Food Security in the East African Community: Impact of Regional Integration under Customs Union and Common Market Policies

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FINAL REPORT

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ACRONYMS

ADER	Average Dietary Energy Requirement
ADSA	Average Dietary Supply Adequacy
AMS	Agriculture and Market Support (Uganda)
AoA	Uruguay Round Agreement on Agriculture
ASEAN	Association of Southeast Asian Nations
CAADP	Comprehensive Africa Agriculture Development Programme
CARICOM	Caribbean Community and Common Market
CET	Common External Tariff
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CIP	Commodity Intensification Programme
CO	Country Office
CU/CM	EAC Customs Union and Common Market
CV	Coefficient of Variation
DES	Dietary Energy Supplies
EAC	East African Community
EAGC	East African Grain Council
EASC	East African Standards Committee
EU	European Union
FAC	Food Assistance Convention
FAO	Food and Agriculture Organization of the United Nations
FBS	Food Balance Sheets
FDI	Foreign Direct Investment
FO	Farmer Organization
FTA	Free Trade Area
GDP	Gross Domestic Product
GIEWS	FAO Global Information and Early Warning System
GoK	Government of Kenya
GoU	Government of Uganda
HACCP	Hazard Analysis and Critical Control Points
HAs	Humanitarian Agencies
HDI	Human Development Index
HDR	Human Development Report
ICBT	Informal Cross-Border Trade
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
IPCC	Inter-Governmental Panel on Climate Change
LDCs	Least Developed Countries
LEAD	Livelihood and Enterprises for Agricultural Development
LRP	Local and Regional Purchase
LSMS	Living Standards Measurement Survey
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MAFAP	FAO Monitoring and Analyzing Food and Agricultural Policies
MDER	Minimum Dietary Energy Requirement
MDGs	Millennium Development Goals
MERCOSUR	Mercado Común del Sur
MT	Metric tonne

NAADS	National Agricultural Advisory Services
NAIPs	National Agriculture Investment Plans
NCPB	National Cereals and Produce Board
NDP	National Development Plan
NFA	National Food Agency
NFIDCs	Net Food Importing Developing Countries
NFRA	National Food Reserve Agency
NGO	Non-Governmental Organization
NTB	Non-Tariff Barrier
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
P4P	Purchase for Progress
PEAP	Poverty Eradication Action Plan
PMA	Plan for Modernizations of Agriculture
PoFI	Prevalence of Food Inadequacy
PoU	Prevalence of Undernourishment
R&D	Research and Development
RECs	Regional Economic Communities
RoO	Rules of Origin
SFRs	Strategic Food Reserves
SGRs	Strategic Grain Reserves
SnPs	Sensitive food Products (EAC)
SPS	Sanitary and Phytosanitary Measures
SQMT	Standardization, Quality Assurance, Metrology and Testing Act
SSA	Sub-Saharan Africa
SSM	Special Safeguard Mechanism
SSNs	Social Safety Nets
SSR	Self Sufficiency Ratio
TRQ	Tariff-rate Quota
UBOS	Uganda Bureau of Statistics
UN DESA	United Nations Department of Economic and Social Affairs
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNSD	United Nations Statistics Division
URT	United Republic of Tanzania
USAID	United States Agency for International Development
VATs	Value-Added Taxes
WFP	World Food Programme
WHO	World Health Organization
WRI	World Resources Institute
WRS	Warehouse Receipt System
WTO	World Trade Organization

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The views expressed herein are those of the authors and do not necessarily reflect the official opinion of the EC-JRC, the Secretariat of the EAC and IBF International Consulting, as well as other institutions consulted in the process of carrying out the study.

EXECUTIVE SUMMARY

Rationale of the Study

The study reviews the evolution of food security in the East African Community (EAC) and analyses the experience with the on-going process of regional integration under the EAC Customs Union and Common Market (CU/CM) policies. The *Treaty for the Establishment of the East African Community* has clearly stated that deeper regional integration is the pathway to attain food security in the EAC. It is in this context that the study aims to identifying ways for strengthening the impact of the on-going CU/CM process on food security through *inter alia* regional trade.

EU is an important partner in the economic development of the EAC region. Its interest in carrying out this study stems from the awareness that improving food security is a precondition for sustained economic progress. Intra-regional trade in food products contributes to improving regional food security, considering the strong agricultural potential of some well-endowed countries and the complementarities in food production between countries.

EU is also one of the main food aid donors to the greater east African region providing assistance mainly in the form of cash transfers to humanitarian agencies for local procurement of food commodities which, in turn, are provided as food aid to vulnerable populations. It is the hope of the EU as a donor that this form of assistance brings a double benefit – both by helping the recipients of food aid and by providing an incentive to increase production where supplies are procured, thus being also a catalyst for intra-regional trade by strengthening the links between surplus and deficit areas in the region.

Food security in the EAC region

The food security of the EAC region is driven by strong demographic trends and income growth

- The region is characterized by high population growth rates and rapidly increasing urbanization; also, with some exceptions, the region has enjoyed rates of economic growth well above population growth.
- These strong demographic and economic trends influence both the quantity and the quality of food demanded and the ability of food systems to deliver.

The region has made advances in reducing food insecurity but progress is uneven

- The region continues to have unacceptably high levels of chronic food insecurity and is also subject to frequent food shortages and emergencies.
- Nearly one-third of the population of the region has a level of food intake below that considered necessary for a healthy and active life.
- Rwanda and Kenya have made definite and sustainable reductions in the incidence of undernourishment, for Uganda and URT the progress has stalled in recent years while the situation in Burundi has worsened considerably.
- A major cause of the high prevalence of food insecurity is inadequate availability of food at the national level; for EAC-5 as a whole, dietary energy supply (DES) adequacy needs to increase to about 120%, from 101% during 2010-12, so that prevalence of food inadequacy is reduced by half from the current level.
- Micronutrient deficiencies (iron, vitamin A and iodine) in combination with low levels of energy intake (Kcal) result in relatively high levels of stunting among children under 5 (40% for the region as a whole) and as high as 58% in Burundi.

- Availability and access to food in the region is also influenced by irregular demand from neighbouring countries prone to emergencies, importing large volumes of food supplies (largely informally) and also necessitating interventions by international humanitarian agencies which procure food commodities within the EAC region.

Food consumption versus production trends and import dependence

Production has kept pace with consumption but not in some key staple food commodities

- Driven by high population growth rates, urbanization and increased incomes, the region has experienced high food consumption growth rates, outpacing production growth in several basic food commodities. This is particularly the case for vegetable oils, sugar and cereals.
- In most countries of the region and most crops, increases in food output have largely come from expansion of area under cultivation instead of productivity gains. While performance by country differs, on average, only 20% of cereal output growth can be attributed to productivity gains (15% for beans)
- Given the present low levels of productivity, even modest increases in the use of modern inputs and technologies (already happening in some limited cases) could boost yields considerably.
- There has been some improvement in crop yields in the 2000s relative to the 1990s and this trend may continue, in view of the renewed attention paid to staple foods everywhere in the continent (since the global food price crisis of 2008, having been neglected in previous decades), both on policy support and public investment.

Increasing import dependence and high cost of importing food

- For most food commodities, the trade balance at the regional level has been more or less maintained. Notable exceptions are three commodity groups: vegetable oils, sugar and cereals for which there have been growing deficits and increasing dependence on imported supplies, reaching 68%, 24% and 12% respectively in recent years.
- Overall, considering all food commodities, the region spends much more on food imports than it earns from food exports. A large share of EAC countries' total merchandize export earning is spent on importing food (ranging from 20% to as much as 70%), constituting a heavy burden on their overall balance of payments.

Projected widening gap between consumption and production in the medium term

- Medium-term projections to 2024 carried out in the context of the annual *OECD-FAO Agricultural Outlook* indicate a continued widening gap between consumption and production for several commodities. Among cereals, this is the case for rice and much more for wheat.
- The outlook for vegetable oils is of considerable concern, with a 3.4% projected annual growth rate of imports to 2024. Additional vegetable oils production would cover only 6% of the extra consumption requirement during this period.
- By contrast, the trade deficit of sugar is projected to shrink, with EAC-5 production growth rate (5.4% p.a.) outpacing markedly consumption growth rate (3.4% p.a.).

Diversity in agro-ecological endowments imply important spatial and seasonal complementarities

- Dissimilarities in both the demand and the supply of food staples among EAC countries, due to divergent predominant diets and important differences in agro-ecological conditions and resource endowments, result in substantial complementarities among EAC countries in terms of their surplus/deficit position in food staples.
- This mismatch between EAC countries is an important asset for regional food security. However, to exploit fully this complementarity and avoid possible negative market effects at the local level

from excessive procurement, a good understanding is needed of the behaviour of local markets, including the size of seasonal surpluses/deficits.
- More systematic gathering of spatial and seasonal data at local market levels by national statistical agencies and early warning bodies would be warranted.

Increasing intra-regional trade and significance of informal cross border trade (ICBT)

Formal trade reveals increasing intra-EAC trade including in sensitive food products

- The EAC is sourcing relatively more of its food and other agricultural imports from the region itself, i.e. the share of intra-EAC imports has markedly increased in recent years.
- Several food products experienced large increases in their share of intra-EAC trade, including maize, dairy products, rice and sugar among the sensitive food products (SnPs), and meat, vegetables, other dairy products and beans among non-SnPs.
- The growing share of intra-EAC trade is an indicator of revealed comparative advantage in regional trade as well as potential for further growth.
- However, despite impressive increases in absolute volumes traded regionally, the *share* of intra-EAC trade of food products was only 8% in 2010-12 and also falls well short of the 30% target set by the *EAC Food Security Action Plan*.
- Overall, while there is good evidence that the effects of the CU/CM process so far are in the expected direction, the outcomes could have been much more convincing in the absence of various non-tariff barriers (NTBs).

Large share of intra-EAC informal cross-border trade (ICBT) and increasingly with neighbouring countries

- A significant part of food trade in the region is ICBT. While largely omitted in the official trade statistics, it is estimated at over 3 million MT of staples, roughly 70-80% of EAC-5's total trade in these products.
- Several positive aspects of ICBT are well documented, including contribution to food security and income generation for poor people with a strong gender dimension, as well as contribution to the stability of supplies and prices by linking deficit to surplus areas.
- However, ICBT is also poorly organized (by definition), is often carried out on behalf of others, and is exploited on both sides of the border by larger traders who gain the most from this activity.
- The EAC-5 is the origin of some 91% of ICBT regionally (largely Uganda) but absorbs only 32% of ICBT, the rest 68% destined to neighbouring non-EAC countries.
- The expectation that ICBT would diminish following implementation of CU/CM has not materialized; if anything, ICBT has increased.
- One policy issue for the EAC associated with large ICBT with non-EAC countries is managing demand shocks originating from these countries and affecting EAC markets. This may require a trade policy framework at the EAC level to respond to these challenges.

Promising WFP approaches for bridging the gap between formal and informal markets

Local and regional purchases (LRPs) have become important actors in regional food markets

- Institutional procurement of food, such as by the WFP and other humanitarian agencies (HAs) and national food agencies (NFAs), has the potential to significantly impact on local food markets and regional trade as well as on smallholder farmers' incomes and welfare.

- On the whole, most studies have found impact of LRPs on markets (price level and volatility) being weak or modest, largely due to the small scale of LRPs; where LRPs are substantive, there have been impacts, e.g. for maize in Uganda.
- In contrast, traders surveyed often think otherwise, that LRPs impact on markets and have affected their business and profitability.

WFP's Purchase for Progress (P4P) programme could be a model for implementing LRPs

- With declines in relief food aid, WFP shifted its attention to market development, launching the P4P global program in 2008 as a pilot to test innovative ideas.
- P4P evaluation studies are mostly positive about P4P's approach and results (including on Rwanda's CP4P where WFP is playing the role of a large and reliable institutional buyer as well as a mentor), notably on linking smallholder farmers to markets and on building capacity to reliably deliver foods meeting quality standards.
- Given that market inefficiencies are serious binding constraints for increasing production, safeguarding farmers' interest and boosting regional trade, the P4P approach appears promising, but needs to be scaled up to reach many more farmers.
- One area for further research could be to study the feasibility of the Rwandan CP4P approach for other EAC countries.

Clarification needed on how national and regional food reserves could work in a CU/CM environment

- The *EAC Food Security Action Plan* includes proposals on a regional mechanism for the management of strategic food reserves (SFRs), notably for EAC members to maintain food reserves and contingency funds to cover at least 6 months of needs, and to use regional instruments to plan and coordinate the use of reserves.
- Some elements of these proposals are not clearly articulated and need to be clarified. If the SFRs are also to be used for market intervention, it is unclear how this can be compatible with CU/CM policies where trade is fully free and markets are integrated.
- In view of the above, a study led by the EAC Secretariat to clarify these issues would be desirable, similar to the studies on regional food reserves in West Africa (e.g. RESOGEST and PREPARE approaches).

Market price behaviour and role of the CU/CM integration process

Price data only partially support the expectation that market integration is stronger in recent years

- Econometric analysis of prices shows statistically significant relationships for maize between Kampala-Nairobi and Kigali-Nairobi markets, significant influences of Kampala, Kigali and Bujumbura markets on Dar es Salaam prices for rice, and of the Kampala prices on Nairobi, Kigali and Bujumbura prices for dry beans.
- Prices of maize and rice in the five EAC markets co-move fairly closely, with average correlation coefficients of 0.66 and 0.75, respectively, but only 0.41 for dry beans, most likely due to large informal trade with non-EAC markets.
- EAC rice prices are substantially higher than world price, much more than would be explained by applied CET, indicating serious market inefficiencies along the supply chain.
- The expectation for prices to co-move more closely following deeper trade integration is only partially supported; why this is the case needs to be analysed, taking also into account demand shocks from South Sudan and DRC, as well as NTBs and institutional procurement.

Food markets suffer from large seasonal price gaps, with the problem particularly acute in the Kampala market, pointing to storage and other problems at the farm and local market levels

- Seasonality of prices of maize and dry beans is most pronounced in the Kampala market; for rice, seasonality is less serious and is highest for Dar es Salaam.
- Kampala maize market also experiences more frequent and deeper price slumps than in other markets, and these shocks are only weakly transmitted to other markets.
- Both high seasonality and weak transmission of shocks point to the same problem, that the Ugandan maize and beans markets suffer from serious deficiencies in terms of farm-level storage and credit facilities as well as competition – also confirmed by interviews in field visits.
- Comparing 2010-2014 with 2006-2009, seasonality did not decline, as expected, in two-third of the cases analyzed.

How large is food price instability? Is instability declining with deeper trade integration?

- During 2006-14, price instability in the EAC markets was higher for maize than for rice and beans, and higher in the main producing/exporting countries than in importing areas.
- Comparing 2010-2014 with 2006-2009, price instability was similar in both periods for maize, more unstable in the second period for rice, and reduced instability for dry beans.
- A review of selected past experiences with large price spikes and slumps showed, on balance, that domestic factors were the main drivers, notably harvest shocks, export restrictions, uncertainties related to trade policy, and weak supply management, especially during excess production.
- Responding to price volatility in EAC markets may require a clear trade policy framework for responding to shocks emanating from neighbouring non-EAC countries, which may include export policy instruments.

Progress in the implementation of the CU/CM policies

Implementing the CET on sensitive food products, a rule-based system grounded on regional triggers could be the way forward for resolving divisive issues

- Sensitive food products with higher CETs aimed at boosting regional production enjoy broad support of stakeholders as well as policy makers, albeit views are divided over whether more foods should be added to the list or some deleted.
- The flexibility provision for discretionary adjustment of CETs for food security ('stays of application') and for raw materials ('remissions') has been a contentious issue due to *ad hoc* implementation, although there is general support for such flexibilities.
- A compromise suggestion is to adopt a rule-based system whereby CET flexibilities are triggered by regional, and not national, shortfalls in food production using EAC regional food balance sheets, or/and spikes in world market prices.

Progress has been made on establishing food standards, but there is also a risk of setting standards unnecessarily high to render them counterproductive

- Good progress has been made on harmonization of standards and technical regulations, a fine act of balancing different objectives, notably food safety regulatory requirements and practical considerations on the ground.
- One conclusion of this study is that there is a good basis to argue that some EAC standards (e.g. maize and dairy products) may have been set unnecessarily high.
- In view of the structure of the maize market, there is no market reward for smallholder farmers to improve quality, trading in the informal market instead. Under the circumstances, unrealistically

high standards neither contribute to boosting formal intra-EAC trade nor to safeguarding food safety, their *raison d'être*.

- An alternative to a strict harmonization of standards is equivalence agreements between trading partners which entail a recognition that each country's respective standards, despite being different, may achieve similar levels of protection.

Intra-EAC trade continues to be frustrated by lingering physical, regulatory and hidden constraints and a range of NTBs difficult to remove

- The overall progress in removing NTBs has been slow and frustrating to all concerned, especially NTBs of a regulatory nature which in theory could be acted upon quickly and without much cost.
- Even where the regulatory obstacles are removed at the policy level, enforcement is weak and things do not change on the ground.
- Among the serious physical constraints, expensive transport and associated costs *en route*, including storage costs, were ranked high, with perishable commodities (meat and milk, fruits and vegetables) taking the brunt. Unpredictable NTBs and *ad hoc* charges were considered to be serious constraints to intra-EAC trade.
- On the positive side, security, delays and corruption were seen as improving by a majority of the survey respondents, as well as mutual recognition of the SPS/TBT certification procedures.
- With the *EAC Elimination of Non-Tariff Barriers Bill, 2015* finally enacted in March 2015, the expectation is high that trade barriers will be finally addressed seriously and decisively. In this respect, the established EAC process of identifying and monitoring the removal of NTBs may prove an asset.

Overall policy environment and government spending in agriculture in EAC countries

- The fairly high prevalence of undernourishment in the region, due to inadequate food supplies in relation to strong demographic trends, calls for the need of substantial increases in food production.
- Rapid growth in food production requires both a supportive policy environment for farmers and adequate level of government spending on essential public goods for agriculture and targeting investment in improving rural infrastructures.
- While the policy environment is largely supportive to food production, EAC members need to almost double the spending on agriculture as a proportion of total budget from present levels to reach the 10% target set by CAADP (2003 Maputo Declaration).
- In view of serious market inefficiencies at the farm/local levels which undermine production incentives, not only the quantity of government spending in agriculture is important, but also spending has to be provisioned to tackling specific problems in the supply chain, inter alia, by minimizing post-harvest losses, investing in on-farm and local storage, creating competitive markets for primary procurement and modernizing processing facilities.

I INTRODUCTION

The will to integrate African economies at both the continental and regional level dates back to the independence era of the 1950s and 1960s but the process gained momentum following the 1991 Abuja Treaty under which a concept of a continental economic community was articulated based on Regional Economic Communities (RECs) as the building blocks. Food security was always a prominent and core objective of these processes, by referencing to the high incidences of chronic hunger, frequent food shortfalls and famines, and growing import dependency of basic foods. There was also a strongly-held conviction among most leaders and intellectuals in Africa that Africa holds immense potentials for addressing these chronic problems through regional integration in general and integration of the food markets in particular.

The RECs have made varying progress on trade and economic integration and, through this process, progress on food security. A Customs Union (CU), and a Common Market (CM), is expected to deliver more on this than a Free Trade Area (FTA). Currently, a rough count shows that there are in Africa three CUs – EAC, SACU and WAEMA/UEMOA - and seven FTAs – ECCAS, ECOWAS, SADC, COMESA, IGAD, UMA and CEN-SAD.

The objective of this study is to better understand how deeper trade and economic integration in the EAC contributes to enhancing regional and national food security. EAC is well advanced among the existing RECs in Africa, having progressed to deeper integration. Thus, the findings of this study would be valuable not only for better policy formulation and implementation in the EAC region but also for other RECs seeking to improve food security through deeper trade and economic integration.

The rest of this introductory Chapter is organized as follows. The next section provides an overview on the framework and pathways of regional trade integration and food security, drawing upon some insights from trade theory and articulated expectations expressed in EAC policy documents. Section 1.2 introduces the study, outlining background to the work, objectives, and scope. This section also outlines some policy and research questions on trade and food security in the context of the EAC, and expectations from this study. Section 1.3 outlines the methodology used for the study and Section 1.4 the outline of the report.

1.1 Regional trade integration and food security

In trade theory, the main channel through which trade impacts on poverty is through increased national income due to the rationalization of production through the reallocation of resources in sectors where a comparative advantage exists, and increasing returns by firms as they realize economies of scale. These channels are expected to work similarly in regional trade integration also, with the exception of some nuances such as the possibility of trade diversion that reduces overall gains. Not addressed in this general framework is the distribution of income gains across households and regions. It is held that the overall gain is positive and there will be winners and losers and the former need to compensate the latter to realize non-efficiency goals such as equity or food security. This framework also assumes that factors of production are mobile and firms and industries are not constrained by supply response.

There is one other effect that operates under regional trade but does not under multilateral trade liberalization. This is *trade diversion* which can occur when a partner country's production replaces lower-cost imports from a non-FTA partner as a result of the high level of protection that protects the countries inside the FTA. Trade diversion reduces the overall gains from trade realized through *trade creation* effect.

In practice, several of the main assumptions made in the above basic framework do not hold, for example factors of production are not as mobile as assumed, supply response is weak and overall income gains do not get distributed as easily as assumed. These factors are much more pervasive in the agriculture and rural areas. It is for these reasons that in trade negotiations, whether at the WTO or bilateral or regional levels, liberalization of agricultural trade has been much more divisive than for non-agricultural trade. It is easy to see why this is the case. Because a majority of the poor and food insecure are dependent on agriculture, this sector has much more direct and immediate impact on incomes of the poor and their food security. For the same reason, any negative shock on food or agriculture production tends to have a marked negative impact on poverty and food insecurity. Since agriculture has stronger backward and forward linkages with the rural economy, the impacts are felt deeper and wider.

