputs to these value chains could provide women with access to better sources of protein to feed their families and household income to help educate their families.

THE AFRICAN UNION INTER AFRICAN BUREAU FOR ANIMAL RESOURCES

AU-IBAR provides leadership in the development of animal resources for Africa. AU-IBAR was founded in 1951 to study the epidemiological situation and fight rinderpest in Africa, and today its mandate covers all

aspects of animal resources, including livestock, fisheries and wildlife, across the entire African continent. At the same time AU-IBAR fills a unique and strategic niche by working at the continental and regional levels, with the RECs being key partners. Despite its crucial role in Africa's economy and livelihoods services, the livestock sector has remained under-developed because of a number of constraints, the main one being the huge burden of animal diseases. In order to alleviate this problem, national veterinary services in Africa should play a prominent role in preventing and controlling emerging and re-emerging diseases. Their role should even go beyond the enhancement of animal production by reducing losses caused by animal diseases. They should also aim at safeguarding public health by tracking animal diseases transmissible to humans and protecting consumers from food-related health risks, and improving access to markets. AU member states, however, cannot fulfil all these without adequate policies and legislation related to the establishment of efficient and affordable veterinary services. Where livestock policies have been formulated, they tend to be based on insufficient information and analysis, and are generally formulated without participation from key stakeholders, most notably the poor and the private sector.

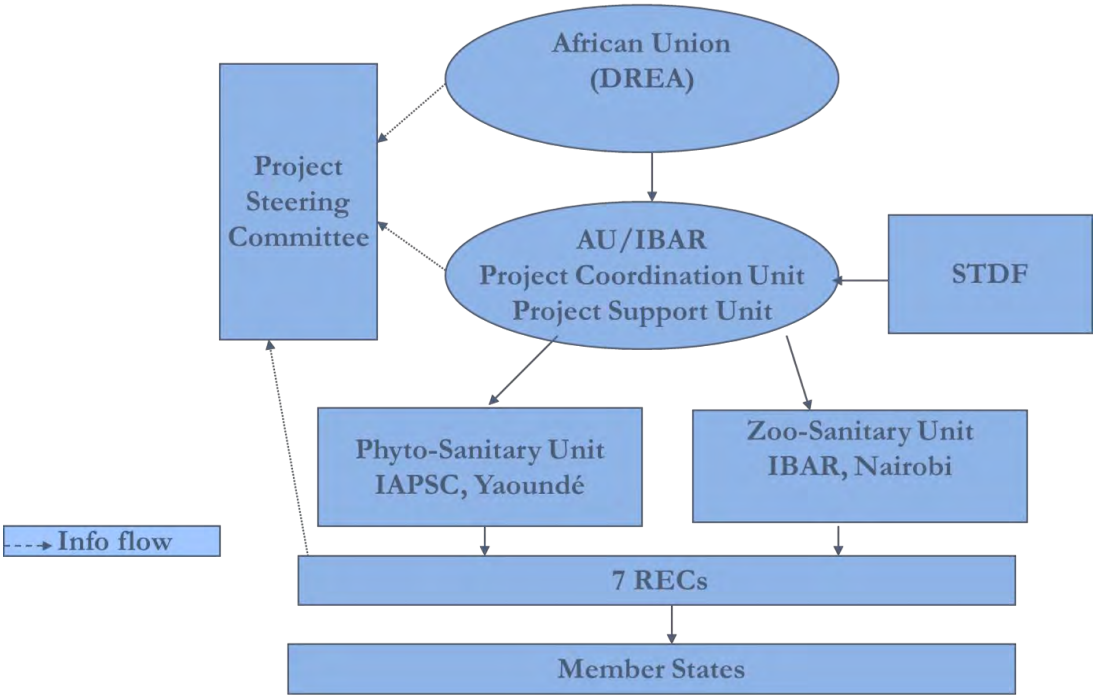
At this time of globalization, agricultural/livestock policies need to embrace major concerns of the global community, such as food safety and the transmission of diseases from animals to humans (zoonoses). Globally, animal health systems are becoming increasingly a "global public good." Failure of one country to prevent and control zoonoses or animal diseases may endanger others. To address this concern, the global community is pursuing the "One Health" approach. The approach envisions a global partnership aimed at minimizing the impact of epidemics and pandemics caused by highly infectious diseases of humans and animals, thereby improving public health, animal health, food safety, food security, livelihoods and the environment.

An important area of focus is the development and promotion of common African positions within the global animal resources arena. Meanwhile, animal resources-based trade within Africa is facilitated through harmonization of policies and regulation between AU member states.

Being a specialized technical office of the African Union Commission, AU-IBAR enjoys unique convening power, and is a critical instrument for advocacy; it is able to bring together animal resources policies and decision-makers from the AU member states, including at ministerial level or higher. This means it is very well placed to translate technical recommendations into national, regional and continent-wide policies and practices, and to achieve real impact on the lives and livelihoods of those who depend on Africa's animal resources. By providing a pool of expertise that can be accessed by the RECs and AU member states, AU-IBAR strives to avoid duplication of effort and ensure more effective resource utilization. AU-IBAR has done a very good job coordinating with ISSBs such as OIE, and Codex as well as United Nations Agencies such as FAO and WHO as well as the RECs.

The AU-IBAR developed a strategic plan for 2014- 2017 that focuses on good governance, SPS and harmonizing standards for surveillance and control of transboundry diseases that are barriers to livestock production and trade.

Figure 8. Project Organizational Structure



CURRENT AU-IBAR PROGRAMS AND PROJECTS RELEVANT TO THIS STUDY

1. Standards, Methods and Procedures in Animal Health (SMP-AH) [2012-2016]
2. Surveillance of Trade Sensitive Diseases (STSD) [2013-2016]
3. Participation of African Nations in Sanitary and Phytosanitary Standard-Setting Organisations (PAN-SPSO) [2008-2015]
4. Reinforcing of Veterinary Governance in Africa (VET-GOV) [2012-2016]
5. Integrated Regional Coordination Mechanism for the control of Transboundary Animal Diseases (TADs) and Zoonoses in Africa (IRCM) [2011-2014]

Note that all of these projects are supported with funding by the European Union with the exception of the SMP-AH which is a USAID-funded project. The EU has for many years been a strong supporter of AU-IBAR animal programs. The EU provided strong support for the PARC and PACE campaigns that led to the global eradication of rinderpest in Africa and the world. Although AU-IBAR and partners have made efforts to minimize duplication of efforts in projects, there are some overlapping goals. Some projects such as SMP-AH have had modest funding, yet have proven to be highly successful. Part of this has been through the USAID management of this project and the consultants both USDA and USAID have provided to give guidance to AU-IBAR to develop this project.

1. STANDARDS, METHODS AND PROCEDURES IN ANIMAL HEALTH (SMP-AH) [2012-2016]

The Standard Methods and Procedures in Animal Health (SMP-AH) is a four-year project (March 2012 to September 2016) being implemented by AU-IBAR in partnership with IGAD Centre for Pastoral Areas and Livestock Development (ICPALD/IGAD) and nine countries in the Greater Horn of Africa, namely, Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Tanzania and Uganda. The project is supported by USAID/East Africa Mission, under the FTF framework with a budget of US $7,750,000. The following partners are also engaged in project implementation: USDA, ILRI, OIE, and FAO.

The goal of the program is to contribute to the reduction of poverty, and enhance regional economic growth and integration through improved access of live animals and animal products to regional and international markets.

The project aims to support harmonization and coordination of animal health policies and regulations related to surveillance, prevention and control of high-priority trade-related TADs in the region in order to promote movement of livestock across national boundaries, without posing health risks to both human and livestock, and hence promote regional and international trade in livestock and livestock products.

Expected results:

- Framework for surveillance and control of trade-related TADs established.
- Laboratory testing procedures for the priority diseases harmonized in the region.
- Standards for regional quarantine stations enhanced.
- Technical and coordination capacity of participating countries and IGAD enhanced.

Background:

The objective of this project is to increase overall knowledge of the disease situation in the field to inform decision-makers on the development of harmonized policies for surveillance and response mechanisms. Increased surveillance and response capabilities will directly strengthen the national and regional animal health systems—which in turn impact food security, marketability of livestock, and economic health for both families and nations.

Since the introduction of the SMP-AH in 2012, activities that have occurred include: an inception workshop, risk analysis workshop, Chief Veterinary Officer U.S. study tour, and veterinary continuing education courses in epidemiology, surveillance and laboratory diagnostics, in addition to the technical working group meetings.

Technical working groups were created comprising of technical experts on laboratories, surveillance and epidemiology, disease control, quarantines, writing of standard methods and procedures, and assessment and confirmation were established to develop SMPs for nine priority diseases. These priority diseases are as follows:

1. Brucellosis in Sheep and Goats - Brucella melitensis
2. Rift Valley Fever
3. Foot and Mouth disease
4. Peste des Petites Ruminants
5. Lumpy Skin Disease
6. Sheep and Goat Pox
7. Camel Pox
8. Contagious Bovine Pleuropneumonia
9. Contagious Caprine Pleuropneumonia

As a result of the activities and technical working groups, nine SMP policy documents were analyzed and drafted. Five of the SMP policy documents are ready for final draft and final validations. These diseases are: Rift Valley fever, Brucellosis, foot and mouth disease, and peste des petits ruminants. It is expected that within the next year, the remaining four SMP policy documents will be ready for the final draft and final validation stage. Further the five completed SMP guidance documents are expected to be presented for adoption within the next six months.

2. SURVEILLANCE OF TRADE SENSITIVE DISEASES (STSD) [2013-2016]

The project supported by IGAD and the AU-IBAR is aimed to improve animal disease surveillance and livestock identification and traceability system and is being implemented for three years in the eight member states of the IGAD region. Joint steering committee meetings are held with the SMP-AH project outlined above. The two programs are both modestly funded and are working together to deliver a well-coordinated approach for the IGAD countries. The project is financed by the European Union within the framework of the Regional Indicative program of the 10th European Funds for Development and of the initiative Supporting the Horn of Africa's Resilience (SHARE), and has been endowed with 6 million Euros. The IRCM seeks to support capacity building and facilitate entrenchment of the coordination of TADs and zoonoses prevention and control within the institutional structures and processes of the RECs and their member states. This has the dual impact of ensuring the diseases remain in the limelight of REC political and technical leadership, and are accorded requisite priority as well as resources for action. It is conceived as a mechanism that aims to bring relevant actors together in a coordinated manner and to address capacity gaps to support relevant components and structures within animal and human health systems, as well as cross-cutting programs.

3. PARTICIPATION OF AFRICAN NATIONS IN SANITARY AND PHYTOSANITARY STANDARD-SETTING ORGANISATIONS (PAN-SPSO) [2008-2015]

PAN-SPSO, financed by the European Commission, and implemented by AU-IBAR in collaboration with the African Union Inter-African Phytosanitary Council and seven RECs in Africa, seeks to facilitate effective involvement of African countries in the activities of the OIE, IPPC, Codex and the WTO-SPS Committee. The STDF, which receives US support, participates in the PAN-SPSO as a technical and strategic partner.

The STDF has assisted AU-IBAR in the implementation of the following activities:

- Organization of SPS seminars (train-the-trainers approach)
- Seminars for relevant officials from the RECs and other selected African SPS experts were organized in Nairobi (13-16 July 2009) and Bamako (20-23 July 2009). Trainers from the WTO, STDF, Codex, OIE and IPPC Secretariats shared their knowledge and guidance to enable the participants to deliver SPS-related training after the event.
- Complete training packages (English, French) were developed and distributed including material from the WTO, STDF, OIE, IPPC and Codex Secretariats.
- Scoping study and analysis of existing SPS regional/national coordination mechanisms
- In 2011, the STDF published a study on "National SPS Coordination Mechanisms: An African Perspective," complementing the 2010 study on "Regional SPS Frameworks and Strategies in Africa." These publications present and analyze the terms of reference, mandate and membership of existing coordination mechanisms and provide suggestions and guidance on the feasibility and modalities to further establish such mechanisms in Africa—both at the regional and national level.
- Support to the RECs to obtain observer status in meetings of the WTO SPS Committee, Codex, OIE and IPPC

RECs: Community of Sahel-Saharan States; Common Market for Eastern and Southern Africa; East African Community; Economic Community of West African States; Economic Community of Central African States; Inter-Governmental Authority on Development; Southern Africa Development Community

Participation of African nations in the standard setting process in usually weak due of insufficient capacities and lack of coordinated and harmonized standards. International standards are therefore mainly set by developed countries and often form serious barriers to trade for African countries. The OIE is recognized by

the WTO as the international standards setting body for animal health. The objective of many of the priority PAN SPS workshops are build consensus for African delegates prior to the OIE general session. Based on a scientific approach and considering the complexities of Africa, this consensus will ensure that Africa speaks with one voice.

Expected results:

- African SPS entities for effective participation in SPS standard stetting activities empowered.
- Common positions on SPS standards at continental and regional levels reached by African nations.
- Scientific capacity of African institutions to provide adequate input into standard-setting activity established.
- SPS-related data and information acquired and disseminated to African institutions via a newly established, publicly accessible information sharing platform.

Main achievements:

- Sensitization of national authorities on SPS matters.
- 3 RECs strengthened in coordinating SPS activities.
- Common positions on animal health, plant health and food safety reached.
- Signature of MoU and contract agreement with 7 RECs.
- Development of science-based arguments on standards in net progress.
- Increased number of RECs with observer status at ISSOs and WTO-SPS committee.
- 40 SPS experts and 53 national SPS trainers trained

4. REINFORCING OF VETERINARY GOVERNANCE IN AFRICA (VET-GOV) [2012-2016]

The program contributes to the overall strategic objective of AU-IBAR, which is "to improve the contribution of livestock to food security and safety, economic growth and wealth creation in Africa." In support of this objective, the VET-GOV program is poised to improve the institutional environment at national and regional levels to provide effective and efficient animal health services in Africa. The strategic focus is on strengthening veterinary services towards (i) the establishment of adequate and affordable veterinary services on the national level; (ii) strengthen regional institutions to play their coordinating, harmonizing, supporting and integration roles between their MS in line with the One Health concept. This will be done through two intertwined interventions: evidence-based advocacy, and capacity building programs for policy formulation and implementation.

Expected results:

- Result 1: Knowledge and awareness for institutional strengthening enhanced.
- Result 2: Institutional capacity for livestock policy formulation, animal health strategies and legislation enhanced.
- Result 3: Institutional capacity for the implementation of policies strengthened.

In this regard, SMP-AH, PAN-SPSO, IRCM and the Animal Resources Information System II (ARIS II) program, as well as the ALive Partnership are directly supported by the VET-GOV program.

Regional Economic Communities: The program strengthens the capacity of RECs to fulfil their mandates to (i) coordinate and harmonize the activities of member states, (ii) provide technical assistance to member states and (iii) facilitate regional integration. In this regard, the VET-GOV program assigned regional coordinators in each REC and aligned its activities through the RECs.

Animal health networks (e.g., laboratory, epidemio-surveillance, communication, socio-economics of TADs, etc.) that play a key role in the harmonization of national approaches and regional integration; and (ii) widely mobilizes expertise in relation to livestock policy analysis.

World Organisation for Animal Health: OIE is responsible for implementing activities related to (i) enhancing capacity of countries to assess compliance with OIE standards, (ii) building capacities in veterinary legislation and (iii) ensuring interoperability between the AU-IBAR ARIS and the OIE World Animal Health Information System.