When it comes to trade integration in basic foods, commonly identified additional pathways linking trade and food security include, inter alia: higher incomes due to specialization and efficiency gains, although in practice this depends on the distribution of those gains; and reduced variability in food supplies and food prices.

Since the 2008 food price crisis, food importing countries have also expressed apprehensions about price spikes and the risk of reliance on the global food markets as a source of food supplies during crises due to imposition of export restrictions. This experience has tilted opinions further towards regional integration of food markets.

These linkages and pathways between trade integration and food security are also recognized and articulated in declarations and official documents of the RECs in Africa. For example, as noted at the outset, tackling food insecurity was a prominent goal of the 1991 Abuja Treaty.

In the case of the EAC, Chapter 18 of the *Treaty for the Establishment of the East African Community*, titled *Agriculture and Food Security*, addresses regional food security and agricultural provisions. The chapeau of this Chapter, on scope of regional cooperation, uses concepts and arguments commonly found in trade literature, such as: "the overall objectives of co-operation in the agricultural sector are the achievement of food security and *rational agricultural production* within the Community. To this end, the Partner States undertake to adopt a scheme for the *rationalization of agricultural production* with a view to promoting *complementarity* and *specialization* in and the sustainability of national agricultural programmes" (emphasis added). In other words, the envisaged pathway to food security is deeper regional integration based on the principle of comparative advantage.

Besides articulating the core pathway intrinsic in a trade-food security framework, the Treaty itself and other EAC regional policy documents such as the 2010 *EAC Strategy for Food Security* and 2011 *EAC Food Security Action Plan 2010 – 2015* provide a complete package of essential instruments for realizing the expected potentials. Thus, the package contains both trade-related instruments such as removal of tariffs and NTBs on intra-trade, safeguards and so on, as well as measures to increase productivity, strengthen supply response capability, and regional initiatives on fertilizers, irrigation, climate change adaptation etc. This is a realization that while trade liberalization creates an enabling environment for intra-union trade, actual trade flows will depend on these other factors.

1.2 Rationale of the study

The EAC region suffers from fairly high level of chronic and transitory food insecurity, frequent food shortages and unstable food prices. On the other hand, there is a consensus widely shared by leaders and experts alike that the region is well endowed to expand food and non-food agriculture for consumption and export. The region has embarked into deep trade integration of the food markets with the objective of

addressing *inter alia* these food insecurity problems. Besides trade policies, several other regional initiatives and instruments essential for trade integration have been formulated and implemented.

The objective of this study is to understand how deeper regional trade integration of the food and agricultural markets helps improve food security and spur agricultural growth. It entails, *inter alia*, an analysis of the effectiveness of the implementation experience of the CU/CM policies, including an understanding of the views and positions of various stakeholders, especially from the private sector. It is recognized that the full range of the CU/CM instruments are yet to be fully implemented, e.g. the removal of the NTBs, and so it would be premature to assess the impact of the CU/CM on regional food trade. However, it should be possible to already get some indications so as to judge if the already implemented provisions are having positive, or negative, effects.

The overall goal is to contribute to improving the effectiveness of various trade provisions and instruments as well as provisions for the agricultural sector. The EAC being among the most advanced of the RECs in Africa in terms of regional integration, the findings of this study would also be of value to other regional bodies in Africa seeking to deepen integration along similar lines.

A review of the literature shows that there has been considerable analytical work on issues related to this study. This means that in order for the project to add value, it should concentrate on issues that have been identified or are judged as needing further work or investigation. Both the literature review and inception workshop held in Kampala, Uganda, revealed a range of policy and analytical questions that are important for the effectiveness of the provisions and instruments but whose answers are not as clear. Given that the EAC is the most advanced among the RECs in Africa to deepen trade integration through the CU/CM process, the study is also an opportunity to address these specific research questions of important policy significance for regional integration.

The following are some of the questions that have arisen:

- Do the CU/CM policies lead to distorting local market prices in potential maize producing countries such as Tanzania and Uganda?
- To what extent the regional demand provides income opportunity for farmers in exporting countries?
- What policy measures do governments have to consider within CU/CM protocols so as to avoid price distortion/escalation without having discouraging impact on the local producers?
- How past production shocks and world price volatility were addressed through national and regional policy responses and whether and how a CU/CM is more effective in responding to such shocks?
- What would be the appropriate proportion of the marketable surplus in a sub-region of some given features (e.g. volume of surplus/deficit, level of market integration, number of net sellers/buyers, level of food insecurity etc.) for local purchase for food aid and relief purpose without distorting markets and negatively impacting producers/consumers?

Additional research and policy questions asked and which the study has addressed with varying degrees of success include the following.

How does the CU and regional trade policies affect food security? - The issues here revolve around the types of trade policies applied for staple foods and how these policies affect local markets, in terms of local supplies and prices. A major issue is how these policies are implemented, and whether there is much discretion about their application at the border among different types of traders. Another relevant issue is the time consistency of policies, in contrast to frequent and largely unpredictable trade policy regime shifts. It is not clear whether frequent policy changes reduce the overall volume of trade or just increase

the costs of trade, rendering imported supplies more expensive. A third issue is the relation between a strict trade regime and informal trade. The stricter the regime (e.g. a ban on import or export, or high product standards), the larger the incentive to bypass them via informal trade channels.

Balancing regional trade policy under a CU framework and national food security objectives – The major issue here is whether national trade policy bound by CU/CM policies in necessarily a valid or adequate way to ensure national food security or whether a discretionary and variable state-contingent trade policy is required at times. The latter may necessitate instituting short-term trade measures, thus temporarily abolishing the spirit and substance of the CM idea. In this connection, the issues include considerations about how the CU instruments can be applied in a more predictable manner, and so avoid adverse effects to other member countries, as well as not dilute the main thrust of the integration process. What alternative policies and instruments are available that may be more efficient in ensuring stable markets and adequate supplies of basic foods?

1.3 Methodology

A range of analytical activities were implemented for this study as summarized below. The most substantive part of this is an analysis of statistics and related information, described below under headings 1 to 6. In addition, three other methodological tools were used to gather essential information: i) survey of traders and other stakeholders; ii) focused discussions and interviews with stakeholders in all EAC countries; and iii) a restitution workshop for sharing the results and final feedbacks.

The study gathered a large amount of data and undertook analysis in six specific areas identified in the study's ToRs.

1. Analysis of the state of food security in the EAC region

- An analysis was undertaken using detailed FAO data on food security for each EAC country. The analysis covered trends in adequacy and variability of food supplies, inequalities in food distribution and prevalence of undernourishment. Similarly reviewed were statistics on proteins and micronutrients and the prevalence of malnutrition, especially as manifested by stunting of children under 5 years of age.
- Analysis of the status of food security at sub-national and household levels is hampered by limited availability of data and it was beyond the scope of the study. Consequently, a limited effort was made in this direction by reviewing some of the literature on poverty studies for the five EAC countries.

2. Analysis of the trends and characteristics of the supply (availability) of major food staples at the national and regional levels, taking into account seasonality of domestic production and regional and international imports and exports

- For national-level analyses, up to date time-series statistics going back to the 1980s until as recent as 2014 were obtained from the FAO GIEWS (Global Information and Early Warning System) for all five EAC countries. These covered all major food staples for which various statistical analyses were undertaken on trends, variability, co-movements among countries, etc. as well as to arrive at national supply-utilization accounts over time, including quantification of national surpluses or deficits. Information on the exogenous drivers of these variables were identified and used in the analysis.
- In order to identify pockets of surplus and deficit sub-regions, and trade among them, efforts were made to compile statistics on production, consumption and balance of food staples at the sub-regional and lower or district levels. At the end, only a limited analysis was feasible for lack of disaggregated statistics at those lower levels.
-

- Basic geographic characteristics of the EAC countries were analyzed via tabulations of localities, combined with economic and agronomical information. Efforts were made to combine geographic and climatic information with economic information in order to identify the most likely sources of surpluses and deficits.
- Complementarities between regions and countries were identified on the basis of the above analysis, leading to the identification of potentials for regional trade.
- Analysis was undertaken to identify variables that affect supply and net trade and whether net trade is sensitive to domestic and world prices.

3. Analysis of intra-trade in food and agricultural products

- Detailed agricultural trade statistics were downloaded from the WITS/COMTRADE website and a range of analyses were undertaken to understand the structure and evolution of intra-EAC trade.
- This analysis covered three categories of products: the EAC sensitive food products, non-sensitive but crucial staples such as beans, sorghum, edible oils, meat and others, and all agricultural products.
- The nature and evolution of informal cross-border trade (ICBT) was analysed using published sources, supplemented by survey questionnaires and country visits by the authors.

4. **Analysis of food prices (based on all available sources), namely trends, price levels, spikes and volatility, and seasonality for major food commodities, extent of price integration**

- Analyses of food prices were undertaken to understand their trends and characteristics, including price levels, seasonality, spikes and volatility, and the extent of market integration.
- Part of this analysis was also extended to the regional levels, by reviewing price data to identify trading surplus and deficit regions. The extent of co-movement in prices and market integration among the markets was also analysed

5. Analysis of the constraints to regional trade

- A combination of ad hoc estimates from field visits and a review of the estimates in available studies were compiled to quantify physical constraints along the domestic and transit routes and at the border (transport costs, transfer costs, transaction costs etc.) in the movement of supplies between identified geographical points (main producing and consuming areas).
- Non-physical constraints (various charges, non-tariff barriers, etc.) in moving supplies across national borders were also reviewed and analysed.
- Based on this information, an assessment was made of their relative importance which provided the basis for identifying the main bottlenecks along the main producer-consumer routes.
- Traders' survey also provided valuable insights on these constraints.

6. Analysis of CU/CM policies including tariffs and NTBs as well as policies and investment supportive of food and agricultural production.

- EAC Gazettes were reviewed to compile statistics on changes in the CET over the past 5-6 years under the flexibility provisions that permitted CET stay of application and duty remission. Affected food products and reasons for the flexibility were noted and analysed.
- EAC quarterly publication on the status of the elimination of NTBs provided information on the state of the NTBs resolved, new NTB introduced and unresolved cases. This information was analysed to understand issues behind difficulties to remove the NTBs.
- EAC Annual Trade Reports provided progress made in a number of areas including intra-EAC trade growth. These reports provided insights on the growth or slump of trade over the years.
- Statistics were compiled from World Bank and FAO MAFAP sources on the state of price distortions and revealed incentives to agriculture. Statistics were also compiled on public spending in agriculture related to the Maputo declaration calling for 10% spending on agriculture. This information provided the basis for analyzing the overall policy environment for food and agriculture sub-sectors.

In addition to this formal analysis based on available data compiled from various sources, the study also benefited from field visits by the study team to the five EAC countries as well as detailed responses to a comprehensive Questionnaire.

Interviews of stakeholders

The authors undertook field visits covering all five countries during the first half of March, one week per country. The objective of these field visits was to have discussions with key stakeholders on the various issues pertaining to the CU/CM process. Together with the national Resource Persons, targeted stakeholders were interviewed on various topics/issues identified, such as questions on ease of trade, marketing costs, procedures and regulations of trading both internally and externally, policies affecting border trade with EAC countries and other countries, factor influencing the cost of trade and so on. The field visits also helped update statistics and validate assumptions made. In many cases, follow-up interviews were also made by national Resource Persons. A total of 77 stakeholders were interviewed covering the five countries (Annex 1.1).

Survey of targeted stakeholders

A statistically representative sample survey was considered neither feasible nor essential, given the scale and scope of the project. Instead, an attempt was made to reach out to a good number of representative stakeholders - traders, commercial farmers, farmers' and traders' associations millers, mills etc. – among those interviewed during the field visits. A questionnaire was prepared for the survey and implemented in all five countries during March 2015. The survey questions (see Annex 1.2) sought directly from stakeholders their views on various aspects of the CU/CM policies and implementation so far from the standpoint of their own experience based on their involvement in policy making or in the context of their business.

A total of 33 stakeholders among those interviewed responded to the survey questionnaire (indicated as such in Annex 1.1).

Dissemination of the results through a final dedicated workshop

A final restitution workshop took place on 8-9 June 2015 in Kigali, Rwanda. The draft final report was presented and discussed in that workshop and feedback received from the workshop is integrated in this final report.

1.4 Report outline

The Report is organized in seven Chapters. Following this introductory section, Chapter II reports analyses on the state of food security in the EAC countries, both nationally and sub-nationally. Also discussed are the main drivers of food insecurity at the national, sub-regional and household levels.

Chapter III analyses a wide range of statistics aimed at understanding the drivers of food consumption and related challenges and long-term trends in the balance between food production and consumption, disaggregated by country and main staple foods. It examines trends in food import dependency, the increasing cost of food imports and the declining role of food aid. Finally an attempt is made to look at the potential for increasing food production, by decomposing output growth into its area and yield components and explore likely trends in productivity during recent years.

The focus of Chapter IV is on intra-regional trade (i.e. what flows from where to where) looking at agricultural products as a whole but also focusing on the sub-set of food products having been characterized as sensitive and analyze their evolution over time. A special section deals with informal trade in the region, still being a very prominent form of trade (which products are mainly traded under this mode and by which countries). Procurement of food commodities by humanitarian agencies (mainly WFP) to be provided as food aid in the EAC region or elsewhere in the region are also analyzed including the market impact of food procurement and distribution. Finally, the Chapter reports the results of fresh analyses of the geography of intra-regional production of basic food stuffs, mapping out the main producing/surplus areas within EAC (commodity/country-specific) and the main consuming/deficit areas and analyzing seasonal and spatial complementarities between deficit and surplus areas.

Chapter V assesses regional integration in some basic food products based on the experience so far, by analyzing relationships between markets trying also to find out which market is the driver in the formation of prices within the region. This is followed by a discussion of the main impediments to intra-regional trade, including both physical and institutional constraints. This leads well into looking at the implementation experience of the main elements of market integration through the CU/CM process applicable to food products. An assessment is made of progress made on removal of tariffs, issues with the application of the CETs, elimination of the NTBs and harmonization of technical standards. The perspective of this analysis is EAC and the role of these policies on intra-EAC trade and food security.

Chapter VI presents a synthesis of the analyses and findings on important cross-cutting issues, based on the analyses in Chapters II to V. This Chapter takes a forward-looking approach, discusses concrete ideas on ways to address identified policy weaknesses, and technical and non-technical deficiencies. This Chapter also covers some of the more divisive issues and research questions for further analysis.

Finally, Chapter VII presents some concluding remarks.

II FOOD SECURITY SITUATION IN THE REGION

2.1 Trends in national-level food and nutrition security indicators

FAO provides a suite of indicators for monitoring food and nutrition security at the national level. Prominent outcome indicators are various prevalence rates such as the prevalence of undernourishment, prevalence of food inadequacy, prevalence of stunting among children, prevalence of Vitamin A deficiency among children, and so on. The prevalence of undernourishment (PoU) is the traditional FAO hunger indicator, also adopted as official MDG indicator for Goal 1, along with the incidence of income poverty. The prevalence of food inadequacy (PoFI) was added more recently in 2012.

The prevalence indicators are expressed in terms of the percentage of total population not meeting the set minimum food or nutrition requirements. The prevalence indicators PoU and PoFI are derived on the basis of three parameters: i) the average level of food availability in the country; ii) the distribution of the average availability among the population; and iii) the level of food considered essential for a given outcome of health and wellbeing. Therefore, a good understanding of the progress made by a country in improving food security, as measured by the prevalence outcomes (e.g. PoU and PoFI), requires analyses of the underlying parameters as well, notably food availability and its distribution. Of these two, food availability plays a crucial role. Stability of food supply is also an important dimension of food security and an indicator of the progress being made.

This section reviews the state of food insecurity in the EAC countries based on these indicators.[1] The next three sections review the progress made on average food availability, stability of supplies and the adequacy of the supply relative to requirement. These are followed by an assessment of the distribution parameters. The final section then reviews the prevalence rates. For a comparative perspective, corresponding indicators are also reviewed for EAC's four neighbouring countries from southern Africa, namely Malawi, Mozambique, Zambia and Zimbabwe, based on a population-weighted average of the indicators for them.

2.1.1 Average availability of dietary energy supply (DES)

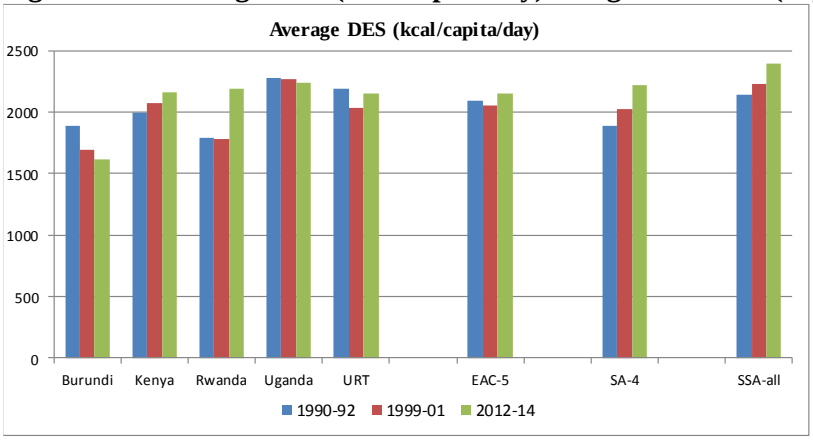
The DES measures the sum total of all food available for human consumption in a country after deduction of all other uses (exports, animal feed, industrial use, seed and wastage), and so is based on a food balance sheet. It is expressed in kilocalories per person per day (kcal/person/day). The DES plays a crucial role in determining prevalence rates.

The level of the DES tends to be around 3,000 kcal in countries with virtually zero or very low prevalence of hunger, e.g. in developed countries as well as in many countries in Latin America. The average for the ASEAN region in 2012-14 was 2,764 kcal and a similar 2,769 kcal for the developing countries as a whole. For sub-Saharan Africa (SSA) as a whole, the DES was 2,391 kcal. Within the EAC-5, the DES levels of Kenya, Rwanda and URT were similar in 2012-14 in the 2,152-2,185 kcal range while Uganda's was higher at 2,242 kcal. Burundi stands out at 1,610 only in 2010-12 (Figure 2.1.1).

[1] FAO food security indicators are available for the period 1990-92 to 2012-14 with the exception for Burundi for which the series ends in 2010-12. For weighted averages for EAC-5, the results for 2012-14 include 2010-12 data in the case of Burundi. Given the slow change in the data series and the small population weight of Burundi, the overall average is virtually unaffected by the missing Burundi statistics for 2012-14. All food security indicators are available in the FAO website: http://www.fao.org/economic/ess/ess-fs/en/

The figure shows that for EAC-5 as a whole there was a reduction in the average DES between 1990-92 and 1999-01 and an improvement in 2012-14. This contrasts with the case of the SA-4 (weighted average for the four southern African countries) and SSA as a whole where progress was continuous. Only Kenya had this experience in the EAC. The trend growth rates, which capture all data points within the periods, show that the growth rates were positive for four EAC countries (Burundi being the exception) for the entire period, 1990-92 to 2012-14. That the growth rates were negative in the 1990s and positive in the 2000s (Kenya being the exception) means that the overall positive experience (during 1999-2014) was due to the progress made in the 2000s. Rwanda's progress on DES has been remarkable, growing at the rate of 1.37% p.a. in the 2000s, four times the EAC average growth rate of 0.33% p.a. Overall, however, the DES growth rate for EAC-5 is only about half the rates for the SA-4 and SSA.

Figure 2.1.1 Average DES (kcal/capita/day) and growth rates (%) in the EAC region (1990-14)



	DES growth rate (% per annum)		
	1990-92 to 2012-14	1990-92 to 1998-00	1999-01 to 2012-14
Burundi	-0.65	-1.28	-0.59
Kenya	0.44	0.68	0.54
Rwanda	1.14	-1.20	1.37
Uganda	0.12	-0.20	-0.23
URT	0.14	-0.86	0.42
EAC-5	**0.27**	**-0.25**	**0.33**
SA-4	0.76	1.20	0.78
SSA-all	0.55	0.45	0.60

Source: FAO, Food Security Indicators.

What has been the experience during 2005-14, the period when EAC economic integration deepened? Overall performance has not been positive, with the DES growth rate during his period being lower than during 1999-2005 for all five EAC countries (not shown in Figure 2.1.1). For Kenya and Rwanda, the growth rates, while still positive, decelerated, while these turned from positive to negative in the second period for Uganda and URT. Elsewhere in Africa, while the DES growth rate similarly decelerated for SSA as a whole, for SA-4 this was three times faster in the second than in the first period of the 2000s. This result for EAC-5 is unexpected because agriculture is known to have performed better in recent years than in the past. Note that the DES is expressed in per capita terms and so population growth does play a role.

2.1.2 Stability of dietary energy supply (DES)

Stability of food supply is among the four core dimensions of food security along with availability, access and utilization. Supply stability of a variable is typically assessed based on the deviations of the actual values from a trend. In order to focus on more recent years, stability of the DES is reviewed here over the period 1999-2001 to 2012-14 (2000 to 2013 in short).