Non-State Actors: Empowering non-state actors, i.e., the civil-society organizations and the private sector, in policy formulation and implementation, as well as in advocacy and communication has been considered as a compulsory element for achieving improved governance in the livestock sector. Acknowledging this, the VET-GOV program builds the capacities of non-state actors, particularly farmers associations and organizations to enable them play their role of convincing governments for institutional strengthening of veterinary services.

Overall Objective/Goal: Provide an objective and progressive approach to coordination and capacity development for the effective management of TADs and zoonoses, including emerging/re-emerging diseases in Africa.

Purpose: Strengthen the capacity of RECs and their member states to effectively coordinate, harmonize and execute interventions in the prevention and control of TADs and zoonoses, including of emerging and re-emerging diseases with the participation of all stakeholders.

Specific objectives:

- Provide an objective medium- and long-term approach for strengthening the coordination of TADs and zoonoses prevention and control among RECs and AU member states.
- Provide mutually acceptable approach to inter-country interactions (communication, joint action, resource sharing, incident command structure etc.) in regard to TADs and zoonoses.
- Serve as the entry point for investment and capacity building for the progressive control and eradication of priority TADs and zoonoses in Africa.
- Provide a strategic framework for the institutionalization of TADs and zoonoses prevention and control in line with the economic and political integration agenda of the AU.
- Provide a platform for the operationalization of the one health strategic framework in Africa.

5. INTEGRATED REGIONAL COORDINATION MECHANISM FOR THE CONTROL OF TADS AND ZOONOSES IN AFRICA (IRCM) [2011-2014]

The IRCM project supported capacity building and facilitate entrenchment of the coordination of TADs and zoonoses prevention and control within the institutional structures and processes of the RECs and their member states. This has the dual impact of ensuring the diseases remain in the limelight of REC political and technical leadership, and are accorded requisite priority as well as resources for action. It was conceived as a mechanism that aimed to bring relevant actors together in a coordinated manner and to address capacity gaps that impended effective functionality. The program invested in capacity building activities within animal and human health systems. The project was funded through 2014 and is followed by the AU-IBAR IGAD joint program entitled Surveillance of Trade Sensitive Diseases [2013-2016].

Table 4. Ethiopia Livestock Projects

Project	Donor / Implementer	Contact Person	Contact
Addis Ababa Abattoir	AFD/ IGAD - COMESA		
Agricultural Growth Program	World Bank		
Agricultural Growth Program - Livestock Market Development (AGP-LMD) http://www.cnfa.org/program/agricultural-growth-program-livestock-growth-project-ethiopia/	USAID / CNFA; SNV; IMC; IIE; IICD; ACDIVOCA	Marc Steen	msteen@cnfaethiopia.org
Climate induced vulnerability and pastoralist livestock marketing	USAID/ ILRI/Colorado State University	Polly Ericksen,	p.ericksen@cgiar.org
Community Disaster Risk Management (CDRM)	VSF-Suisse	Kebadu Simachew	ksimachew@vsfsuisse.org
Community-based Integrated Natural Resources Management	IFAD / GEF	Robson Mutandi	r.mutandi@ifad.org
Dairy Development	Land O'Lakes		
Development of Innovative Site-specific Integrated Animal Health Packages for the Rural Poor	FAO/IFAD	Antonio Rota,	a.rota@ifad.org
East Africa Agricultural Productivity Program (EAAPP)	World Bank / Govt of Kenya	Govt of Kenya	
Emergency Veterinary Support Program (EVSP)	SDC / VSF Suisse	Kebadu Simachew	ksimachew@vsfsuisse.org
Enabling Sustainable Land Management, Resilient Pastoral Livelihoods and Poverty Reduction in Africa (IUCN)	FAO ; IFAD	Antonio Rota,	a.rota@ifad.org
Enhancing Dairy Sector Growth in Ethiopia (EDGET) http://www.snvworld.org/files/documents/eth_edget.pdf	Netherlands / SNV	R Hodson	rhodson@snvworld.org
Feed Enhancement For Ethiopian Development - Phase II (FEED II) http://www.acdivoca.org/site/ID/ethiopia-feed-enhancement-for-ethiopian-development-II	USAID / ACDIVOCA	C. Birkelo	cbirkelo@acdivocaeth.org
Feed the Future Innovation Lab for Collaborative Research for Adapting Livestock Systems to Climate Change http://lcccrsp.org/	USAID / Colorado State University	Joyce Turk	jturk@usaid.gov
Feed the Future Innovation: Agricultural Growth-Livestock Growth Project (AGP-LGP) http://www.cnfa.org/program/agricultural-growth-program-livestock-growth-project-ethiopia/	USAID / CNFA	Joyce Turk	jturk@usaid.gov
Humanitarian Response Fund (HRF).	SDC / VSF Suisse	Kebadu Simachew	ksimachew@vsfsuisse.org
Improving and Integrating Animal Health Services in the Livestock Value Chain through Public Private Dialogue in Ethiopia (LVC/PPD)	EC / Veterinary Services Directorate	Friedrich Mahler	Friedrich.MAHLER@ec.europa.eu
Improved Community response to drought, South Omo	VSF Germany	Genene Regassa	genene@vsfg.org

Improve Food Security through Nutrition Based Livestock Off-take	VSF Suisse	Kebadu Simachew	ksimachew@vsfsuisse.org
Index Based Livestock Insurance: Adaptations and Innovations for Ethiopia http://crsps.net/resource/index-based-livestock-insurance-adaptation-and-innovations-for-ethiopia/	ILRI	Andrew Mude	a.mude@cgiar.org
Introduction of Napier grass elite lines for screening for stunt resistance to provide feed for improved smallholder dairy productivity	ILRI	Alexandra Jorge	a.jorge@cgiar.org
Leather's quality	AFD		
Livelihood diversifying potential of livestock based carbon sequestration options in pastoral and agro pastoral systems of Africa	GIZ, ILRI	Mohammed Said	M.Said@cgiar.org
Livestock and Irrigation Value Chains for Ethiopian Smallholder (LIVES) http://lives-ethiopia.org/	ILRI / ACDIVOCA	Azage Tegegne	a.tegegne@cgiar.org
Livestock Master Plan	BMGF; CIDA / ILRI	Barry Shapiro	b.shapiro@cgiar.org
Pastoral Community Development (PCDP) Project II / III	IFAD, World Bank	Robson Mutandi	r.mutandi@ifad.org
Pastoralist Area Resilience Improvement Through Market Expansion (PRIME)	USAID / ACDIVOCA	K. Byrne	kbyrne@et.mercycorps.org
Pastoralist Livelihoods Initiative	Tufts University	Adrian Cullis	adrian.cullis@tufts.edu
Private Enterprise Program Ethiopia (PEPE)	DFID / DAI	Max Goldensohn	Max_Goldensohn@dai.com
Reducing the impact of infectious diseases on village poultry production in Ethiopia http://www.ilri.org/ReducingtheImpactofInfectiousDiseases	DFID, ILRI / University of Liverpool / BBSRC	Tadelle Dessie	t.dessie@cgiar.org
Regional initiative in support of vulnerable pastoralists and agropastoralists in the Horn of Africa	EC, FAO, SDC	Emmanuella Olesambu	emmanuella.olesambu@fao.org
Regional Pastoralist Initiative (RPI) -Ethiopian Component	SDC / VSF Suisse	Kebadu Simachew	ksimachew@vsfsuisse.org
Safe Food - Fair Food: From capacity Building to Implementation	GIZ	Carola Morstein-von	Carola.Morstein-von@giz.de
Stock Routes	ILRI	Fiona Flintan	fionaflintan@yahoo.co.uk
Support for Agricultural Marketing Development in Ethiopia	EC		
Supporting Horn of Africa Resilience (SHARE).	EC / FAO	Gijs Vantklooster	Gijs.vantklooster@fao.org
Uptake of integrated termite management for rehabilitation of degraded rangeland in East Africa	ILRI	Kees Swans	K.Swaans@cgiar.org
Vaccines production	AFD / IGAD; COMESA; EAC		

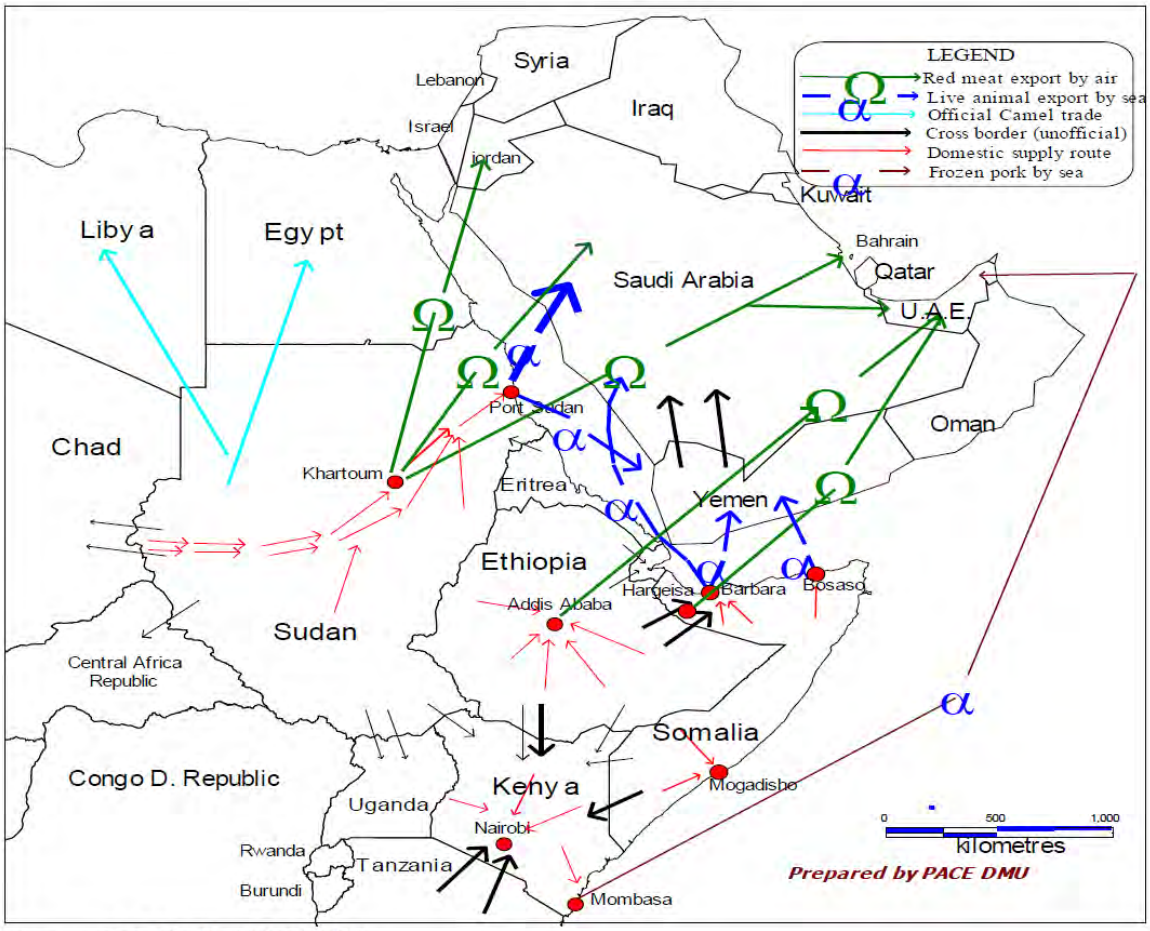
EAC:

East African countries have agreed, in principle, to many harmonized policies governing SPS issues regionally. However, to date the EAC has not yet published SPS standards for the region. The adoption and implementation of key SPS policies, moving from the continental and regional level down to the national

level, is seen as key to the overall success of improving the SPS policy environment thus leading to improved SPS capacity and systems throughout the region.

The East African Community catalog of standards on its website is dated 2010 and lists no SPS standards. EAC is currently implementing its Food Security Action Plan (2011-2015) and preparing to implement the SPS protocol that was approved by the EAC Council of Ministers and the Summit in 2014. The draft SPS measures as prepared by EAC will be in four volumes: SPS Volume I: Phytosanitary Measures and Procedures for Plants; (ii) SPS Volume II: Zoosanitary Measures and Procedures for Mammals, Birds & Bees; (iii) SPS Volume III: Measures and Procedures for Fish and Fisheries; and (iv) SPS Draft Harmonized Food Safety Measures.

Figure 9. East African Livestock Trade Routes - Formal and Informal



Source: OAU- IBAR (1999)

IGAD:

IGAD objectives are to:

- Promote joint development strategies and gradually harmonize macro-economic policies and programs in the social, technological and scientific fields;
- Harmonize policies with regard to trade, customs, transport, communications, agriculture, and natural resources, and promote free movement of goods, services, and people within the region;

- Create an enabling environment for foreign, cross-border and domestic trade and investment;
- Achieve regional food security and encourage and assist efforts of member states to collectively combat drought and other natural and man-made disasters and their natural consequences;
- Initiate and promote programmes and projects to achieve regional food security and sustainable development of natural resources and environment protection, and encourage and assist efforts of member states to collectively combat drought and other natural and man-made disasters and their consequences;
- Develop and improve a coordinated and complementary infrastructure, in the areas of transport, telecommunications and energy in the region;
- Promote peace and stability in the region and create mechanisms within the region for the prevention, management and resolution of inter-state and intra-state conflicts through dialogue;
- Mobilize resources for the implementation of emergency, short-term, medium-term and long-term programmes within the framework of regional cooperation;
- Promote and realize the objectives of the COMESA and the African Economic Community;
- Facilitate, promote and strengthen cooperation in research development and application in science and technology.

ICPALD is collaborating closely with the AU-IBAR on several projects. They support nine member states in drought prone regions.

COMESA:
Through ACTESA, COMESA recently commissioned a consultant to help develop "An Inclusive Livestock Value Chain Development Plan for the Common Market for East and Southern Africa 2015 – 2020." With this plan ACTESA would fund a Livestock Value Chain Development Center to deliver capacity building activities for their member states. This concept paper has been reviewed and was well supported by COMESA. They have contracted for an action plan to be developed.

G. LIVESTOCK PRIORITIES

It is not realistic to think that one SPS advisor can be all things to all groups and make a significant impact or know the issues related to plant health, animal health and food safety. It is important that the SPS advisor be very familiar with the USDA, and particularly with APHIS and FAS so that they can reach back and recruit assistance in areas in which they are not experts. The SPS advisor, working with USAID, can improve implementation of FTF programs ensuring that they truly have SPS elements and that these are properly implemented by USAID implementing partners throughout the East African region.

1. POLICY HARMONIZATION FOR LIVESTOCK DISEASE

Harmonize policies, regulations and implementation plans for surveillance and control for key diseases that affect livestock trade. Nine standard methods will have been developed by AU-IBAR, IGAD and Chief Veterinary Offices (CVOs) and key veterinary working groups from the region. This Standard Methods now need to be implemented at the country level. Assistance in doing this would include increasing surveillance using passive surveillance by looking for signs of disease called syndromic surveillance. Export animals can be tested prior to export while in quarantine facilities using the national laboratory system.