Figure 2.1.2 plots the deviations of the actual DES from their linear trend values.[2] The graphs show, for example, the deviation in DES supply for Kenya in 2003 was -53 kcal, the difference between 2,020 kcal (actual) and 2,073 (trend value), while the deviation is positive 59 kcal for URT in 2006, the difference between 2,167 kcal (actual) and 2,108 (trend value). Note that the deviations are fairly small relative to the averages, e.g. the highest negative deviation during 2000-13 was 61 kcal for Uganda in 2000, which is

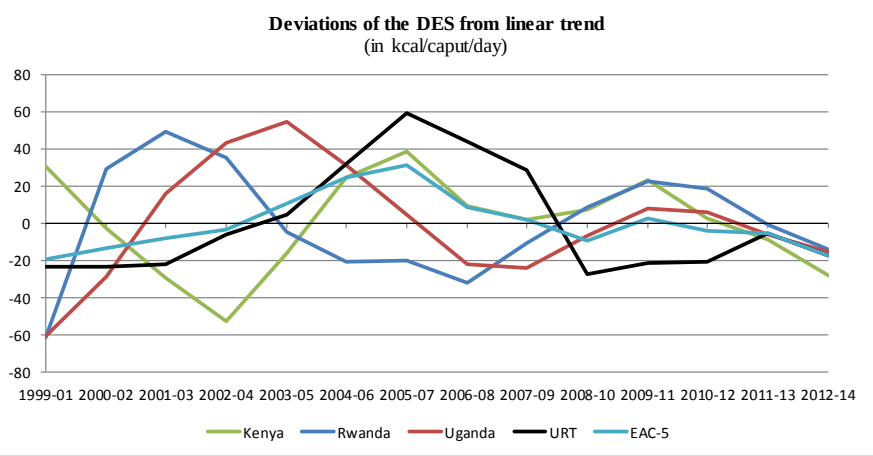
[2] Burundi is not included in this analysis as the quality of the data appeared poor for computing instability measure.

only about 3% of the roughly 2,000 kcal trend value. This is expected because the DES includes all foods which when aggregated cancel larger deviations in individual foods.

A summary measure of instability over the entire period covered is standard deviation (SD), which is computed from the deviations from trend values. This measure shows that instability is highest for Rwanda, Uganda and URT (29-30 kcal/capita/day), followed by Kenya (25 kcal). The SD of 15 kcal/capita/day for EAC-5 is almost the same as for SA-4. It may be noted that deviations from trend are not synchronous among countries. This is essentially a good feature for regional cooperation in food security, whereby countries can exploit seasonal complementarities in food production to the benefit of all countries (more on this in Section 3.5).

While the SD measures instability for the entire 10 years or so, one interesting question to ask would be whether there is a tendency for the instabilities to shrink over time. The graphs do show that the deviations seem to be declining over time. This is especially notable since around 2005. As a further check, the signs of the slopes of the deviations were checked by fitting trend lines on the deviations. The results (Figure 2.1.2) confirm that the slopes are indeed negative for all four countries, with marked declines for Rwanda and Uganda. The rate of decline for EAC-5 (-0.56% p.a.) is similar to that for SA-4.

Figure 2.1.2 Instability trends of the DES in the EAC region (1999-01 to 2012-14)



	DES trend - how stable during 1999-01 to 2012-14?	
	Standard deviation (SD)	Slope of the deviations
Kenya	25	-1.22
Rwanda	30	-2.83
Uganda	30	-3.11
URT	29	-0.20
EAC-5	**15**	**-0.56**
SA-4	16	-0.51
SSA-all	9	0.55

Note: The graph plots deviations of the DES from their (linear) trend values. S.D. (standard deviation) is a measure of instability of the deviations of the DES from their trend values. The slope of the deviations is computed by fitting trend lines on absolute values of the deviations (i.e. by ignoring their signs). Burundi was not included in this analysis for data reason.
Source: Computed by Authors with DES data from FAO.

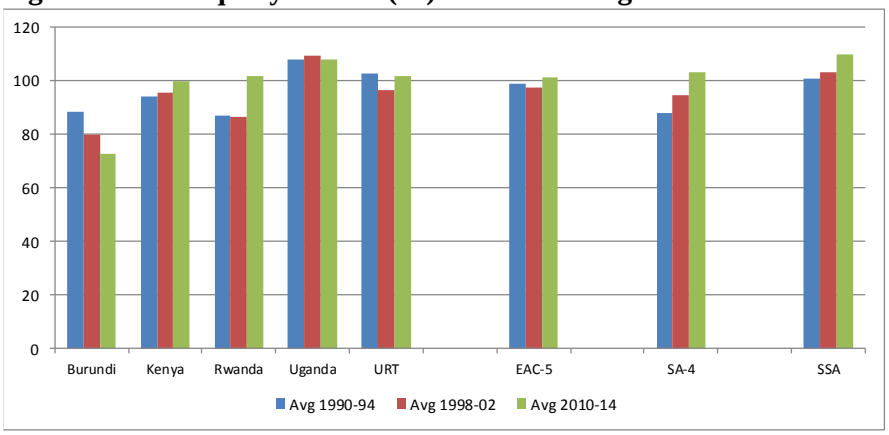
2.1.3 Adequacy of DES relative to requirements

The average level of food availability (the DES) on its own does not provide a satisfactory picture of food adequacy and food security for the whole population. There are two important considerations that have to be taken into account for the later: (a) a comparison of the average DES with an average normative dietary requirement; and (b) how available supplies are distributed among the population in a country. FAO's food security indicators provide these measures. As for adequacy (distribution is reviewed below), the yardstick is the Average Dietary Supply Adequacy (ADSA) which expresses the DES as a percentage of the Average Dietary Energy Requirement (ADER). The latter is a normative reference for adequate

nutrition of the average individual in a country for a healthy life and a normal level of activity.[3] A value of ADSA greater than 100 indicates that, on average, the total dietary energy supplies available in a country are more than enough to meet the needs of the population for a healthy and active life. An important proviso, of course, is how these supplies are distributed among the population. A level of ADSA at 100 or above would ensure adequate food for all only if the available food is perfectly equally distributed to all, which hardly happens in real life, as will be seen below.

Figure 2.1.3 shows the ADSA levels for three periods. Also shown are trend growth rates of the ADSA for the 1990s and 2000s. The average ADSA for EAC-5 as a whole was 101% in 2010-14 which means that, on average, the available DES is only 1% more than what would be required for a healthy and active life. For comparison, the ADSA is 120 for south-east Asia, 128 for Latin America, 119 for the developing countries as a whole and 110 for SSA[4].

Figure 2.1.3 Adequacy of DES (%) in the EAC region



	Growth rates (% p.a.)	
	1990-92 to 1998-00	**1999-01 to 2012-14**
Burundi	-1.13	-0.78
Kenya	0.27	0.51
Rwanda	-1.22	1.08
Uganda	-0.17	-0.35
URT	-1.02	0.46
EAC-5	**-0.42**	**0.28**
SA-4	1.05	0.77
SSA	0.35	0.59

Source: ADSA data from FAO Food Security Indicators. Growth rates are computed by the authors.

The growth rates of the ADSA show that the overall situation in the EAC region has improved in the 2000s compared to the 1990s. In the 1990s, the ADSA growth rates were negative for four of the five EAC countries. In the 2000s, the trend turned positive for Rwanda and URT, with marked improvement for Rwanda, while it increased for Kenya. For Burundi as well, the negative growth was lower in the 2000s.

2.1.4 Indicators of the distribution of DES across population groups

Besides the average DES at the country level, the other crucial parameter that determines the prevalence of food insecurity is the distribution of the DES, which tends to be egalitarian in some countries and skewed in others. FAO food insecurity indicators include two measures of distribution. One is the coefficient of variation (CV) of food consumption within the general population, derived from available household surveys that collect data on both food consumption/acquisition and income/expenditure. The higher the CV, the less uniform is the food consumption in a country. The second is the skewness of caloric consumption distribution. The higher its value, the more the distribution is skewed, implying that a higher share of the population consumes less than the average consumption for that country.

[3] The ADER is about 25% higher (depends on country factors) than the Minimum Dietary Energy Requirement (MDER), an amount of energy needed for light activity. The traditional FAO incidence of undernourishment uses MDER. The ADER, on the other hand, covers food requirements associated with normal physical activity.

[4] The DES averages for these other country groups are for the 2010-12.

Table 2.1.1 shows average values for two periods of the CV and skewness for the EAC countries. The CVs indicate substantial differences, e.g. for the second period, from 0.23 for Kenya to 0.36 for URT, which means that the same level of the DES will have higher prevalence of hunger in URT than in Kenya. The CV also increased markedly for URT for recent years (from 0.28 to 0.36) but fell slightly for Kenya and remained similar for other countries. The EAC-5 weighted average value of the CV is lower than that for SA-4. The skewness pattern is similar to the CV both in terms of the relative levels within EAC and in changes between the periods. Also, as with the CV, skewness is lower in EAC-5 on the whole than in SA-4.

Table 2.1.1 Distribution parameters of DES in the EAC region

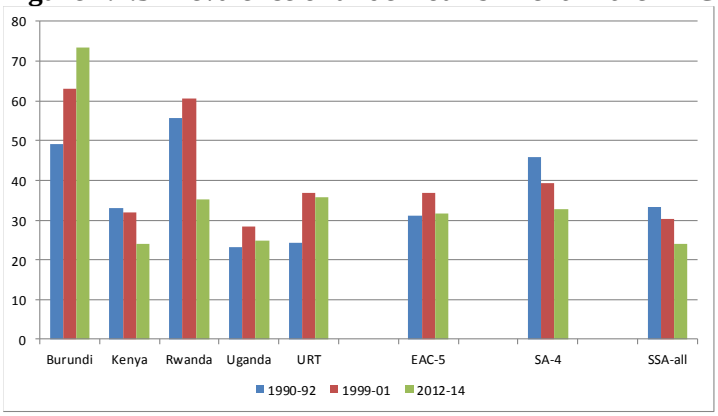
	CV of DES		Skewness of DES	
	Avg 1990-92 to 1994-96	Avg 2006-08 to 2012-14	Avg 1990-92 to 1994-96	Avg 2006-08 to 2012-14
Burundi	0.29	0.29	0.90	0.90
Kenya	0.26	0.23	0.79	0.70
Rwanda	0.33	0.32	1.01	1.01
Uganda	0.29	0.30	0.89	0.94
URT	0.28	0.36	0.87	1.14
EAC-5	**0.28**	**0.30**	**0.86**	**0.94**
SA-4	0.31	0.35	0.97	1.06

Source: FAO Food Security Indicators.

2.1.5 Prevalence of undernourishment, food inadequacy and malnutrition

Having described above various indicators that determine the overall food security outcome, this section reviews estimated prevalence rates. As said earlier, the prevalence of undernourishment (PoU) is the traditional FAO indicator of hunger, as well as one of the MDG1 indicators. The PoU measures the percentage of the population that is at risk of not covering the food requirements associated with normal physical activity, also the level associated with a "hunger" threshold. In order to cover more than this minimum requirement, FAO added in 2012 another indicator called prevalence of food inadequacy that uses a higher level of the minimum caloric energy intake.

Figure 2.1.5 Prevalence of undernourishment in the EAC region (%)



	Trend growth rates of the PoU (% per annum)				
	1990-92 to 2012-14	1990-92 to 1998-00	1999-01 to 2012-14	1999-01 to 2005-07	2005-07 to 2012-14
Burundi	1.1	1.5	1.0	1.1	0.3
Kenya	-0.6	-0.4	-0.9	-0.4	-0.4
Rwanda	-1.3	1.6	-1.8	-2.2	-2.0
Uganda	-0.1	0.9	-0.2	-1.3	0.3
URT	0.3	1.8	-0.2	-0.3	0.2
EAC-5	**-0.1**	**0.8**	**-0.5**	**-0.7**	**-0.1**
SA-4	-0.7	-1.1	-0.7	-0.3	-1.0
SSA-all	-0.5	-0.3	-0.6	-0.6	-0.4

Source: PoU data from FAO Food Security Indicators. Growth rates are computed by the authors.

Figure 2.1.5 shows the evolution of the PoU in the EAC region. For EAC-5 as a whole, the PoU increased (i.e. the situation worsened) from 31% in 1990-92 to 37% in 1999-01 and improved again to 32% in 2012-14. This pattern contrasts those of the SA-4 and SSA as a whole where there were steady improvements. The EAC-5 as a whole also had markedly lower PoU in 1990-92 than in SA-4 the gap seems to be narrowing, indicating slower rate of change in EAC-5. Hunger incidence is also higher in EAC-5 than in the SSA as a whole.

In EAC, Burundi stands out from the rest in that the PoU is not only very high but also shows no sign of reduction. Lack of good statistics may blur the real situation but this alone is unlikely to be the only reason. Uganda had and remains with the lowest prevalence of hunger. In terms of progress over time, while the incidence worsened in Burundi, Rwanda's progress from 2000 is outstanding, reducing the prevalence rate from 61% in 2000 to 47% in 2005 and to 34% in 2013. Kenya too reduced the incidence by 8 percentage points between 2000 and 2013. The growth rates presented next to the graph are based on all data points during the period. They show that that all EAC countries made progress in the 2000s compared to in the 1990s. Growth rates of the PoU for 2000-13 were negative (i.e. hunger reduced) for all four countries, Burundi being the exception, whereas only Kenya had negative trend during 1991-1999.

While generally progress in the 2000s have been better than in the 1990s, a closer look at the data show that some advances made in the early 2000s have been halted or reversed in the second half (the last two columns of the growth rates). For EAC-5, the rate of decline in undernourishment fell from -0.7 p.a. in 2000-06 to only -0.1 in 2007-13. However, a similar slowing down of hunger reduction has been experienced in the SA-4 area, as well as in SSA as a whole.

Table 2.1.2 summarize results for additional outcome indicators. One of them is the prevalence of food inadequacy (PoFI) which, as mentioned, is based on higher food energy requirement than the PoU. For the EAC-5, the PoFI is 40.4% in 2012-14, (much higher than the PoU of 31.5%), nearly double the percentage for developing countries as a whole. This implies that two out of five inhabitants in the EAC region have a caloric energy intake inadequate to lead a normal and active life. The worse affected country is Burundi where food inadequacy is shockingly high, indicating that four out of five people in the country receive a caloric energy intake insufficient for normal physical activity.

Table 2.1.2 Prevalence of malnutrition in the EAC region

		Prevalence of deficiencies among children (%)			Prevalence of			Depth of food inadequacy		
	Food availability (kcal/cap/ day)	Anaemia	Vitamin A	Iodine	stunting among children (%)	under-nourishment (%)	food inadequacy (%)	absolute (kcal/cap/ day)	share of food availability (%)	share of cereal production (%)
	2012-14	Most recent observation				2012-14	2012-14	2012-14	2012-14	2012-14
Burundi	1610	46.5	27.9	60.5	57.7	73.4	81.4	660	41.0	205.5
Kenya	2158	46.3	84.4	36.8	35.2	24.3	35.5	156	7.2	15.6
Rwanda	2185	37.6	6.4	n/a	44.3	33.8	42.5	248	11.4	31.3
Uganda	2242	56.2	27.9	3.9	33.7	25.7	33.5	172	7.7	17.1
URT	2152	60.8	24.2	37.7	42.5	34.6	42.3	258	12.0	15.2
EAC-5	**2148**	**52.8**	**41.6**	**27.4**	**39.2**	**31.5**	**40.4**	**229**	**11.1**	**19.5**
Developing	**2769**	**52.4**	**34**	**29.6**	**28.0**	**13.5**	**20.5**	**101**	**3.6**	-
WORLD	**2881**	**47.9**	**30.7**	**30.3**	**25.7**	**11.3**	**17.5**	**84**	**2.9**	-

Source: FAO SOFA (2013) and FAO SOFI (2014).

Another useful indicator of food deprivation used by FAO is the depth of the food deficit which calculates the calories that would be needed to lift the undernourished from their status (expressed in per capita basis), everything else being constant. As expected, the depth of the food deficit is the highest for Burundi, where some 660 Kcal/capita/day more would be required so that the whole population of that country could lead a normal and active life. The average for the region as a whole is 229 Kcal/capita/day (more than double the level of developing countries) which is 11.1% of the regional average available calories, implying that food supply in the region would have to increase by that amount to lift the undernourished out of food inadequacy[5].

It is also possible to arrive at a rough estimate of the absolute amount of cereal equivalent that corresponds to the estimated depth of food deficits[6]. In the case of Burundi, some 518,000 MT of cereals would be required, which is more than twice the actual cereal production in that country. The cereal equivalent required to lift all five countries out of food inadequacy would amount to some 3.1 million MT which is close to 20% of the actual aggregate cereal production of the region.

The PoU measured in terms of caloric deficits does not tell the full story of malnutrition. In diets consisting mainly of staple cereals or root crops, it is possible to consume enough calories without consuming enough micronutrients (foods rich in micronutrients, such as fruits, vegetables and animal-source proteins). Malnutrition of young children (including during fetal development brought on by the malnourished mother) are manifested in weight loss and growth faltering, reflected as underweight and wasting, a condition referred to as chronic malnutrition or stunting[7]. The consequence of this is poor physical, mental and social development of the child, inhibiting an individual's lifelong mental development leading to chronic ill health, less opportunities for educational growth and low productivity (UNCF, 1998; The Lancet, 2013).

Aside from Vitamin A, the averages of micronutrient deficiencies of the EAC region are not different than those of developing countries as a whole. However, there are some clear outliers, such as the high prevalence of anaemia in URT, high incidence of Vitamin A deficiency in Kenya and high incidence of iodine deficiency in Burundi. These deficiencies in micronutrients while not much out of line with eveloping country levels, in combination with the generally low levels of energy intake, result in much higher levels of malnutrition among children under 5. As a result, the region fares badly with 39.2% of children under 5 years of age estimated stunted compared to 28% for the developing countries as a whole.

While caloric inadequacy may contribute to stunting among children the opposite is not necessarily true[8]. There are examples of countries with relatively high levels of stunting despite very high levels of caloric

[5] Another way to assess this problem is to estimate the level of ADSA required to reduce the prevalence of food inadequacy (PoFI) to low levels, based on the experience of other countries. For a sample of 123 pairs of ADSA and PoFI for 41 SSA countries, the estimated relationship between these two variables is: % PoFI = 161.5 - 1.2 * % ADSA. In other words, on average, it takes an ADSA of 126% to reduce the PoFI to 10% and an ADSA of 130% for 5% PoFI.

[6] The calculation entails multiplying the depth of the food deficit (Kcal/capita/day) of Table 2.1.2 by the population of each country and by 365 days, and then dividing by the number of Kcal contained in a Kg of cereals (about 4,000 Kcal/Kg)

[7] Children under 5 years of age are considered stunted when their height-for-age is 2 standard deviations below WHO's 2006 child growth standards. They are considered anaemic when their haemoglobin levels are less than 110 grams per litre, and they exhibit vitamin A deficiency when their serum retinol is less than 0.70 μmol/litre or 20 μg/dl. Finally, as regards iodine-deficiency, children aged 6–12 years are considered deficient when their urinary iodine is below 100 μg/litre (FAO, 2013).

[8] Stunting is also a result of lack of access to clean drinking water, education of mothers, breastfeeding practices, health and nutrition programs (or the lack thereof). In South Africa, the immediate and underlying causes of

intake. Egypt has often been mentioned as a case in point having witnessed a remarkable increase in dietary caloric intake in recent years (encouraged by high subsidies). However, the bulk of the diet has been dominated by cereals and other basic products (sugar and oil) that are energy rich but micronutrient poor. As a result the prevalence of anaemia and vitamin A deficiency remain high in Egypt and so does the incidence of stunting at about 30%.

To conclude this sub-section, the main findings are as follows. First, food security of the EAC region is driven by strong demographic trends and income growth. The region has made advances in reducing food insecurity but progress is uneven. The region continues to have unacceptably high levels of chronic food insecurity and is also subject to frequent food shortages and emergencies. Nearly one-third of the population of the region has a level of food intake below that considered necessary for a healthy and active life. Rwanda and Kenya have made definite and sustainable reductions in the incidence of undernourishment, for Uganda and URT the progress has stalled in recent years while the situation in Burundi has worsened considerably. Second, current level of regional average availability of food needs to be raised to about 120% from present level of 101%, in order to halve the incidence of food inadequacy. Most of this additional food supply has to come from domestic production because it is simply unaffordable for the region to spend more on imports. Third, micronutrient deficiencies (iron, vitamin A and iodine) in combination with low levels of energy intake result in relatively high levels of stunting among children under 5 (40% for the region as a whole) and as high as 58% in Burundi.

2.2 Food insecurity at the sub-national and household levels

This sub-section continues assessment of food security by focusing at the sub-national and household levels. Most countries have disadvantaged regions and suffer from regional disparities in poverty and access to food, as well as disparities among population groups within regions. While drivers of food security at the national level such as broad-based economic growth with vibrant agriculture, prioritized in national budgets, are widely acknowledged, there are also drivers that are specific to individual regions and population groups. For example, food security in arid areas is conditioned by factors different from those in fertile agricultural lands and food security of landless households are only indirectly affected by overall progress in agriculture. In addition, some of these drivers are intimately related to markets and trade, and thus subject to change through regional cooperation and trade, while others, more structural in nature, are less directly related (e.g. demographic trends and farm productivity). Some of the latter are discussed in subsequent Chapters in this study.

A range of literature provides analysis on sources of food insecurity at the sub-nation and household levels. For this brief, the following were consulted where available: FAO SOFI reports on drivers of food and nutrition security, national Living Standards and Measurement Surveys, WFP's Comprehensive Food Security and Vulnerability Analysis (CFSVA), FEWSNET reports, FAO crop and food security assessment mission reports, food security reports of national food security steering groups and reports of Integrated Food Security Phase classifications (IPC). It is recognized that the primary concern of some of these assessments are on short-term or transitory food insecurity rather than on structural drivers.

2.2.1 Burundi

Burundi has the highest level of hunger of all the 79 countries listed in IFPRI's 2012 Global Hunger Index. At 1,610 kcal/capita/day in 2010-12, Burundi also ranks lowest on the availability of food among the 180 developing countries for which this data is available from FAO. Very few countries in the world

malnutrition are reflected by the basic economic and socio-political inequalities leading to inadequate access to basic services such as primary health care, clean water, sanitation and education (Theron, et al, 2006).

have suffered so much in so recent periods as Burundi from the devastating civil conflicts that lasted from 1993 to 2005, disrupting everything from livelihood, infrastructure and productive capacity. The country is still recovering from those devastations. Approximately 80% of the estimated population of 11 million is estimated to live below the poverty line of less than US$1.25 per day. The incidence for food insecurity is also similar. Needless to say, conflicts and protracted crises have been the crucial drivers of food insecurity in Burundi.

Most of Burundi's 17 provinces have high rates of chronic malnutrition. The main reason is low agricultural productivity across the board. Besides inclement weather, agriculture suffers across the board from many deficiencies such as low soil fertility, lack of adoption of modern technology, limited access to modern production inputs and services, poor post-harvest techniques, small farm plots, pests and plant disease, and so on.

WFP's 2012 CFSVA provides a good assessment of the issues and drivers of food insecurity in Burundi. Although the study's focus was on the situation in 2012, the analyses go beyond assessing current and transitory problems because of the recurring nature of these problems. Its recommendations are divided into three groups: i) targeting of interventions based on the results of the IPC analysis; ii) targeting priority areas facing chronic food insecurity; and iii) targeting priority areas facing transitory food insecurity. For each area, critical drivers of food security are identified, such as, for example, addressing plant diseases in the eastern depression region, and improving the performance of food markets in the wet plateaus.

Overall, food insecurity facing Burundi is due to systemic deficiencies in basic requirements of the agricultural sector to function and, thus, only a comprehensive agricultural and rural development strategy would be able to tackle the structural constraints leading to hunger and poverty. Regional economic integration should be part and parcel of such a strategy, recognizing that trade helps improve food security only when supported by domestic policies that support a vibrant agriculture, at least in the initial stages.

2.2.2 Kenya

The last integrated household budget survey for Kenya is about eight years old but this remains the only such source for statistics on poverty at the regional level. This survey indicates a large variation in food poverty rates across various provinces: Central (31%), Eastern (45%), Nyanza (46%), Rift Valley (50%), Western (51%), Coast (64%) and North Eastern (66%), with the overall average for rural provinces being 47% and for urban provinces 41%.

Some up-to-date assessments are available for food insecurity from other sources. Notably, the periodic assessments of food situation at the sub-regional level by the government and agencies such as FAO, WFP and FEWSNET shed light on various drivers of hunger. One recent and fairly comprehensive assessment is the 2014 long-rains assessment by the Kenya Food Security Steering Group (KFSSG 2014). Assessments were made for five livelihood clusters: Pastoral Northwest Livelihood Cluster; ii) Pastoral Northeast Livelihood Cluster; iii) Agro Pastoral Livelihood Cluster; iv) Southeastern Marginal Agriculture Livelihood Cluster; and v) Coastal Marginal Agricultural Livelihood Cluster.

For each cluster, factors affecting food insecurity, or drivers, were identified. Many factors are common to all clusters but they vary in terms of the intensity of their effects, e.g. for a pastoral area versus an agro pastoral area. These are weather/rain anomalies, water scarcity, resource based conflicts, high food prices, depressed livestock prices, hardships associated with migrations in search of pasture, livestock pest and disease outbreaks, and cross-border conflicts. Other drivers identified are poor access to livestock markets, threat of cattle rustling, lack of subsidized relief seed and late arrival of subsidized fertilizer,

over reliance on maize as staple food (instead of drought tolerant crops) and poor post-harvest management practices.

In the context of the theme of this study, several of the drivers are related to markets and trade, and in turn they are linked to the EAC integration process. One of them is terms-of-trade between livestock and maize, which are monitored fairly closely. As markets of these two products in vulnerable areas are poorly integrated with the larger national and regional markets, even a small shock tends to amplify prices. Food security assessments generally recommend for interventions aimed at upgrading basic infrastructure and strengthening the functioning of food markets so that local markets are more integrated with national markets, thus leading to less volatility. This recommendation is also found in the 2007 Kenya integrated household survey.

Volatility in milk production and prices, linked closely to rainfall and pasture conditions, is also a frequently identified driver of food insecurity in arid and pastoral areas. Again, deepening of trade integration within the EAC can contribute to stabilizing milk prices and improve food security.

Early depletion of household-level stocks of grains due to lack of storage facility and credit is also identified as an important driver of food insecurity, with the Warehouse Receipt System (WRS) given as the favoured response for this problem.

One issue raised in interviews during country visits for this study was the challenge facing the government in integrating the north eastern and north western areas of Kenya with the larger national and regional markets. In these areas, livestock plays a crucial role in livelihoods and so deeper integration of the milk and meat product markets with the larger regional economy would be a desirable response. One question asked was whether the EAC should formulate a special programme for integrating remote regions within the EAC including areas with resource-poor households with poor connection to regional markets.

2.2.3 Rwanda

Rwanda has made significant progress on poverty reduction, especially since 2000, as the economy grew strongly and impressive gains were made in food production (see Chapter III). Rwanda was the top performer in most indicators of food security reviewed in the previous section – between 1999-01 to 2012-14, annual growth rate of DES was 1.37% versus 0.54% for URT, the next best performer, while the adequacy rate of DES grew at 1.1% p.a. versus 0.51% p.a. for Kenya, the next best performer. Rwanda is the only country among the five EAC members coming closest to meeting the MDG target on hunger (see next section 2.3).

The main driver of these positive gains in food security is increased food production based on productivity growth. Rwanda tops the list among the EAC countries with the highest contribution of yield, not area, to increases in cereals production. As reviewed in Chapter III, while cropped area contributed only 18% of the total increase of cereals output during 1999-01 to 2012-14, increasing yields in combination with increasing areas accounted for a staggering 76% of the total increase.

Rwanda's flagship Crop Intensification Program (CIP) launched in 2007 is credited for these successes. The CIP has taken a multi-pronged approach that includes facilitation of inputs (improved seeds and fertilizers), consolidation of land use, provision of extension services, and improvement of post-harvest handling and storage facilities. The focus of the CIP is on six priority crops: maize, wheat, rice, Irish potato, beans and cassava. Rwanda's commitment to agricultural development is also reflected in the allocation of budgets to agriculture. For example, in just three years during 2008-2011, the budget of the

MINAGRI increased substantially from FRW 26 to 68 billion, reaching very close to the 10% spending target committed to in the 2003 Maputo Declaration.

Despite these impressive gains, poverty and food insecurity vary enormously between provinces and from district to district. Poverty remains disproportionately a rural phenomenon, with 48.7% of people in rural areas considered poor, compared to 22.1% in urban areas (EDPRS, 2013). Food insecure households are typically poor rural households, living in crowded homes, relying on low income agriculture and casual labour. They farm small plots of land (less than 0.5 ha) often on steep slopes and infertile soils. They are often headed by an elderly head of household. Stunted children also live in poor rural households, have lowly educated and illiterate mothers who are themselves stunted. While economic growth rate has been high, income inequality also remains high, undermining the outcomes on poverty reduction. Rwanda's Gini coefficient is higher than in other EAC countries, but it showed some modest improvement in the most recent five years for which data is available[9]. This improvement is consistent with development experience of countries where economic growth is driven by strong performance in agriculture.

The Northern and Eastern provinces have experienced the most remarkable improvement in food security and now record the lowest rates of poverty and food insecurity in the country, while the Western and Southern Provinces record the highest rates (Figure 2.2.1) (CFSVA and Nutrition Survey 2012). The province where in 2012 had the highest proportion of households with relatively acceptable levels of food consumption was Kigali (from 88 to 96% of households depending on the district), followed by the Eastern Province (84 to 88% of households). On the other hand, 70% of the households with poor or borderline food consumption were in 13 districts (Ngororero, Rutsiro, Karongi, Rusizi, Gatsibo, Nyamasheke, Nyamagabe, Bugesera, Nyanza, Burera, Gakenke, Rubavu and Rulindo), home to 50% of all Rwandese rural households. In Rwanda's poorest district, Nyamagabe, 73% of people live below the poverty line[10].

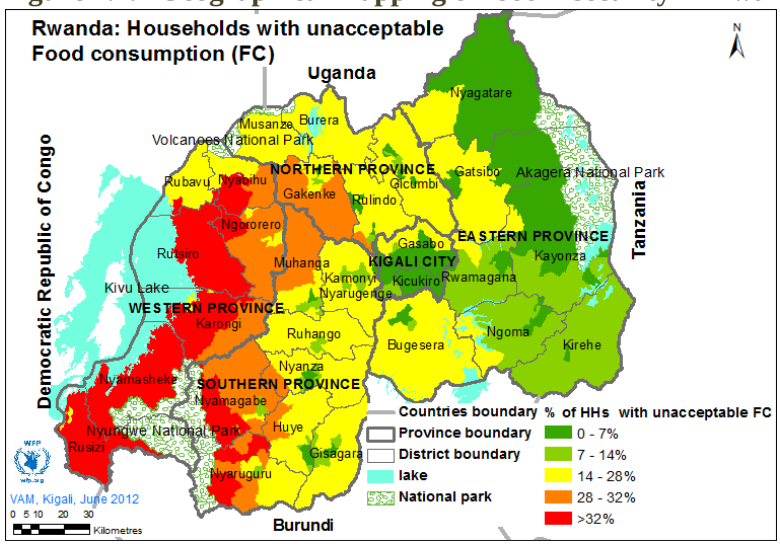
The highest prevalence of stunting was found in the North (47.4 to 56.1% of households) and West (47.3 to 54.4%) provinces followed by South (39.2 to 45.3%) and East (37.2 to 43.5%) (Figure 2.2.2). Kigali has the lowest estimated prevalence of all provinces (18.9 to 30.7%). Over half (53%) of the rural households with stunted children were in the West and Southern provinces. An estimated 52% of stunted children under 5 were found in the districts of Musanze, Gatsibo, Ngororero, Gicumbi, Rubavu, Rusizi, Bugesera, Gisagara, Karongi, Nyamasheke, Burera and Ngoma. These 12 districts hosted some 46% of Rwandese children under 5 years.

Areas with the highest rates of households with poor food consumption were also the areas where the prevalence of stunting was highest except in the northern volcanic areas that had very high stunting but average percentages of households with poor food consumption.

[9] The Gini coefficient has seen an increase from 0.47 in 2000 to 0.51 in 2005 (EICV 2, 2005/06), mostly in rural areas, which are high levels by global standards. But over the last five year period, 2006 to 2011, the inequality seems to have decreased as indicated by the Gini coefficient of 0.49 in 2010/11 (CFSVA, 2012).

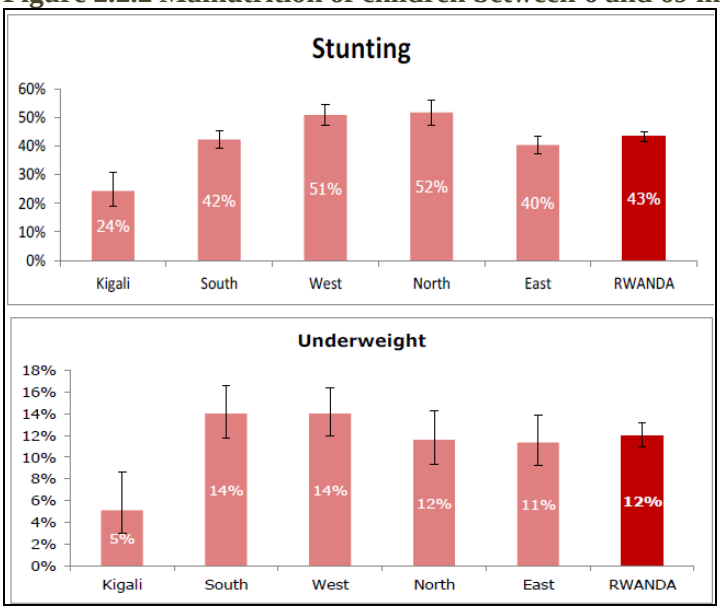
[10] Economic Development and Poverty Reduction Strategy 2013-2018, *Shaping our Development*, February 2013.

Figure 2.2.1 Geographical mapping of food insecurity in Rwanda (March to April 2012)



Source: CFSVA (2012).

Figure 2.2.2 Malnutrition of children between 6 and 69 months (March to April 2012)



Source: CFSVA (2012).

2.2.4 Uganda

Poverty trends at the regional and national levels are derived from periodic national income and expenditure surveys, the latest being the 2009/10 Uganda National Household Survey. This survey estimated that the incidence of income poverty in Uganda fell by 6.6 percentage points between 2005/06 and 2009/10, from 31.1% to 24.5% (GoU, 2013). For 2009/10, the incidences for the rural and urban areas were 27.2% and 9.1% respectively. Other indicators of poverty such as the poverty gap and squared poverty gap also followed similar trends. Poverty decline was most prominent in the Northern region (61% to 46%), followed by Eastern region (36% to 24%), Central region (16% to 11%), while there was little change in the Western region (20.5 to 21.8%). For Uganda as a whole, while the incidence of poverty significantly declined, this has not been the case for the number of people in poverty due to

population growth. Also inequality of income has worsened in this period, with the Gini coefficient rising from 0.41 to 0.43. It was also reported that per adult consumption growth during 2005/06-2009/10 was weaker than during 2002/03-2005/06.

Besides these large-scale income and livelihood surveys, periodic reports by the Uganda Integrated Food Security Phase Classification (IPC) Technical Working Group provide analysis on the state of food insecurity at the level of sub-regions and households. Although the IPC surveys are launched in response to short-term or transitory food crises, some of the IPC studies are comprehensive and analyse structural drivers of food insecurity. These reports also provide insights on some of the drivers closely linked to markets and trade and areas for cooperation at the EAC regional level.

The latest such report, issued in September 2014, indicates that 83% of the population in Uganda is in phase 1, i.e. minimal or no food insecurity and able to meet their essential food and non-food needs without engaging in unsustainable strategies (Uganda IPC 2014). Food is available at the household level and in markets and can easily be accessed as food prices are generally affordable. The population has an acceptable food consumption score and can afford at least three meals per day of a diversified diet. Some 16% of the population was classified as being in phase 2, i.e. households are stressed while less than 1% is in phase 3, i.e. in food crisis. The majority of the population in phase 2 and 3 is scattered across the country with concentration in Karamoja, Teso, Acholi, and central 1 and central 2 regions. Karamoja is a semi-arid pastoralist area suffering from recurrent climatic shocks such as droughts and floods, which also compound problems in accessing food due to poor road networks and heavy rains. The assessment was almost identical for 2013 also.

The IPC reports summarize for each region of Uganda the risk factors or drivers of food insecurity, both current and chronic. Some of these are related to weather, but there are others related to markets and trade subject to improvement through the EAC integration process. Those related to food prices and food availability include high volatility of staples prices and household food stocks. One recurring statement made in the IPC reports for various regions is that while food production at the household level is sufficient for staple foods like cassava, maize, rice, ground nuts and beans, poor post-harvest handling practices have worsened the situation. These include high losses due to poor storage facilities as well as distress sales for lack of such facilities.

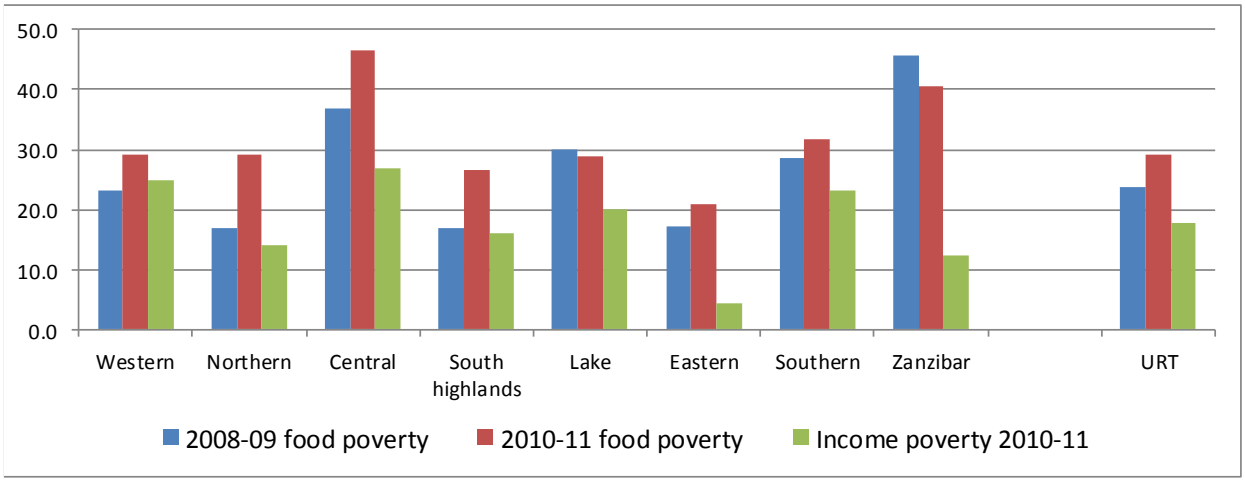
A second category of food insecurity driver is crop and livestock pests and disease, such as Banana Bacterial Wilt (BBW) and Cassava Brown Streak Disease which spreads during the rainy season. Several of these pests and diseases are common across the EAC region and so there is a large scope for regional cooperation in finding solutions. A third category of driver of food insecurity is livestock disease outbreaks such as the Foot and Mouth disease (FMD). An outbreak of the FMD, at times even rumours, leads to quarantine restrictions imposed on the movement of livestock and livestock products. Nearly 80% of the population in the phase 2 and 3 pastoral regions derives its income from sale of livestock and livestock products, including from small-scale cross border trade. This is another area for action at the EAC level.

2.2.5 United Republic of Tanzania (URT)

A dedicated module on food security, embedded within the 2010-11 Tanzania Living Standard Measurement Survey (LSMS), provides detailed information on household-level food and income poverty by major regions. A report has been published based on this data (WFP 2013). It defines various indicators to measure different dimensions of food insecurity. Figure 2.2.3 shows for eight regions and two periods (2008-2009 and 2010-2011) the estimates of the incidence of food insecurity defined as *high food energy deficiency*, which is the percentage of households experiencing a calorie deficit of more than 300 kcal per day. Also shown are the incidences of the overall income poverty.

One key finding of this study was that the situation has actually worsened between the two reference periods. However, some other indicators used in the study indicate improvements, for example on diet diversity, measured as the number of different types of foods consumed. The figure shows large increase in food insecurity in the region that had already the highest incidence in 2008-09, the Central region (from 37 to 46%) but also in regions where the incidences were low in 2008-09, the South highlands (from 17 to 27%) and Northern region (17 to 29%). These are large increases and it is hard to reconcile these statistics with the overall improvements in food production in the country.

Figure 2.2.3 URT: Food and income poverty by region, 2008-09 and 2010-11



Source: WFP (2013).

The study also finds that food shortages were more commonly reported by households situated in the drought-prone bimodal rainfall zone (north and west) than those in the unimodal zone (south and east). Accordingly, vulnerability to food insecurity shocks due to factors such as water shortages, food price rises and drought were reported by many more households in the bimodal area than in unimodal zone. Rural households living in bimodal rainfall areas were also more likely to report being severely affected by steep food price rises (56%) than those living in unimodal areas (35%).

Mapping food insecurity by livelihood group, the study indicates that the highest incidence of food insecurity prevailed in the "transfers" and "crop-producing" livelihood groups. The more the farming households depended on their own produce, the greater their vulnerability. This finding points to the failure of mainly the staples sub-sector to provide food security, both actual and perceived. Households primarily depending on staples food production also face high degree of vulnerability, reflected in their very high share of the calorie derived from staple foods (cereals, roots and tubers) and very high share of total expenditure on foods. In contrast, households belonging to non-agriculture based livelihood groups – self-employed and non-agricultural wages – were least likely to experience food insecurity.

One major issue is that food security gains are not matching national economic gains as the connection between the overall economic growth and food security has been weak. Tanzania enjoyed significant economic growth during 2001-10, at 6.9% per year while the official national poverty rate fell by just 2 percentage points and the household food security situation has not improved. One plausible explanation for the above poor link could be that while there was a strong growth in the cash crops sub-sector, the growth in food production has been weak. Studies have shown that the food sub-sector has a greater potential to benefit smallholders and the poor than the cash crops subsector.

An analysis of URT's food security contained in FAO's 2015 issue of the SOFI (SOFI, 2015) points to disconnect between economic growth on the one hand and food insecurity and poverty on the other. One reason given is that economic growth was mainly driven by the expansion of industry and services and not by agriculture. Structural economic reforms, including trade liberalization, are also found deficient in that the reform measures were not accompanied by effective policies to modernize agriculture and make improvements inclusive of small farmers, including providing secure access to land. Public spending on agriculture was also grossly inadequate given the development challenges.

To conclude, this sub-section assessed food security by focusing at the sub-national and household levels and on drivers behind country experiences. Most countries have disadvantaged regions and suffer from regional disparities in poverty and access to food, as well as disparities among population groups within regions. While rapid and sustained reductions in food insecurity and poverty are associated most closely with economic growth based on a dynamic agricultural sector, this process is often disrupted by various shocks or risk factors. Some of these drivers of transitory food insecurity in the region include civil conflicts, inclement weather, terms of trade between staple foods and principle source of livelihood such as between maize and livestock prices in the pastoralist regions, outbreaks of crop and livestock pests and disease, spikes in food prices due to demand and price shocks from outside the local area. In the case of Burundi, which suffers from serious food insecurity, a comprehensive agricultural and rural development strategy is required to tackle a wide range of structural problems leading to hunger and poverty.

2.3 Progress with MDG targets on hunger and income poverty

The year 2015 marks the end of the monitoring period for the MDG. FAO's latest edition of *The State of Food Insecurity in the World* (SOFI), released in May 2015, appropriately focuses on taking stock of the progress so far. The SOFI data on the absolute number of undernourished population and the prevalence of undernourishment (PoU) for 2014-16 for four EAC countries and three regional country groupings are extracted in Table 2.3.1 (no indicators were reported for Burundi). The data show that the World Food Summit target of halving the absolute number of undernourished people by 2015, not only has not been attained by the EAC countries but these numbers have actually increased (with the exception of Rwanda where they remained stable). The situation in Uganda and URT is much more serious as the number of undernourished population in 2014-16 has more than doubled from the base period 1990-92. While not as severe, there has also been an increase in the number of undernourished in all three country groupings shown.