Table 5. Action Items for Policy Harmonization

Year	Activity
2015	• Develop 5 priority disease Standards methods and procedures • Develop SMP for animal quarantine management • Develop a Phase II of SPM-AH to implement the SMPs developed for disease control and trade • Work with RECS to get uniform adaption of the SMP-AHs across all regions of Africa • Capacity building to support implementation of the program for stakeholders especially at country/woreda levels
2016	• Implementation of a transboundry disease program such as PPR for trade using the SMP-AH • Implementation of a zoonotic disease program that poses a food safety and public health risk to stakeholders who raise livestock or consume mike products that are not pasteurized. Brucellosis surveillance and control program.

2. LIVESTOCK DISEASE SURVEILLANCE

Accurate and timely surveillance is critical for early detection, identification and monitoring of disease progression in a particular area. The data supplied by the surveillance system will serve as an early warning system to detect animal diseases, track trends of TADs, identify populations that are at great risk, implement control measures such as targeted vaccination, movement restrictions, voluntary cessation of export trade, assessing the social and economic impact of the disease, etc. Currently disease surveillance and reporting is poor and irregular, with most countries having a low reporting rate of outbreaks from the field level. That figure is even below 5 percent for pastoral and agro-pastoral areas. Moreover, the sensitivity, specificity and timeliness of the reports are very low and can interfere with livestock trade if outbreaks of disease go unreported. It is important to build viable disease surveillance programs starting at the producer level. Develop training manuals for marginally literate communities of livestock keepers. These would include production diseases of livestock diseases of poultry, camels, sheep and goats and swine. Training of veterinary field personnel including animal health workers where appropriate, and livestock producers will increase reporting of diseases. Work with the AU-IBAR USAID-funded SPS-AH program to harmonize regional approaches to livestock pests and disease monitoring surveillance and control. Continue to provide disease risk management training preferably at regional workshops to enable veterinarians from different countries to become colleagues and increase communications and cooperation.

Table 6. Action Items for Livestock Disease Surveillance

Year	Activity
2015	• Adopt ARIS 2 system to harmonize the animal health information system at both federal and regional level • Enhance the timely and accurate confirmation of suspected disease outbreaks which is currently very low • Promote syndromic surveillance by providing producer and community animal health worker training using AU-IBAR manuals for syndromic surveillance • Build effective epidemiology units in each country by strengthen and providing capacity building for federal and regional epidemiology units with adequate staff ,facilities and equipment • Expand the information system by including data coming from veterinary laboratories, abattoirs and quarantine stations • Strengthen feedback system to the regions and districts through newsletters, bulletins, year books, websites etc.

2016	• Promote use of participatory Diseases Surveillance (PDS) in disease investigation • Develop and enforce guidelines for veterinary information and disease outbreak reporting systems including obligations of private practitioners from village to national level • Introduce new technologies such as digital pen and mobile phones to enhance the quality of the reporting system • Carry out regular active surveillance for diseases selected on risk assessment to inform control strategy and policy development

3. STRENGTHEN SPS LABORATORIES TO SUPPORT SURVEILLANCE, TRADE AND FOOD SAFETY

The goal is to strengthen SPS laboratories for animal disease diagnosis, analysis of food safety pathogens and toxins and monitoring of pesticides and veterinary drug residue. Each country may have more than one laboratory involved in providing these services; some may be in different ministries. Recommendations include: develop frameworks that support each country to adapt international standards of testing, laboratory certification and a highly trained core of professionals to provide these services; provide capacity building for laboratory personnel; and help the laboratories develop plans for fee based services and build political support at the AU for each country to adapt such models so funds do not go back to the treasury but to the service laboratory.

The Ethiopian National Animal Health Diagnostic Laboratory (NAHDIC) has made considerable progress over the past years in carrying out nation-wide and targeted surveillance for selected diseases, establishing and implementing a quality assurance program, training staff in the regional laboratories, and establishing a suite of OIE-recommended laboratory tests to support disease control and exports. So far, NAHDIC is accredited for 11 tests and 6 diseases. This should be expanded further for other diseases and NAHDIC should be supported to be a reputable and credible laboratory for the sub-region. Moreover, there is need for building analytical capacity to undertake residue testing in foods of animal origin (meat, fish, milk, honey etc.). The effectiveness of the 15 state veterinary laboratories in carrying out their duties has been compromised over the years by a combination of factors generally related to staffing, funding, organizational restructuring and funding to purchase supplies such as kits and consumables.

Table 7. Action Items for SPS Laboratories

Year	Activity
2015	• Establish a laboratory quality management system involving proficiency testing and third-party accreditation • Develop an effective Laboratory Information Management System (LIMS) involving both federal and regional veterinary laboratories • Capacitate NAHDIC and regional laboratories to meet the growing demand for export testing and disease surveillance • Develop functional linkages and collaboration between regional and federal veterinary laboratories
2016	• Collect and stock filed isolates of important pathogens for genetic sequencing and production of effective vaccines • Create strong linkage between field veterinary clinics and regional labs • Maintain close working relations and linkage between national laboratories and world reference laboratories (OIE/FAO); send staff for short term training and refresher courses

	• Support national veterinary laboratories to be reputable and credible lab in the region and serve as centers of excellence for selected diseases • Build analytical capacity to undertake residue testing in foods of animal origin (meat, fish, milk, honey etc.) • Initiate cost recovery from the commercial sector to self-sustain quality laboratory services

4. MODERNIZE VETERINARY SERVICES LEGISLATION TO SUPPORT POLICY

Ethiopia as well as most other East African countries does not have autonomous statutory body to regulate the veterinary profession, license and register veterinary surgeons and veterinary practitioners, and regulate professional education and professional conduct. For instance, veterinary programs are being established in new universities, but they lack appropriate curriculum to adequately prepare students for licensing and operating as a veterinarians. Using the Regional developed disease standards and methods to control these diseases, back track to make sure that each country has in place rules and regulations that require these diseases to be reportable to the national veterinary authority and controlled. Develop models for federal state cooperation and authority on public good and private good livestock disease issues. Strengthen individual countries SPS infrastructure starting with National and regional veterinary services. Develop a system in countries that have decentralized authority to the state or county level a clear chain of command to deal with transboundry diseases that affect trade. Decide on which diseases of production will be serviced by the private sector or regional governments. Using the US model and working with AU-IBAR leadership and CVOs of East African Countries adapt a system of national examination to practice for all veterinarians, strengthen veterinary associations in each country, develop a veterinary licensing authority, veterinary accreditation to allow individuals to write health certificates and provide services on behalf of the government for disease control programs.

Table 8. Action Items for Modernizing Veterinary Services Legislation

Year	Activity
2015	• Modernize veterinary legislation by working with AU-IBAR and Chief Veterinary Officers in East Africa to develop a new USAID project complementary to Vet Govs that focuses at individual countries veterinary services at the national and state or country level • Delineation of tasks and geographical areas between private and public veterinary services and outline roles of private vets vs government vets
2016	• Establish or update autonomous statutory body to regulate the veterinary profession, license and register veterinary surgeons and veterinary practitioners, and regulate professional education and professional conduct • Create an annual Veterinary Faculty Dean's Forum attended by all Deans to discuss harmonization of veterinary educational standards, curriculum development, VS needs and related issues • Introduce some form of international benchmarking for undergraduate veterinary education • Develop and enforce guidelines and code of conduct for public and private veterinary services practitioners and para-veterinarians • Institute a system of awarding points for continuing education and make this mandatory for veterinarians in both the government and private sectors

5. IMPROVE LIVESTOCK DISEASE CONTROL TO SUPPORT LIVESTOCK VALUE CHAIN

Means to improve disease control using quality vaccines and veterinary drugs include the following: Work with AU-IBAR to develop guidelines for veterinary drug importation, quality, and licensed sale. Provide support for PANVAC infrastructure training and continued quality assurance. Assist national vaccine production facilities with quality assurance and efficacy testing of vaccines. The broad goals of controlling drugs used on animals are to preserve the health of the animals, improve animal production and protect public health. For example in Ethiopia, the registration, administration and control of veterinary drugs, biological products and feed additives were officially transferred from Ministry of Health to Ministry of Agriculture (MoA). However, the responsible authority in MoA has yet to be established. Timely establishment of the authority is of paramount importance to regulate the importation, production, distribution and use of these products. There is also need for developing analytical capacity to undertake chemical tests to determine the nature, contents, quality, quantity or potency of veterinary drugs and biologicals. The analytical lab under construction by MoA at Kaliti should be equipped and staffed with adequately trained personnel. It has also to establish Laboratory Quality Management System and secure third party accreditation.