As regards the MDG 1c target, i.e. halving the proportion of the population undernourished, Rwanda came very close to meeting the MDG target. Kenya too made progress but it was slow and well below the -50% target. Uganda's and URT's progress are marked red in the SOFI report as their PoU in 2014-16 exceeds the 1990-92 baseline. Both SSA and East Africa groupings also fall well short of meeting the target.

The SOFI also reviews progress with another indicator of hunger, namely the prevalence of underweight children under five years of age (CU5) (which is monitored by UNICEF and the WHO). However, statistics are provided for broad country groupings only. What is insightful in the analysis presented is the finding that progress in reducing CU5 has been generally worse than that of reducing PoU and markedly so for some sub-regions. For example, West Africa achieved a 3.8% average annual reduction in PoU while that for CU5 was only 1% per annum. On the other hand, for East Africa, the two reduction rates were similar, 1.7% p.a. for PoU and 1.6% p.a. for CU5. The report notes that for SSA as a whole, with the resumption of economic growth over the 2000s and progress in agriculture, food availability gradually

improved, lowering the PoU, but the region's other major challenges of improving hygiene conditions and quality of diets remained unaddressed. As a result, the progress with the CU5 lagged behind.

Table 2.3.1 Progress in attaining World Food Summit and MDG targets

	Number of people undernourished				Proportion of undernourished in total population			
	1990-92	2014-16	Change so far	Progress towards WFS target	1990-92	2014-16	Change so far	Progress towards MDG target
	---- millions ---		%		---------- % ----------			
Kenya	7.9	9.9	26	↓	32.4	21.2	-35	🟡
Rwanda	3.9	3.9	2	↓	55.6	31.6	-43	🔵
Uganda	4.2	10.3	143	↓	23.2	25.5	10	🔴
URT	6.4	16.8	164	↓	24.2	32.1	33	🔴
Eastern Africa	104	124	20	↓	47.2	31.5	-33	🟡
SSA	176	220	25	↓	33.2	23.2	-30	🟡
Africa	182	233	28	↓	27.6	20.0	-28	🟡

Progress indicators used in SOFI:

↓ WFS target not achieved, with lack of progress or deterioration

🔴 MDG target 1c not achieved, with lack of progress or deterioration

🟡 MDG target 1c not achieved, with slow progress

🔵 MDG target 1c close to being achieved. Will be achieved before 2020 if observed trend persists.

Source: SOFI 2015, FAO.

Finally, the MDG 1a target refers to halving extreme income poverty between 1990 and 2015. Unlike the FAO generated annual estimates on hunger, poverty estimates are available only for those years when national household income surveys are undertaken and thus the most recent data could be several years prior to 2015. A joint annual publication by the AU Commission, UN ECA, ADB and the UNDP Regional Bureau for Africa tracks progress towards the MDGs in Africa (AU/ECA/ADB/UNDP, 2014). Based on the poverty estimates maintained by the World Bank, the MDG tracking report finds that among the EAC countries only Uganda comes within 5 percentage points away from reaching the MDG target. For Kenya, in contrast, the situation was found to have worsened, Rwanda made fairly marked progress in poverty reduction, while URT's reduction rate was only marginal. The report finds that, with some exceptions, the rate of poverty reduction was faster during 2001-2010 than in the preceding decade, with an acceleration of this trend since around 2005 for many countries. These positive trends are attributed to rapid economic growth rates during 2000s, improved governance environment and implementation of social protection programs in some countries. The report also notes that significant reductions of poverty rates were linked to rapid growth in agriculture, with Rwanda (and Ethiopia) given as good examples of this.

III BALANCE BETWEEN PRODUCTION AND CONSUMPTION TRENDS AND IMPORT DEPENDENCE

3.1 Drivers of food consumption and related challenges

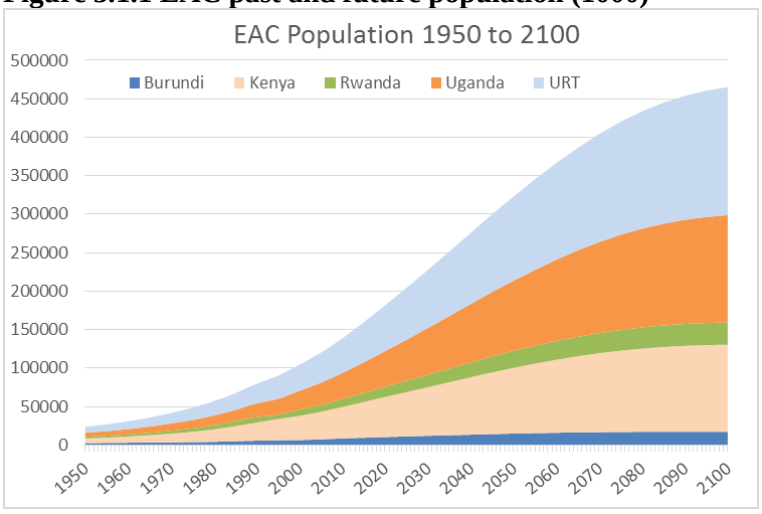
There are several factors that drive demand for food, including population growth and related age composition of the population, rates of urbanization and related changes in consumption habits, as well as growth in disposable income. These are discussed in turn.

3.1.1 High population growth

Among the factors affecting aggregate consumption trends in the EAC region, population dynamics play an overwhelming role. The EAC region is characterized by strong demographic trends with population increasing at a rate of about 3% per annum compared to 1.2% for the world as a whole. In the past five years alone (2010 to 2015), the region's population has increased by some 22 million (Figure 3.1.1)[11]. These demographic characteristics are shared fairly equally among the five EAC countries, with Kenya and Rwanda experiencing slightly lower fertility rates than the other three countries (Table 3.1.1). On a global level, only a handful of countries have fertility rates greater than those of the EACs. In relation to other countries, EAC fertility rates would continue to be much higher and they are projected to decline not earlier than 2050 to today's world average rate for two countries (Kenya and Rwanda) while for the other three countries they would continue to remain proportionally as high as they are today (Annex 3.1).

Because of these high growth rates, EAC's population is unlikely to subside by the end of the 21st century, while UN projections indicate that total world population is expected to peak in 2075, with projected peaks for Asia in about 2050 and that for Europe already attained. Projections indicate a doubling of the region's population in 30 years by 2040 from 2010 levels. Given these dynamics of population growth, it is projected that, by 2060, the EAC region would be more populous than North America.

Figure 3.1.1 EAC past and future population (1000)



Source: UN DESA Population Statistics

[11] To put this population increase from another perspective, the additional number of people added to the region in just five years is equal to the total population of Australia.

A statistic highly relevant to demographic dynamics and to the demand for food now and in the future is the age distribution of the population, captured by the percentage of population under 15 years of age. For the region as a whole this ratio stands at over 45% compared to world average of 26% (Table 3.1.1; for complete age distribution see graphs in Annex 3.2). Again, as in the case of other demographic measures, there are no substantial differences between the 5 countries of the region. Combined with their high population growth rates, this represents a daunting challenge for these countries in meeting present and future food needs. On the other hand, this "youth dividend" can potentially be a demographic gift; under favourable development policies a young workforce can be a driver of growth, generating wealth to sustain the demand for food and other essential goods.

Table 3.1.1 Selected socio-economic indicators of the EAC region

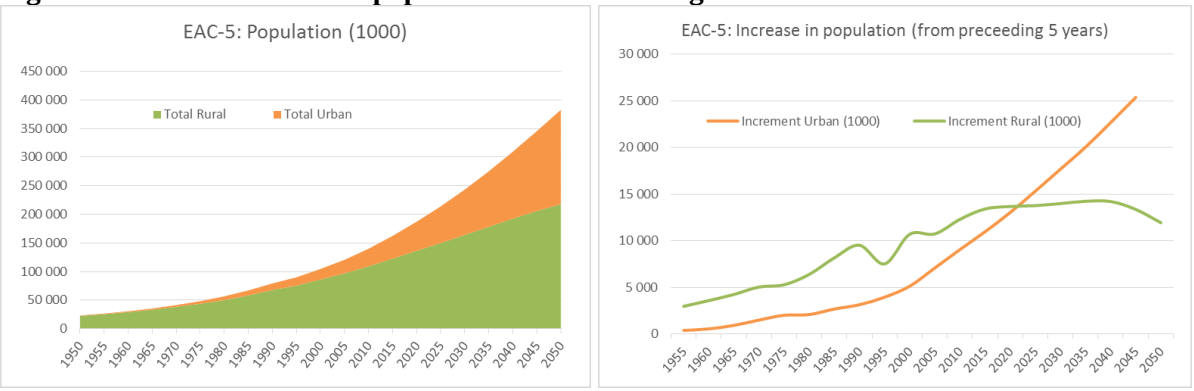
	Population (2015)	Population growth rate (2005-10)	GDP PPP (per capita) growth rate (2000-03 to 2010-13)	Urban population (2015)	Urban population (2050)	Population <15 yrs	Life expectancy at birth: Women	Life expectancy at birth: Men	Mortality ratio: Maternal	Mortality ratio: < 5 years	Fertility rate: Adol'nt: births per 1000 women 15-19 yrs	Fertility rate: Total: births per woman	Contraceptive prevalence: Any	Contraceptive prevalence: Modern	Improved drinking water coverage: Urban	Improved drinking water coverage: Rural	Improved sanitation coverage: Urban	Improved sanitation coverage: Rural	Primary Net enrolment ratio: Girls	Primary Net enrolment ratio: Boys	Tertiary education Gross enrolment ratio: Women	Tertiary education Gross enrolment ratio: Men
	(1000)	%	%	%	%	%	years	years	per 100,000 live births	per 1000 live births			%	%	%	%	%	%	%	%	%	%
Burundi	10 813	3.4	2.4	11.8	26.3	43.9	52.6	49.6	800.0	151.8	20.9	4.1	9.1	7.5	83.0	71.0	49.0	46.0	88.7	90.8	2.3	4.2
Kenya	46 749	2.7	4.2	25.2	43.9	42.6	59.2	56.7	360.0	88.9	98.1	4.6	45.5	38.9	82.0	52.0	32.0	32.0	83.2	82.3	3.3	4.7
Rwanda	12 428	2.8	7.2	27.8	52.6	44.7	57.1	54.5	340.0	114.1	35.5	5.3	36.4	26.1	76.0	63.0	52.0	56.0	92.2	89.0	4.8	6.2
Uganda	40 141	3.4	6.1	15.8	32.1	48.9	55.4	53.8	310.0	113.7	126.4	5.9	23.7	17.9	95.0	68.0	34.0	34.0	92.1	89.6	3.7	4.7
URT	52 291	2.9	5.9	30.9	53.0	44.8	60.3	58.2	460.0	81.3	128.7	5.5	34.4	26.1	79.0	44.0	20.0	7.0	97.7	98.3	1.9	2.3
EAC weighed ave.	162421	2.9	5.2	24.0	43.4	45.1	58.1	55.9	407.6	98.7	105.5	5.2	33.4	26.5	83.9	55.5	31.3	27.2	91.2	90.3	3.0	4.0
World	7028829	1.2	5.1	53.6	66.4	26.4	72.3	68.1	148.2	44.4	45.9	2.4	61.6	54.4	95.0	82.0	72.5	53.4	63.8	65.0	31.6	28.7

Source: UN DESA, Population Division; GDP growth rates are from World Bank data, calculated from GDP PPP (i.e. GDP converted to international dollars using purchasing power parity rates).

3.1.2 Increasing urbanization

With less than one out of five people still residing in rural areas, the region as a whole remains fairly rural compared to other developing regions and world averages, where about 54% of the population lived in urban areas in 2015 (Table 3.1.1). However, urban population of the region is projected to increase rapidly in the next decades, reaching about 44% in 2050. While in relative percentage terms urban population in the EAC would remain low compared to the world as a whole, where 2 out of 3 people are projected to reside in cities by 2050, in absolute numbers the increase in EAC urban population will be substantial. Between 2015 and 2050, the urban population of the EAC is projected to increase by over 4.2 times while that of the rural population by 1.7 times. Thus, the largest share of the additional inhabitants of the EAC will have to be fed in urban centres, not in rural areas. This phenomenon of rapid urbanization is not unique to this region but has been experienced in many parts of the world with similar demographic trends.

Figure 3.1.2 Urban and rural population in the EAC region

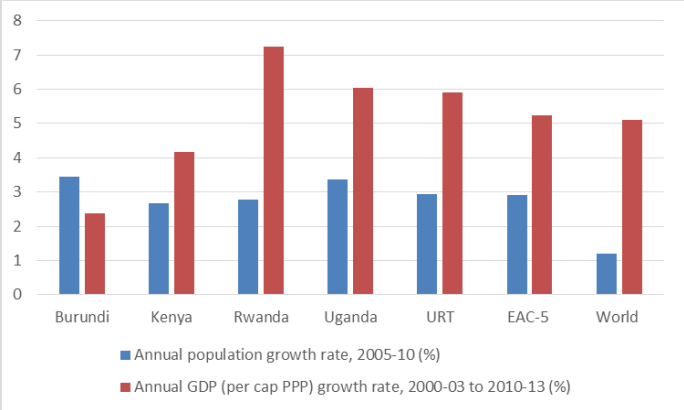


Source: UN DESA Population Statistics

3.1.3 Income growth

Besides strong population growth, the region also experienced solid per capita income growth rates in the past 10-15 years. Overall, for the EAC-5 as a whole, annual per capita GDP growth in purchasing power parity (PPP) terms has increased by over 5% about the same growth rate experienced by the world average. This growth rate for the region exceeded population growth by a considerable margin (over 2 percentage points), leading to improvements in average diets in the region as seen in Chapter II. Yet, as shown in Figure 3.1.3, this increase in the per capita disposable income has not been as much as that experienced by the world as a whole (where per capita GDP growth exceeded population growth by 4 percentage points). Moreover, not all the EAC countries shared in this development. The clear outlier is Burundi where population growth actually exceeded that of per capita GDP growth by a considerable margin. Among the EAC countries, the one with the faster per capita GDP growth is Rwanda which has also succeeded in increasing considerably average food intake (and reduced undernutrition) as will be seen in Chapter II.

Figure 3.1.3 Population growth versus per capita GDP growth in the EAC counties



3.1.4 Challenges for the food system from demographic trends

Better incomes and a rapidly increasing population with distinctly different food consumption habits and a greater dependence on the market is a particular challenge for the food system [12]. Aside from making food physically available in the quantity and variety demanded by increasing numbers of urban consumers, the challenge to the food system, and to related public policy, is how to best respond to the phenomenon described as "the primary mismatch between human biology and modern society" (Popkin, et al, 2012). Living in cities alters lifestyles and physical activity: people consume more foods prepared outside the home and a higher share of animal-source products and processed foods which lead to higher intakes of fats, salt and sugars. With higher energy intakes and lower energy expenditure, urban dwellers incur a higher risk of overweight and obesity than rural dwellers.

These changes in activity and dietary patterns, seen primarily in industrialized and middle-income countries, are also common now in many developing countries. They are part of a "nutrition transition" in which countries simultaneously face not only the emerging challenge of rising levels of overweight[13], obesity and related cardiovascular diseases and other chronic illnesses, but continue to deal with problems

[12] The latest *State of Food and Agriculture 2013* (FAO, 2013) emphasizes the role of the entire food system – from inputs and production, through processing, storage, transport and retailing, to consumption – in the eradication of malnutrition by promoting more nutritious and sustainable diets.

[13] Although the EAC region has yet to be seriously affected by this phenomenon, remaining one of the lowest obesity levels in the world (see Table).

of undernutrition and micronutrient deficiencies for a sizable part of their population (Bray and Popkin, 1998).

While the generally greater availability of food in the cities together with dietary diversity improves micronutrient intake, the health implications of urban living also critically depend on the availability of other basic amenities such as clean water, sanitation and basic health services, as well as basic nutritional education. To the extent these essential amenities exist or can be expanded fast enough to ensure a broad coverage of the growing urban populations, the adverse effects of urban living can be minimized.

In general, urbanization has been associated with a number of positive socio-economic trends of relevance to human welfare and demographic sustainability. In particular, there is an observed substantial improvement in the nutritional status of children as countries become more urbanized[14]. Except for breastfeeding practices, which are generally more prevalent among rural mothers, children's diets in urban areas are generally more diverse and more likely to include nutrient rich foods such as meat, dairy products and fresh fruits and vegetables (Ruel, 2000; Arimond and Ruel, 2002). An analysis of 11 demographic and health surveys show the consistently higher intake of milk and meat products by toddlers in urban areas compared with rural areas (Arimond and Ruel, 2004).

Better access to food in urban areas leads to stark reductions in child mortality rates, which is followed by a rapid reduction in fertility rates. The generally positive association of urbanization with more favourable demographic trends compared to rural areas appears to be the result of the cumulative effect of a series of complementary socio-economic conditions, which amplify the effect of a better access to food. Among the key socio-economic factors is the much higher education of urban mothers as well as considerably higher decision-making power than their rural counterparts (Garrett and Ruel, 1999; Menon, et al, 2000). Other highly important corroborating factors include access to drinking water and sanitation, in both of which coverage of urban populations is generally much greater than their rural counterparts.

On balance, the urbanization trends in the EAC region carry with them both positive and negative consequences. On the positive side, the delayed urbanization process vis a vis other regions has been beneficial in terms of preserving longer traditional lifestyles and diets, thus avoiding the health consequences of urban living experienced in other developing and particularly developed countries. On the negative side, however, logistic and economic factors prohibit widespread coverage of rural areas with adequate education, health, water and sanitation services generally available to urban centres. Aside from causing short-term hardship for rural populations, poor nutrition, lack of access to minimum health services and education opportunities, and lack of basic amenities also tend to perpetuate the demographic patterns characterized by high fertility rates but also high maternal and child mortality rates and low life expectancy.

3.2 Trends in food production in relation to increasing demand

3.2.1 Aggregate regional food consumption trends in relation to regional production

With a population annual growth rate close to or above 3% during the past decades for the EACs, food consumption levels would be expected to have grown at least at that rate, in order to at least maintain average consumption levels. Actually, the rate of growth of food consumption should have surpassed that of population growth, given that there has been an increase in the average quantity and quality of the diet,

[14] On average, the prevalence of underweight children was higher in rural areas than in urban areas in 82 out of 95 developing countries for which data were available (UNICEF, 2013). For a detailed discussion on these and other assessments, see also FAO (2013).

as we have seen in Chapter II. Indeed, for the region as a whole and for the majority of basic food commodities, the rate of growth of consumption has been well above 3% (Table 3.2.1). The best overall gains in aggregate food consumption was achieved during the first decade of this century (2000-2010), followed by the 1980s, while during the 1990s consumption gains for several important commodity groups trailed the 3% benchmark.

Table 3.2.1 EAC-4: Annual growth rates of consumption

Commodity Group	1980-90	1990-00	2000-10	1980-2010
Cereals	2.1	2.4	3.9	3.1
Fruits	2.7	1.7	2.4	2.0
Oilcrops	3.2	3.2	6.8	5.0
Pulses	3.5	2.5	2.7	2.6
Starchy Roots	2.9	1.1	2.8	1.9
Sugar & Swe.	3.2	4.2	3.6	3.9
Veg. Oils	6.6	6.9	5.8	6.3
Vegetables	2.7	3.6	4.5	4.0
Animal fats	0.7	-2.1	9.1	3.3
Eggs	4.0	2.7	3.8	3.3
Fish	5.3	-1.5	3.4	0.9
Meat	2.9	2.3	4.0	3.1
Milk	5.4	1.3	6.4	3.8
Offals	2.8	2.5	1.7	2.1

Source: FAOSTAT Food Balance Sheets database

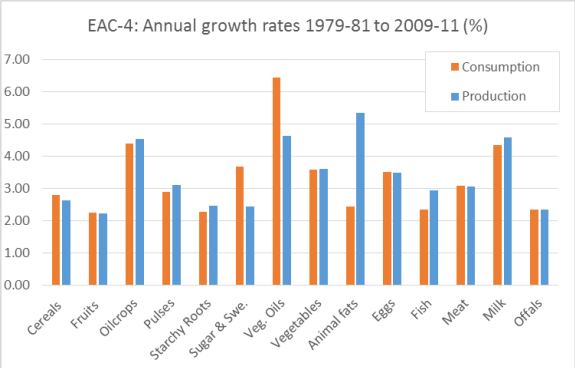
Note that the statistics given in this section (labelled EAC-4) exclude Burundi, which is not included in the FAOSTAT Food Balance Sheets database due to unreliability of various items of data necessary for constructing national food balances. Nevertheless, individual commodity statistics for Burundi are included in most of the analysis of production and trade flows in subsequent sections below, as appropriate.

Considering certain changes in consumption habits due to demographic trends over a 30-year period (1979-81 to 2009-11), consumption growth has not been the same for all commodities (Table 3.2.1). The highest increases in consumption have been experienced for vegetable oils and oil crops, vegetables, sugar, animal fats, eggs, milk and meat, as well as cereals and to a lesser extent pulses. In the bottom of the list is the growth in consumption of starchy roots with a growth rate of less than 2%. It may be noted that in addition to the high growth rates for consumption of vegetable oils and oil crops, the increase in the consumption of animal fats has also been large, especially during the last decade when it experienced the highest growth among all commodity groups of over 9% per annum[15].