Table 9. Action Items for Improving Livestock Disease Control

Year	Activity
2015	• Develop a project proposal with USAID to support the Ministry of Agriculture in establishment of a quality analytical lab and regulatory system to control entry of veterinary drugs into the country and quality assurance • Develop feed safety testing facility • Collaborate with Pan African Vaccine Centre (PANVAC) for quality control of veterinary vaccines • Review each countries veterinary vaccine facility as to output and develop a strategic plan to increase vaccine production and quality for poultry and ruminants in countries who already have capacity
2016	• Timely establishment of the authority to regulate the importation, production, distribution and use of veterinary drugs and biological • Develop analytical capacity to undertake chemical tests to determine the nature, contents, quality, quantity or potency of veterinary drugs and biological • Equip and staff the analytical lab under construction with adequately trained personnel; • Establish Laboratory Quality management System in the analytical lab and secure third party accreditation • Reduce availability of substandard and illegally marketed animal drugs

6. PROTECT CONSUMERS AND EXPORT MARKETS THROUGH ESTABLISHMENT OF AN AFRICAN FOOD SAFETY AUTHORITY

The role and importance of food safety as one of the SPS triads is often overlooked and underappreciated by governments and regulatory bodies in East Africa. AU is developing a framework for a new Food Safety Directorate. Using the African Union IBAR platform, USAID, USDA and universities can help develop a project and an action plan. Work with AU-IBAR to develop harmonized realistic policies for the RECs to help countries implement improved food safety practices. Capacity building is needed for food safety laboratories, to include basic training in food hygiene, meat inspection, food safety risk assessment and surveillance methods. A well-planned food safety capacity building program could constitute a sound approach to assisting East Africa improve food safety practices and provide safe food and feed.

Table 10. Action Items for Establishing an African Food Safety Authority

Year	Activity
2015	• USAID review AU-IBAR proposal for food safety authority and fund.
2016	• Conduct capacity building workshops on best practices in food safety and abattoir management • Codex workshop for animal health and human health country authorities involved with veterinary public health and human health.

Each country in the East African region has had an OIE PVS review and a follow up gap analysis. Each of these reports provides the needed pillars to support an effective SPS or animal health program to support food security and livestock trade. USAID Regional mission should consider developing a Phase II of the SMP-AH. It is one thing to develop a policy and guidelines, it is another to put an action program in place that actually impacts an animal disease situation. This will be the challenge but a necessary next step for USAID bilateral missions to help implement the SMPs at the country level, working with decentralized models which are much like the U.S. system of state federal disease programs. There will be a continued need of support for SPS programs for organizations such as AU-IBAR and IGAD or COMESA. Many of the AU-IBAR programs are due to end in 2016 and 2017. This is an opportunity to work with the European Union, other donors, AU and RECS to develop seamless programs that minimize overlap and provide effective delivery based on the needs so clearly outlined in OIE studies for each country.

IV. CONCLUSIONS

The largest USG effort on SPS capacity building is under the FTF initiative, which targets 19 developing countries of which five are located in East Africa i.e. Ethiopia, Kenya Rwanda, Tanzania and Uganda. The USAID Regional Mission for East Africa FTF Strategy targeted both the maize and livestock value chains. All five bilateral missions also targeted maize in their country FTF strategies. Only Ethiopia targeted livestock in its FTF strategy. Kenya and Rwanda targeted the dairy value chain. Neither Tanzania nor Uganda included livestock or dairy projects in their FTF strategies. There are other USG agencies such as USDA that also implement SPS technical assistance in the East Africa region, but this is largely funded by USAID.

SPS technical assistance is often provided at a regional level, because plant and animal diseases and pests do not respect national borders, but rather environmental, geographical and natural boundaries. To address plant and animal health issues, a regional approach must be taken that helps regulatory harmonization efforts, effective regulatory implementation, and that marshals national plant and animal health experts where the disease- or pest-infested area is located to address the situation. It is futile for one nation to try and eradicate a disease or pest, if the neighboring country does not. This report recommends capacity building support at a regional and national level.

To help coordinate the USG efforts on SPS capacity building, the first recommendation from this report is for the SPS advisor position to be filled as quickly as possible to address the SPS leadership void in the region. Leadership is needed on a number of SPS issues, including as identified within this report, an USAID SPS strategy across the region that links the work of the regional and bilateral USAID missions together with the strategies of the AU, AU RECs and national governments to ensure complementary goals and more effective and efficient project implementation. The SPS advisor should work closely with USAID missions in the region to enhance their understanding and appreciation of the need for SPS technical assistance and to engage donors who are implementing SPS related projects to develop complementarity. The SPS advisor should work to enhance the enabling environment at the national levels to facilitate the adoption of policies, tools and mechanisms that will increase agricultural productivity, expand farmer incomes and economic growth, and enhance regional trade.

The SPS advisor should work to build alliances and contacts with the international organizations such as the WTO, IPPC, OIE, CODEX, FAO, CABI and AUC and bilateral donors to coordinate efforts, build upon existing projects, minimize duplication of SPS activities and help to ensure gaps are addressed. For example the STDF will soon announce a livestock SPS technical assistance project in Ethiopia to facilitate regional trade. This project could build upon the current USAID livestock projects in the country being implemented by ACDI/VOCA as well as the USDA SMP-AH project implemented in collaboration with AU-IBAR and the proposed projects within this report if the linkage is made between USAID and the STDF.

The maize value chain is critical to East Africa, since it is a stable food for many people in the region, particularly in Tanzania, Kenya, Uganda and southern Ethiopia. This report identified two maize health issues that urgently need strategic SPS interventions. MLN affects maize production and infects seed stocks have emerged as a serious threat in East Africa. The virus poses no human health risk. The other issue is mycotoxins of which aflatoxin has long been recognized as a leading food and feed safety risk in maize in East Africa. This fungal agent produces toxins which in high doses poses serious threats to both humans and livestock health. This report outlines an action plan needed to deal with these important maize SPS issues.

Actions are needed not only at the farm level, but throughout the value chain. National policies, legislation, regulations and implemented control programs need to be strengthened to include country-wide surveillance for MLN and aflatoxin with field testing. This will require cooperation between local government bodies, farmers and other private sector members such as the millers for aflatoxin. At the federal government level building the laboratory capacity and providing training for personnel is needed to enable use and proper maintenance of state of the art equipment to identify and quantify the virus and pathogens. Programs at the farmer level and national level for plant health research and regulatory services need strengthening.

For aflatoxin, along with the key priorities that need to be addressed to reduce the occurrence of the mycotoxin, urgent attention is needed to build acceptance for use of binders in human diets to reduce mycotoxin absorption in individuals who have no alternative but to use mycotoxin-contaminated maize. Capacity building programs to raise awareness about the MLN disease threat to maize and importance to health of mycotoxins is needed for farmers and other key players in the value chain. Government SPS regulators at county and national level would benefit from training in rapid field test kit use and surveillance methods. Further capacity building for plant health research and regulatory services diagnostics and risk assessment would improve disease detection and food safety. Training on regulatory rule making and disease control program implementation are needed.