In large part the growth in food consumption has been met by corresponding increases in domestic production (Figure 3.2.1). For several commodities the rates of growth of domestic production actually exceeded those of domestic consumption, such as for oil crops, pulses, starchy roots, vegetables, animal fats and milk. For other commodities the opposite has been the case, notably for cereals, vegetable oils and sugar.

[15] Contrasted with much smaller consumption growth rates for animal fats during previous decades, this phenomenon may signal important changes in consumption habits of the population of the region, including greater share of processed foods in their diets.

Figure 3.2.1 EAC-4: Consumption and production growth rates



Source: FAOSTAT Food Balance Sheets database

In line with these differences in relative growth rates, aggregate production at the regional level over the 30-year period has comfortably met or exceeded the demand for food for most food commodity groups, except for cereals, vegetable oils and sugar (Table 3.2.2). Aggregate self-sufficiency ratios (SSRs) for these three commodity groups actually deteriorated over time. For cereals, a critical commodity for regional food security, the aggregate SSR has declined from about 92% in 1979-81 to below 88% in 2009-11, having dipped close to 80% in 1999-01 (this downward trend continues in more recent years as analyzed in more detail below).

The loss of self-sufficiency in sugar has also been large. From a surplus position in 1979-81, SSR of the region declined to about 76% in 2009-11, having been even below 70% a decade earlier. However, the most dramatic reduction in SSR has been in the veg oils sector, where SSR in 2009-11 stood at about 32%, having declined consistently from 54% in 1979-81. The low SSR for vegetable oils contrasts with the surplus position of the region in oil crops where at the aggregate regional level SSRs have been consistently above 100%, often by a high margin. While this may appear as a paradox, there is an explanation. In the first place, there is a huge difference between the quantities of veg oil imported compared to oil crop exports. Net imports of vegetable oils are several-fold the vegetable oil equivalent of net exports in oil crops. In addition, the oil crops exported are not necessarily those that are normally used for extracting veg oil used in human consumption[16].

Table 3.2.2 EAC-4: Self Sufficiency Ratios of major food commodity groups

Commodity Group	1979-81	1989-91	1999-01	2009-11
Cereals	92.1	98.6	80.8	87.8
Fruits	101.0	100.8	100.7	100.3
Oilcrops	104.5	104.1	101.0	108.8
Pulses	98.7	115.6	97.9	105.0
Starchy Roots	101.5	100.5	100.1	107.1
Sugar & Swe.	109.4	93.3	68.8	76.3
Veg. Oils	54.0	44.4	35.5	32.3
Vegetables	101.1	101.6	101.4	101.8
Animal fats	43.8	60.8	90.3	101.5
Eggs	100.1	100.0	99.6	99.5
Fish	97.2	103.6	117.8	115.9
Meat	100.4	100.3	100.0	100.0
Milk	93.1	98.8	98.6	99.5
Offals	100.0	100.0	100.0	100.0

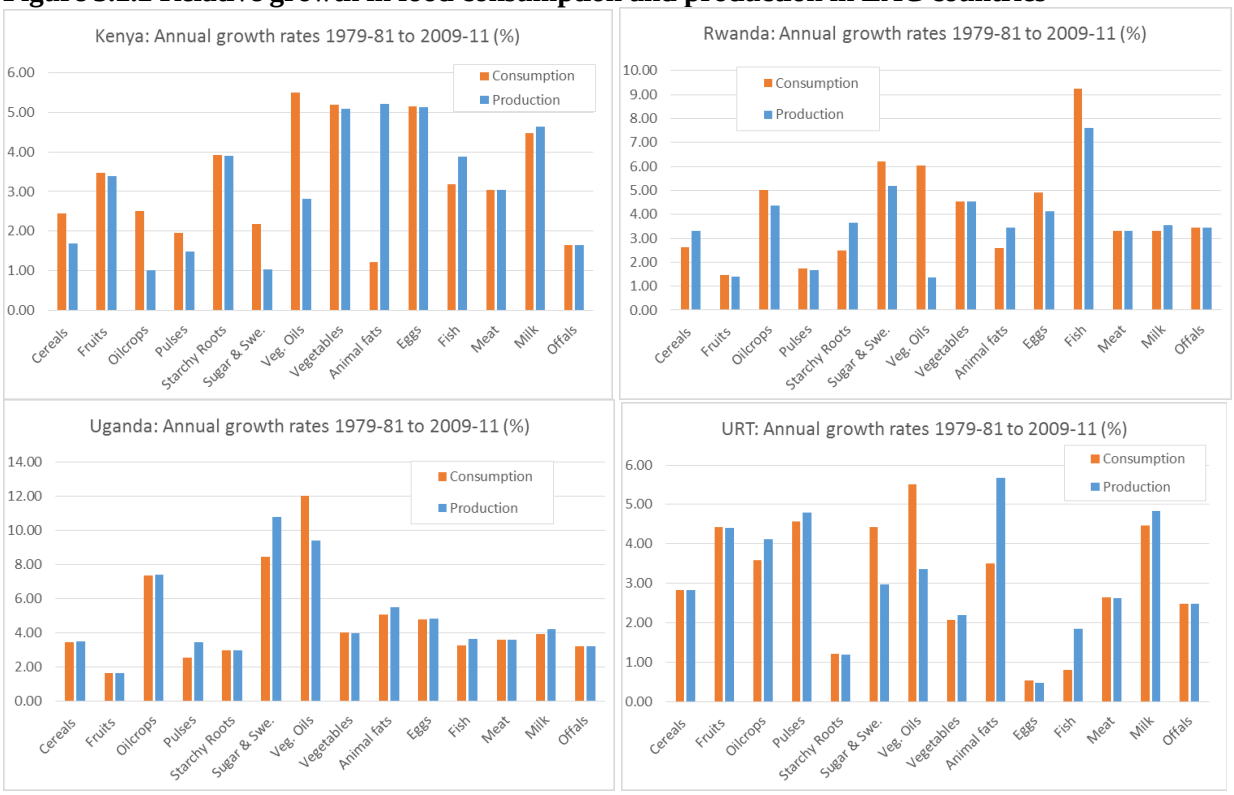
Source: FAOSTAT Food Balance Sheets database

[16] For example, in the case of URT which has the highest SSR in oilcrops, over 80% of exports in value terms are accounted for by sesame seeds and another nearly 10% by groundnuts. While these commodities are included in the general category of oilcrops, their primary use is not in oil extraction but to be eaten as nuts.

3.2.2 Individual country trends

The evolution of consumption and production in the EAC countries over the past three decades shows many similarities but also important differences (see Figure 3.2.2). Highlighting these differences is central in this study as they form the basis for expanding intra-regional trade and contributing to strengthening regional food security.

Figure 3.2.2 Relative growth in food consumption and production in EAC countries



Source: FAOSTAT Food Balance Sheets database

First of all, regarding the commodity groups that the region has been in a surplus situation overall, this characteristic is not shared uniformly across all countries (Table 3.2.3). That is the case for **oil crops** in particular where URT's SSR of 120% contrasts with those of Kenya and Rwanda of 76.3% and 83.5%, respectively.

Pulses is another case where again the SSR of URT's 116% and that of Uganda's 104.3% contrast with 90.5% for Kenya. Yet another example is **animal fats** where Kenya's SSR of 110.6% contrasts with well below 100% SSRs for the other countries, as low as 71.7% for Rwanda. **Meat**, **milk** and **eggs** are also cases in point, however to a lesser extent. In **fruits** and **vegetables** as well as in **starchy roots** all countries are very close or above autarky at national level and hence the opportunities for intra-regional trade are less.

Table 3.2.3 EAC-4: SSRs of major food commodities by country (2009-11)

SSRs in 2009-11				
Commodity Group	Kenya	Rwanda	Uganda	URT
Cereals	68.8	113.6	94.9	96.7
Fruits	103.8	99.6	99.9	99.4
Oilcrops	76.3	83.5	100.6	120.0
Pulses	90.5	99.5	104.3	116.1
Starchy Roots	99.7	152.2	100.2	100.0
Sugar & Swe.	81.7	19.8	84.4	68.3
Veg. Oils	9.1	7.9	48.0	47.6
Vegetables	102.2	99.8	99.6	103.2
Animal fats	110.6	71.7	94.9	96.5
Eggs	100.2	79.6	101.1	98.0
Fish	105.5	47.5	111.9	133.4
Meat	100.5	99.8	99.9	99.4
Milk	99.4	97.5	101.1	98.8
Offals	100.1	100.0	100.1	100.0

Source: FAOSTAT Food Balance Sheets database

The second group of commodities are those where the region experiences an overall deficit situation. One glaring similarity among countries is **vegetable oils** where there has been a substantial growth in consumption in all countries (as much as 12% annually for Uganda and about half that amount for the other countries), however growth in domestic production has trailed considerably behind everywhere (even in Uganda where production grew at an impressive average annual rate of 9.5% during 1979-81 t0 2009-11). As a result of these high growth rates in consumption, SSRs for vegetable oils in 2009-11stood at some 9% and 8% for Kenya and Rwanda, respectively, and at about 48% for both Uganda and URT (both these latter countries have been in a surplus position in oil crops, as noted above).

Sugar is another commodity where all countries have a substantial deficit and where production growth has been behind that of the generally strong consumption growth. Rwanda's SSR of less than 20% in 2009-11 (despite relatively good growth in production over the preceding 3 decades) stands in contrast to the SSRs of the other countries of 68% for URT and well over 80% for both Kenya and Uganda.

Turning finally to **cereals**, the situation is rather mixed. Uganda, URT and especially Rwanda experienced production growth rates in excess of consumption during the 30 years preceding 2009-11, while Kenya's growth in production trailed well behind that of consumption. As a result Kenya's SSR in cereals stood at 68.8% in 2009-11 compared to close to 100% in the 1980s. Burundi's SSR in total cereals has also declined to similar levels to that of Kenya's, also from levels well above 90% in the 1980s (see below). By contrast, SSRs for cereals for the other three countries remain close to autarchy levels (well over 100% for Rwanda in 2009-11).

Cereals are the most important commodities from a food security perspective as well as from the trade perspective, being the most commonly traded food commodities regionally and globally. However, cereals are the sum of several individual grains and hence the performance of countries in some of these individual crops cannot be inferred from looking at an aggregate total. A closer examination of production and consumption trends of individual cereal commodities is presented below in 3.4.

3.3 Growing food import bills

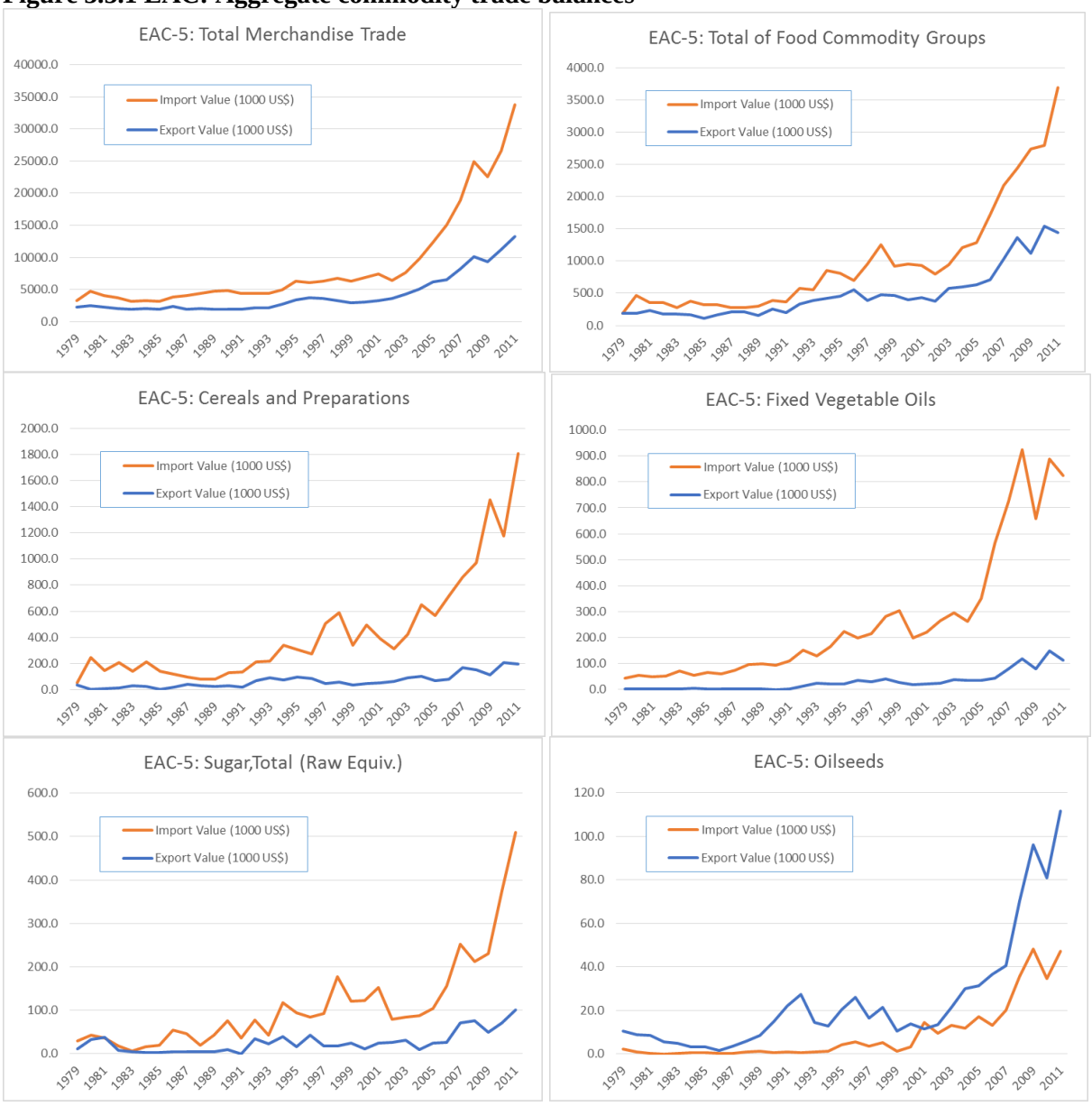
The region total merchandise trade balance is heavily negative and growing. On average in 2009-11 the value of total merchandize imports of the EAC region were 2.5 times the value of its total merchandize exports, compared to 1.7 times in 1979-81. The same gap is also being experienced in the region's total food trade balance (Figure 3.3.1).

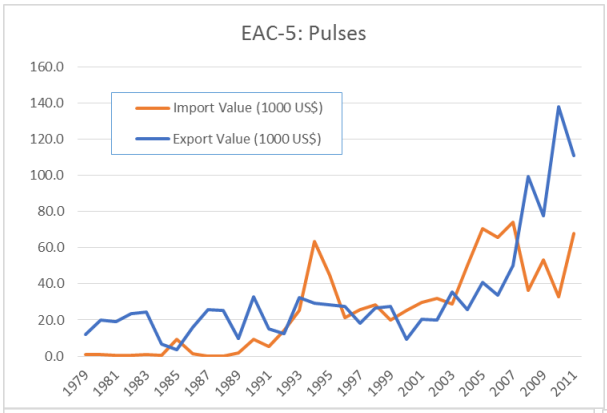
3.3.1 Widening trade gap in important food commodities

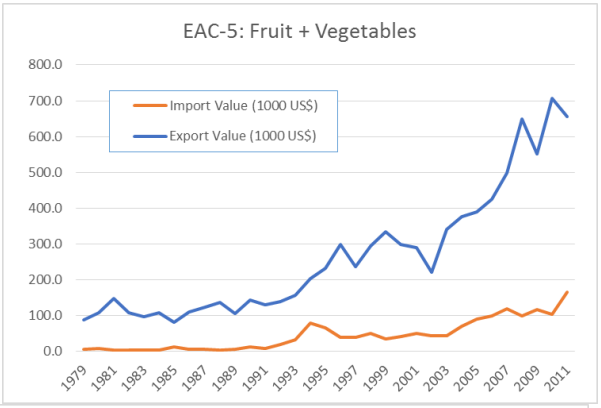
The food commodity groups which mainly account for this growing imbalance between imports and exports are primarily cereals, vegetable oils and sugar. Over three-quarters of the total food import bill of the region is accounted for by these three commodity groups, with cereals alone being responsible for nearly half of the total (Figure 3.3.2).

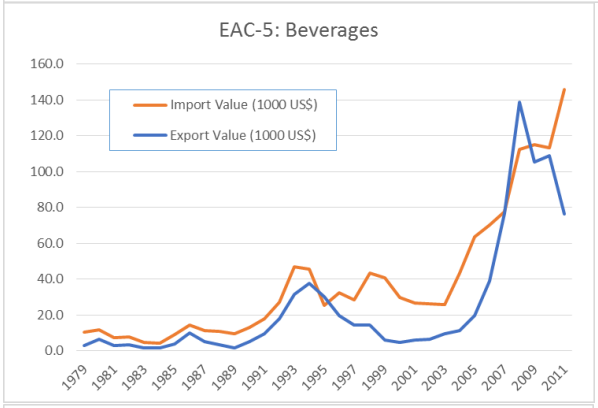
Regarding the other commodity groups, while for some of them the value of imports exceeds that of exports occasionally, on the whole EAC countries are net exporters in recent years. This is the case for oilseeds, pulses and meat, but especially for fruits and vegetables. The latter accounted for nearly half (47%) of the total food exports of the region. In terms of absolute values, EAC's aggregate export earnings from fruits and vegetables are nearly as much as the region's total import bills for vegetable oils.

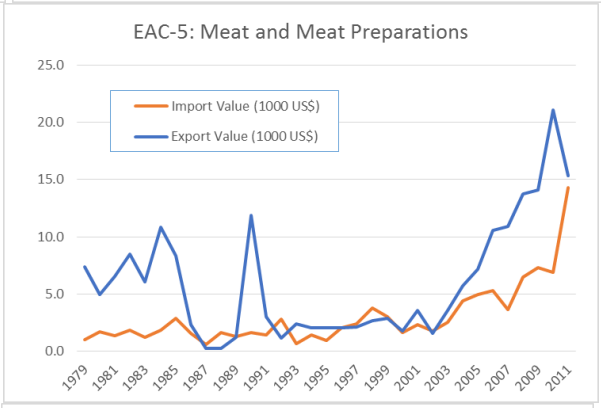
Figure 3.3.1 EAC: Aggregate commodity trade balances

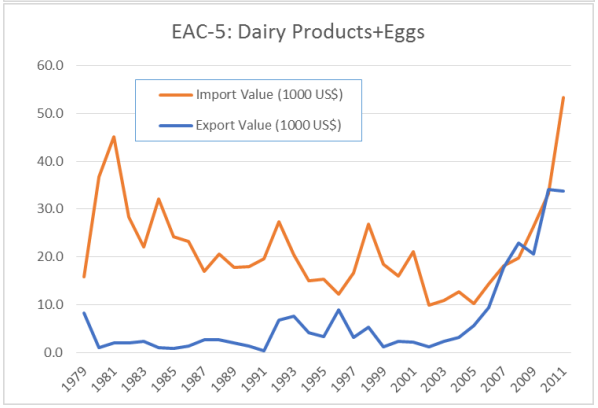


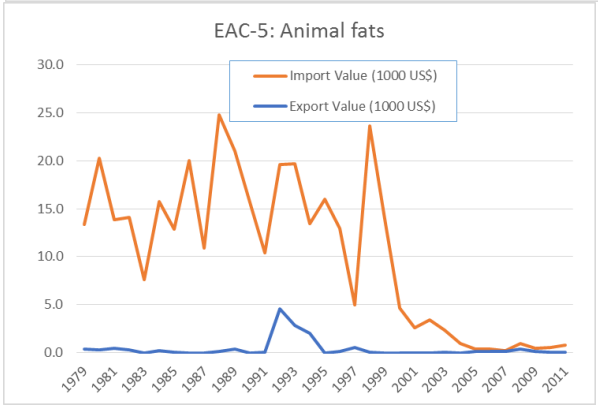






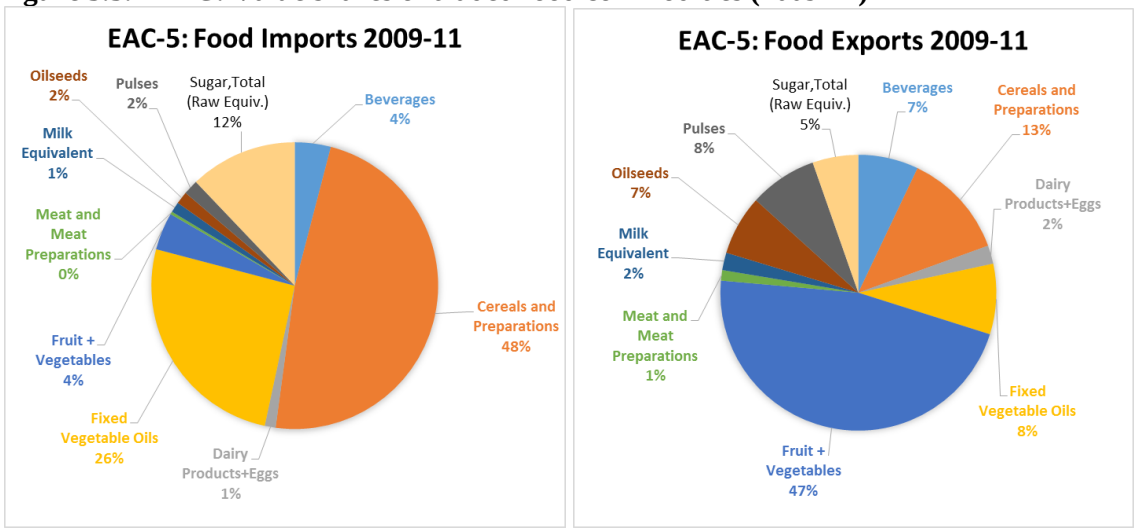






Source: FAOSTAT Trade database

Figure 3.3.2 EAC: Value shares of traded food commodities (2009-11)



Source: FAOSTAT Trade database

3.3.2 Cost of food imports in relation to export earnings

The growing burden being faced by the EAC countries to meet their food needs is more evident when the value of food import bills is expressed in relation to total merchandize trade. The share of food imports in total merchandize imports has increased from 8.3% in 1979-81 to over 11% in 2009-11 (Table 3.3.1). A more insightful indicator, however, is the ratio between the food import bill and the total merchandize exports, a measure often interpreted as the capacity to import[17]. For the region as a whole, this ratio stood at 14.3% in 1979-81 and has now nearly doubled (27.3%). This implies that the cost of food imports has been growing much faster than total merchandize exports and, as a result, the capacity of the countries in the region to afford needed food imports has been deteriorating.

The most severe case is that of Burundi, where a staggering, nearly 70% of the merchandize export earnings are spent on food imports. This share more than doubled during the last 30 years. Relatively heavy is also the burden faced by Rwanda, where about half of the earnings from merchandize exports is spent on food imports.

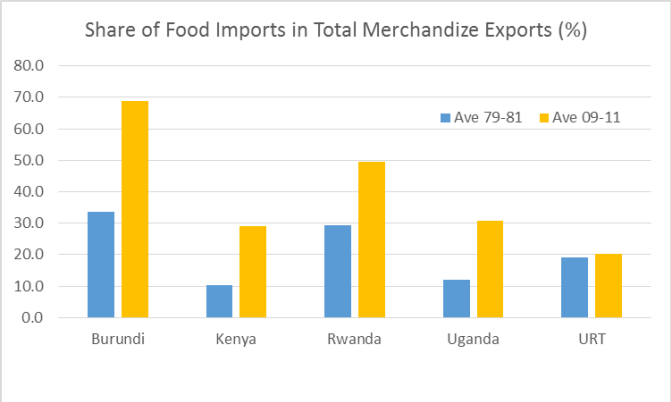
Table 3.3.1 EAC-5: Growing burden of food imports

	Ave 79-81	Ave 89-91	Ave 99-01	Ave 09-11
Share of Food Imports in Total Merchandize Imports (%)				
	8.3	7.5	13.6	11.1
Share of Food Exports in Total Merchandize Exports (%)				
	8.7	10.7	14.0	12.2
Share of Food Imports in Total Merchandize Exports (%)				
	14.3	18.4	30.1	27.3

Source: FAOSTAT Trade database

[17] For example, see Konandreas, P. (2014). 'Challenges Facing Poor Food-importing Countries: Can WTO Disciplines Help?' in Meléndez-Ortiz, Ricardo; Christophe Bellmann and Jonathan Hepburn; (ed.)(2014); Tackling Agriculture in the Post-Bali Context; International Centre for Trade and Sustainable Development, Geneva, Switzerland, www.ictsd.org

Figure 3.3.2 EAC-5: Share of food imports in total merchandize exports



Source: FAOSTAT Trade database

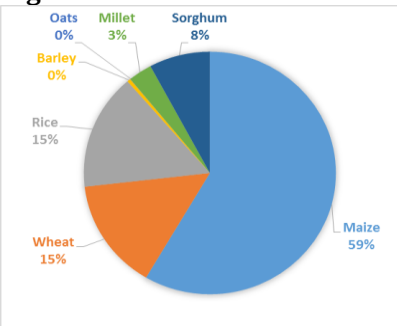
3.4 Performance of cereal production and prospects for growth

As in the rest of the world, cereals constitute the most important commodity group for the food security of the EAC region and additionally they are the main commodity being traded regionally, bridging the gap between consumption requirements and domestically produced foods. Even for countries that are self-sufficient in normal years, when they face production shortfalls in either cereals or other commodities, they import cereals to meet their food deficits.

3.4.1 Cereal production in relation to changing demand

Compared to the past, there appears to be greater convergence in cereal commodities consumed in the different EAC countries. Maize is by far the main cereal commodity consumed in the region accounting for nearly 60% of the total cereal consumption (Figure 3.4.1), ranging from between 50% in Rwanda and 69% in Uganda (average of 2012/13 to 2014/15). This has not always been the case. For example, thirty years earlier maize accounted for only about 33% of cereal consumption for both Uganda and Rwanda (Table 3.4.1).

Figure 3.4.1 EAC-5: Shares of cereal commodities consumed (average 2012/13 to 2024/15)



Source: FAO CCBS database

Another converging characteristic in the consumption of cereals in the region is the substantial reduction in the share of millet and sorghum in the total. On average these two commodities account for only 11% of total cereal consumption today, ranging between 5% for Kenya and 19% for Rwanda. Thirty years earlier, millet and sorghum accounted for much greater shares of total cereal consumption, as much as 58% and 63% for Rwanda and Uganda, respectively.

Yet another important converging trend has been the relatively substantial increase in the share of wheat and rice in total cereal consumption. For the region as a whole, wheat and rice account 15% each in total cereal consumption today, compared to half or less that amount thirty years earlier, and this trend has been shared by all countries fairly consistently (Table 3.4.1). Telling examples of cases of convergence to the regional average are, for instance, Burundi where rice accounts for 17.8% of total cereal consumption today compared to only 3.4% thirty years ago, or that of wheat in Uganda at over 9% today compared to only 2% in the earlier period; also, wheat in Rwanda which accounts today for 16.3% of cereal consumption compared to only 6.4% thirty years earlier.

Table 3.4.1 Shares of commodities in total cereal consumption and production

Burundi												
Shares in total cereal consumption (%)							Shares in total cereal production					
	Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14			Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14
Maize	60.2	58.4	53.4	52.8	59.3		Maize	64.1	58.0	47.4	39.9	54.2
Wheat	10.9	7.1	10.1	9.1	12.0		Wheat	3.0	3.1	2.8	2.9	2.1
Rice	3.4	7.7	12.2	14.7	17.8		Rice	5.4	12.3	21.9	26.9	28.3
Millet	4.3	4.4	2.9	2.8	2.9		Millet	4.6	4.4	3.7	3.7	4.0
Sorghum	21.3	22.4	21.4	20.4	8.1		Sorghum	22.9	22.2	24.3	26.7	11.4
	100	100	100	100	100			100	100	100	100	100
Kenya												
Shares in total cereal consumption (%)							Shares in total cereal production					
	Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14			Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14
Maize	78.2	78.2	71.8	64.9	61.1		Maize	84.1	83.5	82.6	82.2	78.5
Wheat	15.3	12.8	18.3	23.2	25.0		Wheat	8.7	7.3	7.8	8.7	11.2
Rice	1.7	2.7	3.9	6.5	7.8		Rice	1.6	1.9	1.7	2.1	3.4
Millet	0.8	1.8	1.3	1.1	1.0		Millet	0.9	2.2	1.9	1.6	1.6
Sorghum	2.3	3.4	2.6	3.2	3.8		Sorghum	2.6	4.0	3.6	3.7	3.5
Barley/Oats	1.6	1.1	2.1	1.1	1.2		Barley/Oa	2.1	1.0	2.4	1.7	1.9
	100	100	100	100	100			100	100	100	100	100
Rwanda												
Shares in total cereal consumption (%)							Shares in total cereal production					
	Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14			Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14
Maize	32.8	34.9	58.0	48.3	50.6		Maize	33.1	35.0	28.3	55.5	64.9
Wheat	6.4	9.1	4.4	14.4	16.3		Wheat	1.0	4.2	2.6	10.9	7.8
Rice	2.5	3.5	6.9	12.0	13.4		Rice	1.5	3.1	5.2	10.3	9.6
Millet	0.4	0.7	0.8	1.1	1.0		Millet	0.4	0.8	1.7	1.0	0.9
Sorghum	58.0	51.8	29.9	24.2	18.6		Sorghum	63.9	57.0	62.2	22.1	16.8
	100	100	100	100	100			100	100	100	100	100
Uganda												
Shares in total cereal consumption (%)							Shares in total cereal production (%)					
	Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14			Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14
Maize	33.4	37.7	43.6	65.4	68.7		Maize	33.7	37.4	50.3	72.8	77.8
Wheat	2.0	2.0	4.0	9.0	9.1		Wheat	0.8	0.5	0.6	0.6	0.6
Rice	1.6	2.4	5.3	5.8	6.1		Rice	1.7	3.3	4.8	6.6	6.1
Millet	36.4	36.0	28.6	8.0	6.9		Millet	37.0	36.4	26.1	8.1	6.7
Sorghum	26.6	21.9	18.5	11.8	9.2		Sorghum	26.8	22.3	18.1	12.0	8.8
	100	100	100	100	100			100	100	100	100	100
URT												
Shares in total cereal consumption (%)							Shares in total cereal production					
	Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14			Ave 82-84	Ave 89-91	Ave 99-01	Ave 09-11	Ave 12-14
Maize	59.5	65.6	56.3	56.4	58.8		Maize	56.8	63.5	57.4	55.3	61.5
Wheat	3.4	3.7	8.0	9.3	9.1		Wheat	2.3	2.0	1.7	1.3	1.3
Rice	11.4	12.5	15.4	18.0	17.4		Rice	12.8	16.6	19.5	27.9	23.7
Millet	10.2	6.1	5.4	5.0	4.0		Millet	11.3	5.7	4.7	5.1	3.5
Sorghum	15.3	12.0	14.8	11.2	10.6		Sorghum	17.2	11.8	16.4	10.6	10.0
	100	100	100	100	100			101	100	100	100	100

Source: FAO CCBS database

In parallel with the converging shares in consumption in the EACs there has also been a noticeable trend towards greater convergence in cereal production shares. For example, all countries have increased their share in maize production in the total, especially Rwanda and Uganda. Also all countries reduced the share of millet and sorghum. There have also been some divergences, however, notably the production of

rice in Burundi and Uganda (28% of the total in each) compared to 9% for Rwanda and only 6% of total cereal production for Kenya and URT.

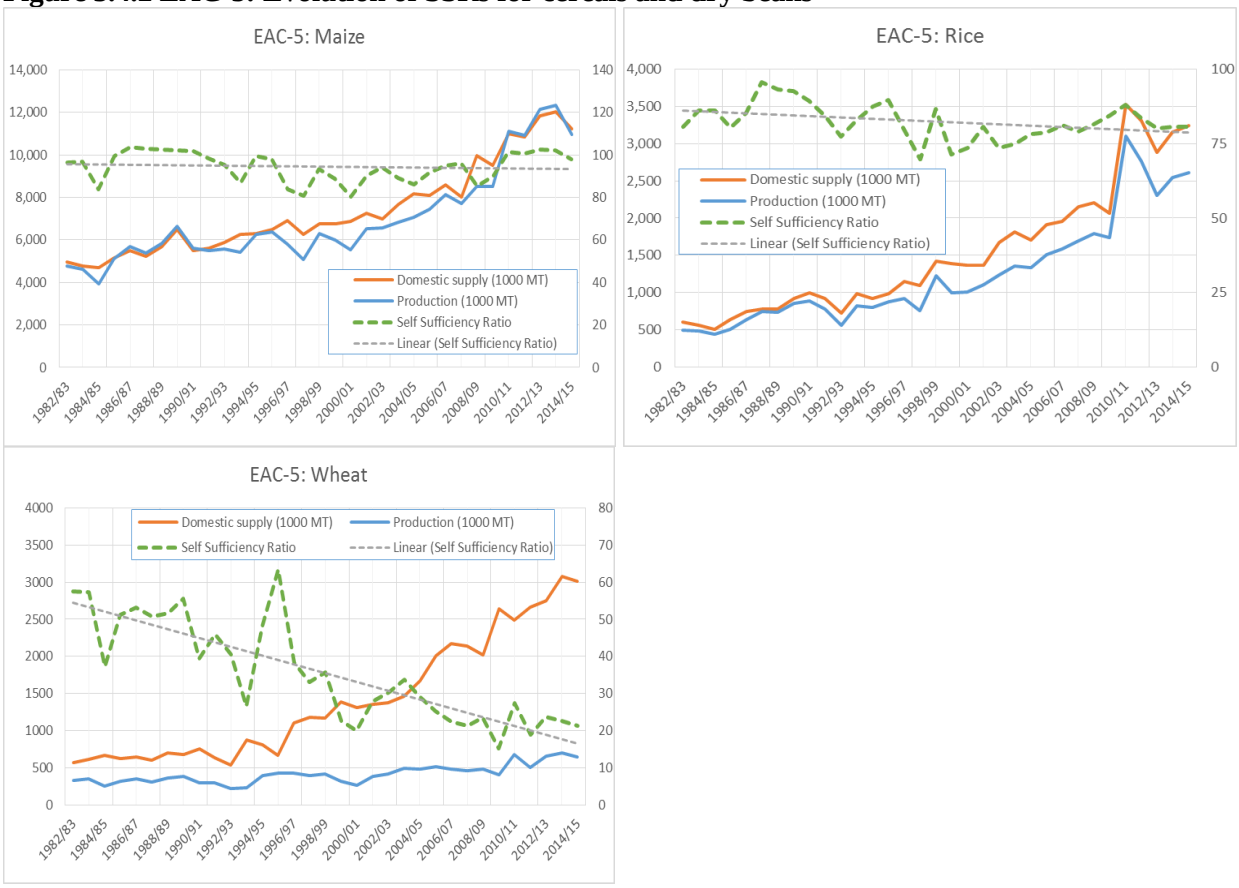
3.4.2 Dependence on cereal imports

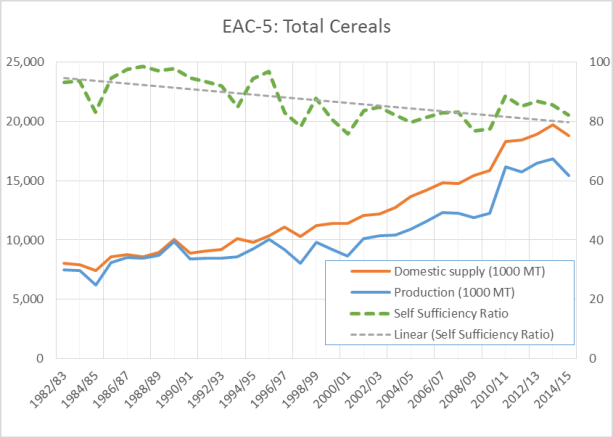
While the cereal supply of the countries of the region has generally been responsive to the changing demand for cereals, for a variety of reasons the EAC countries have moved from a food surplus to a food deficit position. As discussed below, productivity has not kept pace with demand for food of a rapidly increasing population. The region, as other parts of Sub-Saharan Africa missed the green revolution of 1970's which has been instrumental in other parts of the world in raising productivity and achieving self-reliance in basic food supplies.

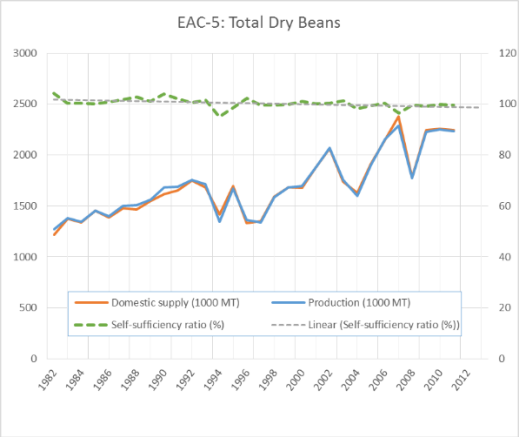
Among cereal commodities, aggregate regional maize production has kept pace with aggregate consumption, with regional self-sufficiency in maize marginally above 100% in recent years, although it has often dipped below that level in the past (Figure 3.4.2). In contrast to the overall regional autarchy in maize (as well as millet and sorghum), the gap between aggregate consumption and production for rice and especially wheat are widening rapidly. The dependence on the world market for both rice and wheat, at about 30% and 80%, respectively in recent years, continue their increasing trend.

These growing regional deficits in rice and especially wheat, driven by urbanization and changes in consumption habits, are reflected in the growing gap between total cereal consumption and production in the region. As we have already seen above, the regional SSR in total cereals has been declining and is hovering just above 80% in recent years.

Figure 3.4.2 EAC-5: Evolution of SSRs for cereals and dry beans







Source: FAO CCBS database

The region imported about 4 million MT of cereals in 2012-14 (Table 3.4.2). Total cereal imports have increased by nearly five times in the span of thirty years, of which wheat and rice by over 7 times. The bulk of cereal imports today are wheat (60%), followed by rice and maize with 18.5% and 18.6%, respectively, and the remaining 3% was accounted by sorghum (Tables 3.4.3 and 3.4.4). Also, the bulk of cereal imports are accounted for by Kenya whose share in total cereals exceeds 60%, with URT and Uganda trailing behind with 21% and 11%, respectively Tables 3.4.3 and 3.4.5).

Unlike cereals, the region overall has maintained a balance between production and consumption in beans, another staple commodity traditionally an important part of the diet. For most years the region enjoys an aggregate surplus, accounted largely by surplus generated by Uganda and URT and exported to the other EAC countries.

There are other important differences between countries in terms of the composition of individual staple commodities imported. For Burundi and Kenya, maize accounts for a large share of their total cereal imports while for the other three countries its share is minor (Table 3.4.4). Aside for Burundi, wheat accounts for the bulk of cereal imports for all countries, with URT wheat imports accounting for as much as 85.4% of its total cereal imports. Rice is also consistently imported by all countries.

Table 3.4.2 EAC-5 Cereal imports by country over time (1000 MT)

	1982-84	1989-91	1999-01	2009-11	2012-14
Maize	429	67	1108	811	733
Wheat	305	368	1069	2167	2359
Rice	88	106	350	519	726
Barley	1	1	0	3	4
Sorghum	3	0	3	52	116
Total EAC	825	542	2529	3551	3938

Source: FAO CCBS database

Table 3.4.3 EAC-5 Cereal imports by commodity and country in 2012-14 (1000 MT)

	Burundi	Kenya	Rwanda	Uganda	URT	Total EAC
Maize	82	628	1	5	17	733
Wheat	42	1230	71	304	711	2358
Rice	11	425	69	119	102	726
Sorghum	0	109	0	5	3	117
Total cereals	135	2392	141	433	833	3934

Source: FAO CCBS database

Table 3.4.4 EAC-5 Repartition of cereal imports by commodity in 2012-14 (%)

	Burundi	Kenya	Rwanda	Uganda	URT	Total EAC
Maize	60.7	26.3	0.7	1.2	2.0	18.6
Wheat	31.1	51.4	50.4	70.2	85.4	59.9
Rice	8.1	17.8	48.9	27.5	12.2	18.5
Sorghum	0.0	4.6	0.0	1.2	0.4	3.0
Total cereals	100.0	100.0	100.0	100.0	100.0	100.0

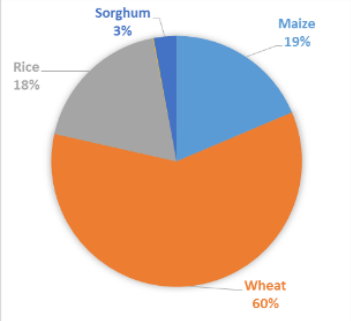
Source: FAO CCBS database

Table 3.4.5 EAC-5 Repartition of cereal imports by country in 2012-14 (%)

	Burundi	Kenya	Rwanda	Uganda	URT	Total EAC
Maize	11.2	85.7	0.1	0.7	2.3	100.0
Wheat	1.8	52.2	3.0	12.9	30.2	100.0
Rice	1.5	58.5	9.5	16.4	14.0	100.0
Sorghum	0.0	93.2	0.0	4.3	2.6	100.0
Total cereals	3.4	60.8	3.6	11.0	21.2	100.0

Source: FAO CCBS database

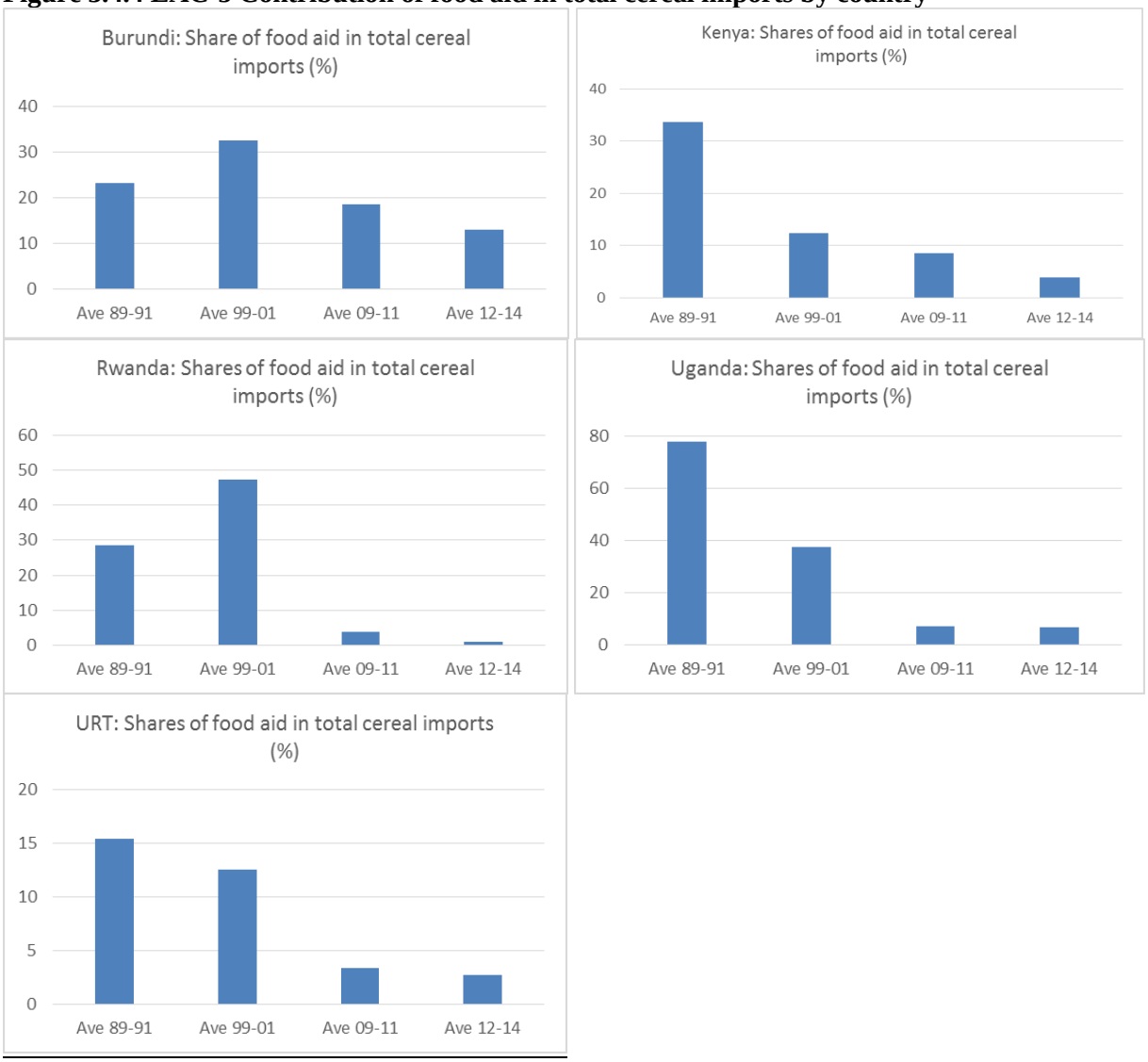
Figure 3.3.3 EAC-5 Shares of aggregate cereal imports by commodity (2012-14)



Source: FAO CCBS database

Food aid has played an important role in meeting the food needs of the EAC countries; however its contribution has dwindled considerably in recent years as the availability of global food aid supplies also declined. Only for Burundi food aid in cereals represents a sizable share of cereal imports in recent years, at 23% during 2012-14 (compared to 33% in 1999-01). While for other EAC countries food aid accounted for a small share of cereal imports in recent years (well below 5% for most of them) it had played an important role in the past in bridging the gap between domestic supplies and national food requirements (especially during periods of regional distress). For example, for Rwanda in 1999-01 nearly 50% of cereal imports were in the form of food aid, in Uganda during the same period close to 40% (as much as 80% during 1989-91) and also for Kenya during 1989-91 (some 35%) while the maximum share of food aid in URT's cereal imports has been in the range of 10-15% in the past and well below 5% in recent years.