It is important to note, that while the report identified MLN and aflatoxin as the priority SPS issues for the maize value chain, these should be seen as a plant disease or a mycotoxin that needs to be resolved today. There will be another devastating disease, pest or mycotoxins that will devastate the maize value chain that the plant health experts in the region must address. To ensure the region is ready to address the next MLN or aflatoxin, the goal of the SPS technical assistance is to build a plant health system that can readily address the next disease, pest or mycotoxin that devastate the small shareholders.

Despite its crucial role in Africa's economy and livelihoods, the livestock sector has remained under developed. Historically many agricultural policies in East African focus on the crop sector. The livestock's low profile in national planning that Poverty Reduction Strategy Papers and CAADP plans contain only general points relevant to the livestock sector demonstrate once again that livestock and the demand by people of the region for support and for access to these products is not being adequately addressed by present policies. Government policies for the agriculture sector for many years have been targeting food security through increasing cereal crop production, and have incorporated livestock primarily in terms of its contribution to crop production.

The East African livestock value chain is faced with a number of constraints with the biggest being the huge burden of animal diseases (SPS). In order to ameliorate this problem, national veterinary services in Africa need to be empowered to play a far more prominent role in preventing and controlling emerging and re-emerging diseases that affect the public good and are barriers food security and to domestic and international trade. Veterinary service and private sector veterinarian guidance for producers and suggested interventions can enhance animal production by reducing losses and poor weight gains caused by animal diseases. Veterinary public health is a key to safeguarding public health by tracking animal diseases transmissible to humans and protecting consumers from food-related health risks, and through improving access to markets.

Member states however, cannot fulfil their livestock economic goals without adequate agricultural and livestock policies and legislations which support the establishment of efficient and affordable veterinary services through financial support as well as policy support to utilize private veterinary services to deal with private good disease issues as well as through veterinary accreditation to assist with public good disease control programs such as Brucellosis and tuberculosis. Public good disease issues need to continue to be

supported and coordinated at National level by Ministry Veterinary Services but can be augmented through the use of private accredited veterinarians on a fee basis.

Where livestock policies have been formulated in the past, they sometimes are based on poor levels of information and analysis, and are generally formulated without participation from key stakeholders, most notably the poor, the pastoralists and other key individuals in the private sector such as the livestock traders.

USAID has funded several impactful projects that have supported the dairy and livestock value chains at bilateral mission level. However, USAID-funded projects visited in Kenya and Ethiopia did not have SPS as major objectives of their programs. Some that did, had minimized their implementation in pastoralists' areas due to lack of funding and manpower. The recent ongoing USAID initiation of the Standard Methods and Procedures – Animal Health Project with AU-IBAR has made impact on harmonization of policies related to livestock trade and disease control. This is an area in which USAID could continue to build momentum by completing phase one of this project and instigating a second phase to work with AU-IBAR, IGAD and the RECS and countries of IGAD to guide implement of the programs for disease surveillance, diagnostics and control. There is much to be done at the host country level in order to implement the guidelines that have been developed at the regional level. These are just paper guidelines at this point well supported by the AU-IBAR, RECs and CVOs. But now is the time where the rubber meets the road in implementation. Policies and regulations and guidelines on a shelf are useless if not implemented. This is where the hard work begins.

Based on the success of the rinderpest campaign, which led to its eradication, one might turn to eradication of peste des petits ruminants which is a closely related virus that affects sheep and goats. The model of the rinderpest campaign fits well for this disease which is important to sheep and goats, camels and possibly wildlife instead of cattle. Such a control program would support poor women in pastoralist areas, as well as women in the highlands and it would improve food security and boost the opportunity for sheep and goat export.

At this time of globalization, agricultural/livestock policies need to also embrace food safety which is largely due to the transmission of diseases from animals to humans (zoonoses). Globally, animal health systems are becoming increasingly a "global public good." Failure of one country to prevent and control zoonoses or transboundry animal diseases may endanger its neighbors. The global community is turning to the concept of "One Health" which envisions a global partnership aimed at minimizing the impact of epidemics and pandemics caused by highly infectious diseases of animals and humans, thereby improving public health, animal health, food safety, food security, livelihoods and the environment.

USAID has the opportunity to make a substantial impact on the success of the livestock value chain through SPS interventions. These must start at the producer level with farmer training in disease recognition called syndromic surveillance, community animal health worker training and support for private veterinary services. A more robust local and federal veterinary service that supports surveillance, diagnostics and trade certification in country as well as for export markets requires infrastructure and training. This training needs to be sustained and not delivered as one off workshops. The turnover of veterinary staff is high and training delivered two years ago may sadly no longer have anyone left in service who participated! Working with regional economic communities and the AU-IBAR and IGAD will ensure policies are agreed upon at state ministry levels and are implemented. Implementation will require donor support for animal health in order to achieve international SPS standards.

Although there is a large amount of livestock trade domestically within countries to support domestic consumption there is far less regional livestock trade presently ongoing amongst countries of the EAC. The

historic patterns for geographic trade of live animals regionally and internationally – is from countries such as Sudan, Ethiopia and Somalia and Somaliland to the Middle East. The IGAD portfolio and countries fit well within the patterns of livestock trade in the region. The EAC has for the most part deferred and worked with other economic groups such as COMESA and IGAD, allowing them to take the lead in developing livestock programs and policies. All of these RECs are working in concert with the AU-IBAR to coordinate animal health SPS programs for the Horn of Africa. There is some traffic of livestock from Uganda and Tanzania to Kenya and some export of pork and processed meat products back to Uganda and Tanzania and Rwanda from Kenya. IGAD countries have focused on livestock programs. AU-IBAR, IGAD and COMESA and EAC must continue to coordinate their efforts to develop and implement harmonized SPS standards. A livestock SPS steering committee of these key partners will help development of uniform standards and disease control programs across trading blocks. The role of RECs can be to help individual countries implement SPS disease control programs through capacity building activities and promote adoption of the standard methods and procedures for targeted diseases of livestock. ACTESA has developed a plan for a Center to deliver capacity building activities for their member states. This concept paper is being reviewed by not yet funded.

As livelihoods improve in highland areas and arid and semi-arid pastoralist areas and a larger middle class develops in urban centers there is predicted to be a rocketing demand for meat and dairy products by consumers in East Africa. With rapid population growth, urbanization and improved economic circumstances there are new opportunities in East Africa for both domestic markets and regional markets for meat and dairy products. Likewise, if more emphasis is placed on domestic SPS interventions and better feed stuffs including maize and fodder for livestock this should allow more livestock to survive, thrive and enter the livestock value chain. As the livestock value chain grows in volume and quality there will be opportunities for domestic trade, regional trade and some international trade with targeted markets in the Middle East. International markets are highly competitive in the Gulf States and Middle East with Australia, New Zealand, India, Pakistan and Brazil serving as growing competitors who are penetrating the same markets in which IGAD countries such as Sudan, Somaliland, Puntland and Somalia, Ethiopia and Kenya also wish to maintain access. Quality and consistent products that meet importing countries SPS standards is the name of the game if East African countries wish to compete in international markets.

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V. ANNEX: SOURCES OF INFORMATION

A. SCOPE OF WORK

Defining SPS Trade Policy Constraints within the Maize and Livestock/Animal-Sourced Products Value Chains in East Africa

Background

The goal of the Leveraging Economic Opportunities (LEO) project is to deepen and widen the capacity of USAID staff and its development partners to use evidence-based good practices to design new projects and activities that promote inclusive market development, effectively manage their implementation, and evaluate their results. LEO pursues the following objectives:

1. Advancing knowledge and evidence on frontier issues
2. Improving the quality of project and activity designs based on evidence
3. Improving project implementation
4. Improving methodologies for evaluating systemic change

LEO also includes two cross-cutting objectives:

- advancing knowledge and practice on innovative approaches to integrating collaboration, learning and adaptation (CLA); and
- building the capacity of USAID staff and development partners to apply evidence-based good practices in project/activity design, implementation and evaluation

One LEO research stream is focused on policy. Under this policy track, USAID is requesting the service of LEO to define a recommended action plan to address priority SPS trade policy constraints within the maize and livestock/animal-sourced products (camel, cow, sheep and goat live animals, meat for human consumption, and hides and skins) value chains in East Africa.

The trade policy reform process can stall or prove ineffective for many reasons at the regional, country, or local level. For example, crucial stakeholders may be excluded or have misaligned incentives; regional harmonization may prove problematic, or may not be matched with country-level initiatives to ensure implementation; and local norms and expectations may limit the enforcement of policies and regulations. Synergy among interventions working at different levels is therefore critical to effective policy change.

With this perspective in mind, a study will be conducted focusing on how SPS-related factors affect maize and livestock and animal-sourced products trade in East Africa. USAID regional and bilateral missions are implementing a number of diverse initiatives aimed at increasing and improving regional maize, livestock and animal-sourced products trade flows. However, these initiatives would benefit from analysis and evidence that will facilitate stronger integration and collaboration among USAID and non-USAID programs and actors in the region. This study will map the complete spectrum of SPS regulations, requirements, and practices for trading maize, livestock and animal sourced products and identify highest return priorities to target and rally around. The initial study will be completed by January 31, 2014 and will target the focus countries of

Ethiopia, Kenya, Rwanda, Tanzania, and Uganda and East African Community (EAC) regional economic body.

Evaluation Purpose

ACDI/VOCA provided short-term technical assistance to help guide the Agriculture Research and Policy (ARP) Policy Division and East Africa regional mission to:

- Identify sanitary and phytosanitary (SPS)-related constraints building on the 2013 US government inter-agency SPS assessment affecting regional trade of maize, livestock and animal sourced products in East Africa region;
- Map current initiatives to address these constraints;
- Identify gaps in the policy cycle regarding technical areas and deficient institutional capacity that are not currently being addressed;
- Generate a set of actionable recommendations for regional and country level interventions with five or more priority needs identified.

Specific Tasks

The specific tasks of the assignment were threefold: desk research, analysis and report writing.

Specialist's Role

Working in close collaboration with the consultant and maize specialist, the livestock specialist will provide short-term technical assistance to assist the BFS/ARP's Policy Division and AFR/SD's Agriculture Team and East Africa regional missions to (i) identify Sanitary and Phyto-Sanitary (SPS)-related constraints building on the 2013 USG inter-agency SPS assessment affecting regional trade of livestock and animal sourced products in East Africa region; (ii) map current initiatives to address these constraints; (iii) identify gaps in the policy cycle regarding technical areas and deficient institutional capacity that are not currently being addressed; and (iv) generate a set of actionable recommendations for regional and country level interventions with five or more priority needs identified. The livestock specialist will reach out to and incorporate relevant country/regional partners in conducting desk study and field mission. Additionally, contractor will incorporate the USAID funded USDA SPS Advisor for Eastern Africa in each phase of work.

Specific Tasks

1. Desk Research

The consultants conducted an initial desk review, which included previously completed institutional architecture analyses, other reports recommended by ARP and the missions, and relevant documents in the public domain, relevant World Trade Organization (WTO) requirements such as the SPS agreement, and the International Plant Protection Convention (IPPC). The consultants also conducted phone calls to understand each mission's constraints and priorities regarding SPS issues specific to the maize and livestock/animal sourced product value chains.

Based on the desk research and calls with missions, the consultants drafted a comprehensive annotated outline of the final report for USAID's input and approval. This ensured that USAID's expectations were clearly understood by the contractors prior to commencement of the field work. Gaps in knowledge were identified, and the consultants drafted a work plan for field research to address these gaps.

2. Analysis

Upon approval of the work plan, the consultants conducted the field research, meeting with the country and regional missions for briefing upon arrival, and for debriefing and the sharing of initial findings prior to departure. Countries visited included Kenya and Ethiopia.

The analysis focused on the following:

- SPS-related trade constraints at the regional, national and local levels for the maize and livestock/animal sourced products as they relate to importing markets, such as Middle Eastern consuming countries. Trade of livestock and animal-sourced products is not confined to within the EA region. For example, Kenya and Ethiopia focuses more on Egypt, Middle East and Indian Ocean Islands such as Madagascar as the main markets exporting live animals.
- Mapping of current SPS impediments to trading and regulations and practices affecting the maize and livestock/animal sourced products value chains.
- Identified priority targets for regional and national level action to achieve greater volumes of trade in maize and livestock/animal sourced products value chains in the short term (by September 2015) and in the longer term (September 2016).

The consultants ensured that the analysis included consideration of legal, administrative and other factors that exclude women from opportunities or enable their participation; and that the analysis reflects the end goal of increasing smallholder incomes and access to nutritious foods.

3. Report

The consultants prepared a first draft report to share with the Bureau for Food Security ARP Policy Team, AFR/SD Agriculture Team, East Africa Regional Agriculture Team and the respective USAID bilateral missions, and will host a webinar presentation of main findings to discuss with relevant stakeholders (USAID staff, government representatives, implementing partners, etc.). Based on feedback, the report will be finalized. The report includes recommendations for actions that can be taken at the regional and national levels to align assistance efforts focused on SPS-related trade policy constraints, and an action plan based on the identified priorities that will facilitate the achievement of strategic milestones in September 2015 and September 2016. The results of this research will be disseminated at a regional meeting of USAID in March 2015.

Summary of Implementation of SOW

USAID Bureau for Food Security, Trade, Investment, and Governance requested ACDI/VOCA assemble a team of three consultants to evaluate SPS trade policy constraints within the maize and livestock/animal-sourced products value chains in East Africa. The team was asked to build a priority list and an action plan for needed SPS trade policy constraints for these two important East African agricultural value chains. The team reviewed in detail the gaps identified in the US Government internal report entitled "Assessing SPS Enabling Policies in East Africa". This provided an excellent background from which the team launched the next steps. In addition, the team collected an extensive number of reports relevant to the maize and livestock value chain for East Africa. US Government staff both in Washington and in East Africa were contacted by email and via phone. Many provided electronic copies of valuable reports to the consultants. The Team assembled in early December for a 10 day visit to Kenya followed by a week visit to Ethiopia. During this time frame the team met with USAID and USDA, USAID contracting partners charged with maize and livestock goals, African Union, IGAD, FAO, ILRI, KEPHIS, and other regional and governmental institutions as well as individuals and organizations who represented private industry and farming groups. Government regulatory officials responsible for animal and plant health and thus SPS issues were visited in

both Kenya and Ethiopia. A complete list of individuals interviewed during the trip is provided in the appendix.

The three team members who served as ACDI/VOCA consultants were contacted in late October about their interest and availability to conduct this study. A conference call was held November 12, 2014 with USAID East Africa Regional and Kenya Bilateral Mission to discuss expectations for this study and to arrange the best time for a visit to East Africa. Contracts were drafted and put in place for the team over the next few weeks and the US team members traveled to Nairobi arriving December 3, 2014. Because of the Thanksgiving, Christmas and New Year holidays and the projected early February date for the USAID regional meeting in Entebbe, the consultants expedited a visit in early December to East Africa in an effort to meet with key Kenya and Ethiopia government officials and US Government and partners before the holidays whereby many individuals would go on annual leave in mid-December and not return until mid-January. The selected timing of the consultation limited the timeframe in which the team could visit and more importantly limited the amount of time that could be spent in the field before the Christmas/New Year's break. Consequently, the US team targeted Kenya and Ethiopia for field visits. Due to the time limitation for the field visit, Tanzania, Uganda, and Rwanda information was gathered through phone calls, emails and relevant reports. The three consultant's home bases were California, Texas and Kenya and made use of Skype and email communications to develop approaches, consolidate ideas and compile data and assemble the draft report presented here.

B. CONTACT LIST OF PERSONS INTERVIEWS

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