Figure 3.4.4 EAC-5 Contribution of food aid in total cereal imports by country



Source: Based on FAO CCBS and WFP FAIS databases

3.4.3 Relative contribution of area and yield in output increase of cereals and dry beans

In order to appreciate better the growing staple food deficits in the region and to be in a position to assess future prospects, it is essential to analyze production performance of individual commodities and countries. Looking first at trends in total cereal production at each country, it is evident that there have been substantially different performances in productivity gains between countries as well as in the area devoted to cereal production (Figure 3.4.6).

Among the five EAC countries, Burundi's record in increasing cereal production has been the most problematic. While it experienced some growth in productivity in the 1980s that reached a plateau in the 1990s, it has stagnated at that level since then. There has not been any real expansion in the area devoted to cereal production, although whatever meagre increase in cereal output has been realized during the past 15 years, it has come from area expansion as yields actually turned downwards. The poor performance in productivity gains for Burundi applies across the board for all three main cereal commodities (maize,

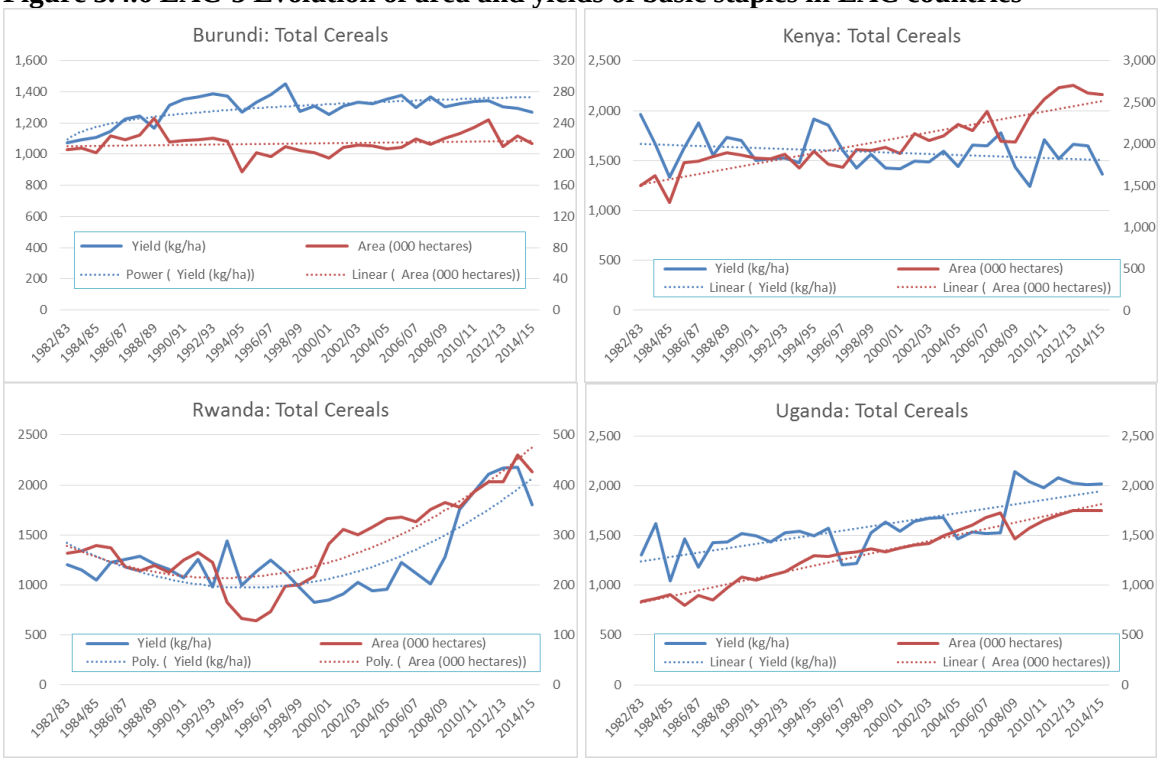
wheat and rice). Especially for wheat, nearly all the reduction in output during the last 15 years has been due to productivity losses (Figure 3.4.7).

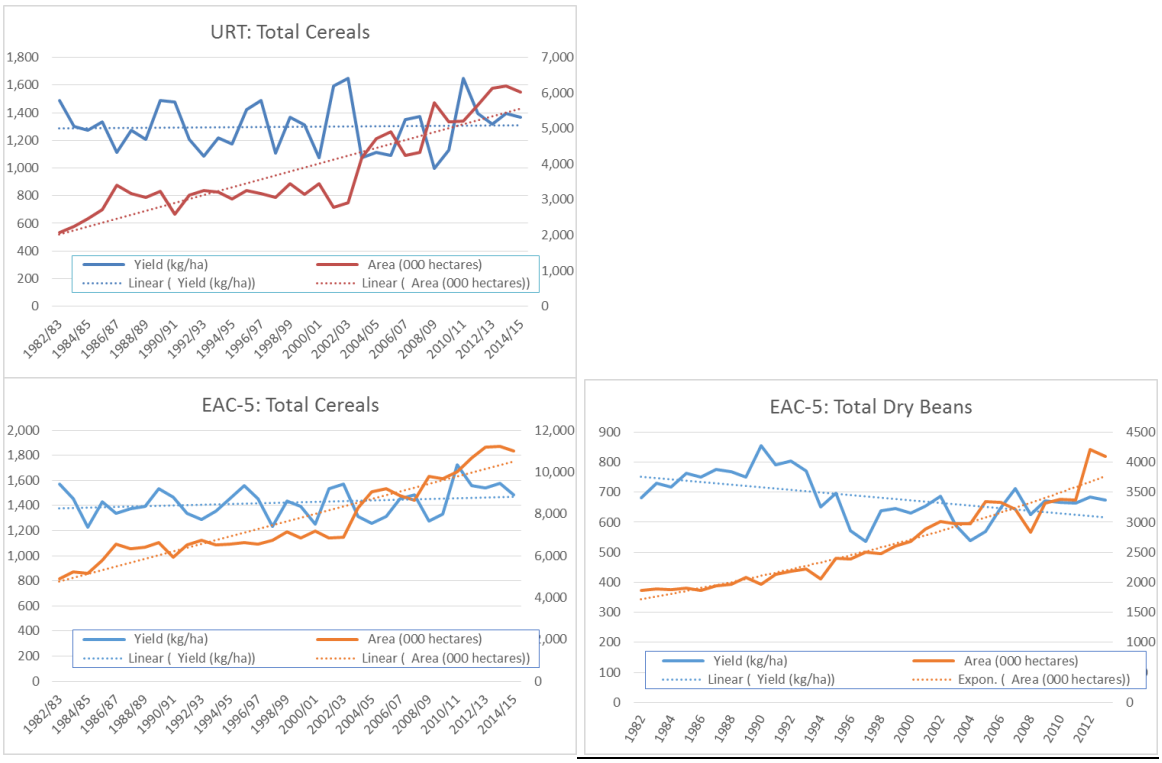
Another category of countries is URT and Kenya which managed to increase total cereal output primarily through an area expansion, contributing 76% and 95%, respectively, while yields are responsible for the balance (Figure 3.4.7). Analyzing individual commodities, it is evident that URT's growth in output for both maize and wheat has come exclusively from area expansion, while in rice there were also some productivity gains. In the case of Kenya, there have been sizable gains in productivity for wheat and especially rice, while those of maize, its main staple, have been very small.

The situation is different for Uganda and especially Rwanda where much of the contribution to increased output came for increasing yields. In Uganda, area expansion contributed 46% and yields 43%, while for the remaining the combined effect of growing area and yields are responsible. In terms of individual commodities, Uganda actually experienced negative growth in wheat yields but these were much more than compensated by large increases in the yields for both maize and rice.

Finally, Rwanda is the champion of performance with area contributing 18% while increasing yields in combination with increasing areas account for a staggering 76% of the total increase in cereal output. Rwanda's impressive performance applies to all three main cereal commodities with increasing yields, in combination with increasing areas under cultivation, being responsible for at least 60% of output for each of them.

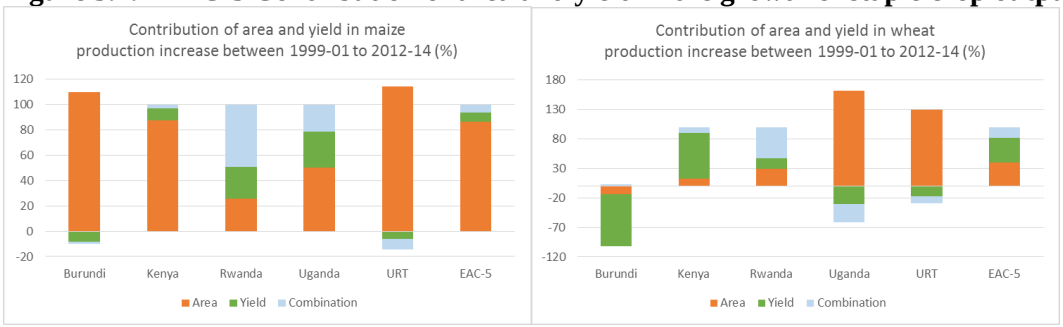
Figure 3.4.6 EAC-5 Evolution of area and yields of basic staples in EAC countries

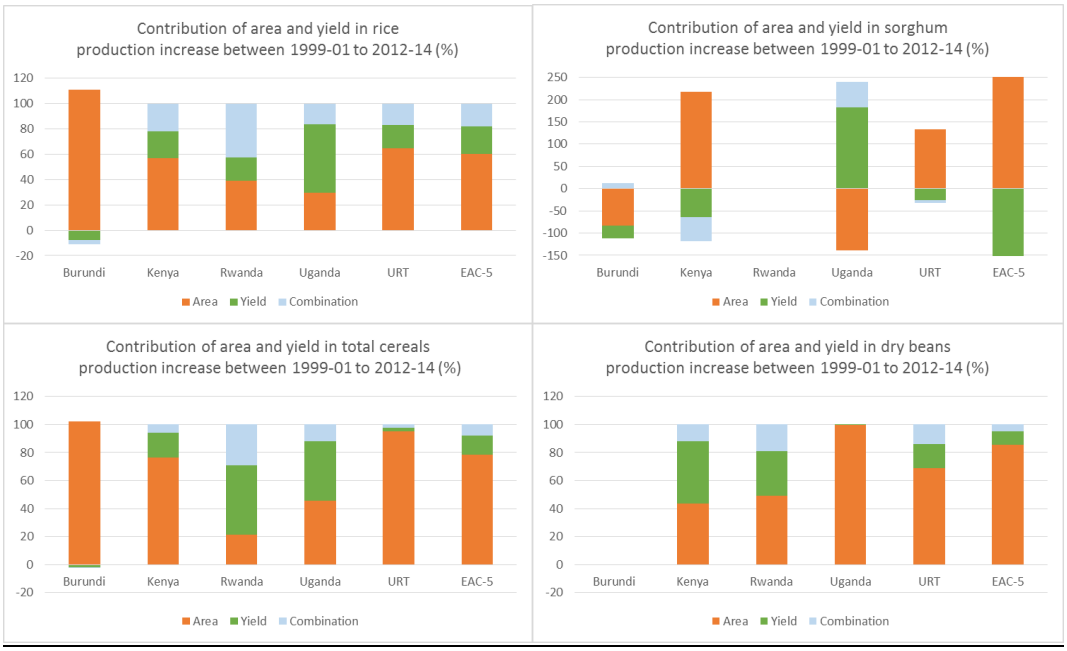




Source: FAO CCBS database

Figure 3.4.7 EAC-5 Contribution of area and yield in the growth of staple crop output





Source: Calculated by the authors using FAO CCBS database

Note: for countries/crops for which bars are not shown, it is because increase in total output was insignificant or negative making the calculation of area and yield contributions spurious.

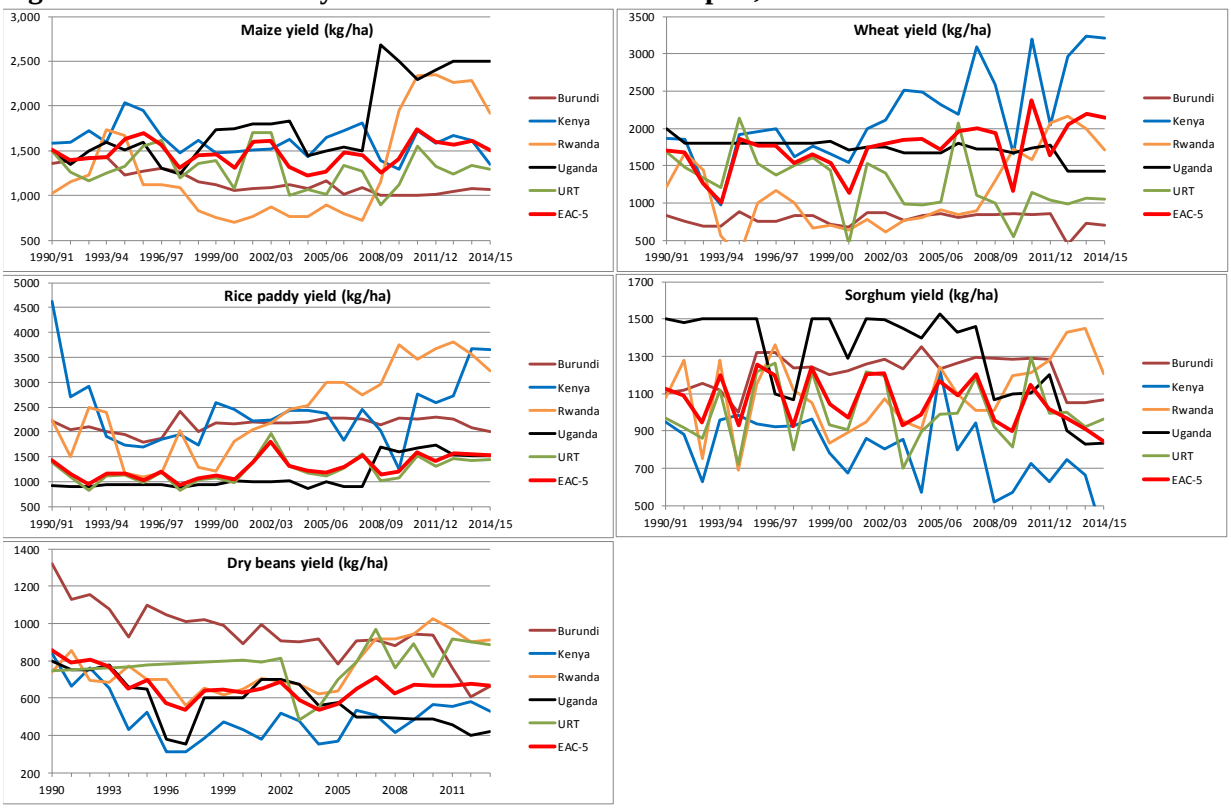
3.4.4 Promising prospects from recent productivity gains in main food staples

As discussed above, it has been area expansion, rather than the yield growth, that has made the most significant contributions to production growth of all main staples in the region. For the EAC as a whole, statistics show that for the 1990s almost all increases in production of staples came from area expansion: 86% for maize, 82% for sorghum and 100% or more for wheat, and for rice and beans (area's contribution over 100% means, technically, that the yield's contribution has been negative).

However, the picture does change somewhat for the 2000s, when yields do also make some marked contributions. Thus, at the aggregate EAC level, yield growth during the 2000s contributed to about half of the production growth for wheat, 31% for rice and 9% for beans, although for maize the contribution of yield remains similar to that in the 1990s.

For **maize**, yield trends were mostly flat or negative until about 2007 after which there are indications of increases, marked rises for Rwanda and Uganda and modest growth for URT, but not for Kenya and Burundi (Figure 3.4.8). For **wheat**, Kenya and Rwanda stand out from the rest in that yields trends were positive for Kenya from around 2000 and from around 2008 for Rwanda, similar to maize. For other countries, no positive trend is visible, notably for URT. Also note the large fluctuations in Kenya's yield during the phase when yield was trending up. For **rice**, Rwanda again stands out with sharp yield growth, and much earlier than for maize and wheat. Kenya's yield also shows sharp upturn but only from around 2009. Yields also trended up for Uganda and URT after 2008, but not as markedly as for Rwanda and Kenya. For **sorghum**, yield trends are on the whole negative or flat with the exception of Rwanda after 2000. Note also the frequent and sharp fluctuations in sorghum yields. Finally, for **dry beans**, Rwanda again stands out for recording strong growth after 2004, as well as URT's during 2003-2007, while for others the trends are either flat or negative.

Figure 3.4.8 Evolution of yields of selected basic food staples, 1990-2014



Source: FAO CCBS database

Overall, although year-to-year fluctuations appear high, there are some signs of improvements in yields in most recent years following a long period of stagnation. There are reasons to expect better performance on crop yields in the 2000s relative to the 1990s, in view of the renewed attention received by agriculture, especially the basic foods sub-sector, neglected in previous decades, both on policy support and public investment. Substantive policy reforms were undertaken during the latter part of the 1990s, and the early 2000s saw important initiatives such as the launch of the CAADP and the Maputo Declaration calling for sharp increases in public spending. The food sector received further strong responses following the global food price crisis of 2008, including large-scale outlays on seeds and fertilizers. These expectations are assessed by comparing relative growth rates in Table 3.4.6.

Table 3.4.6 Yield rates of basic food staples and their growth rates during 1990-2014

	Yield (kg/ha)			Growth rate of yield (% p.a.)			
	Avg1990-92	Avg1999-01	Avg2012-14	1990-99	2000-14	1999-05	2006-14
Maize							
Burundi	1,387	1,085	1,066	-2.3	-0.4	0.7	0.4
Kenya	1,632	1,495	1,549	-0.7	0.0	1.1	-1.3
Rwanda	1,126	742	2,163	-4.4	10.0	2.4	14.1
Uganda	1,450	1,759	2,499	0.3	3.6	-2.8	5.5
URT	1,300	1,367	1,289	0.5	0.1	-5.3	1.4
EAC-5	1,439	1,455	1,563	-0.1	1.0	-2.7	1.6
Rice							
Burundi	2,124	2,175	2,113	0.0	-0.2	0.6	-1.1
Kenya	3,269	2,418	3,319	-6.3	2.2	-0.7	8.8
Rwanda	2,064	1,688	3,527	-6.0	4.7	12.7	2.6
Uganda	911	982	1,528	0.2	4.7	-0.2	5.8
URT	1,113	1,130	1,442	-1.7	0.7	1.5	1.9
EAC-5	1,187	1,178	1,546	-1.8	1.2	1.3	2.5
Wheat							
Burundi	757	755	624	0.2	-1.3	3.1	-3.8
Kenya	1,664	1,730	3,141	1.2	3.3	7.8	3.6
Rwanda	1,444	708	1,957	-6.0	9.5	4.3	10.7
Uganda	1,833	1,762	1,429	-0.5	-1.1	-1.4	-3.0
URT	1,507	1,091	1,036	-0.1	0.2	0.0	-3.7
EAC-5	1,551	1,464	2,134	0.9	2.1	5.0	1.8
Sorghum							
Burundi	1,126	1,226	1,056	1.6	-1.0	1.0	-2.9
Kenya	779	774	553	0.4	-3.3	3.7	-6.2
Rwanda	1,041	897	1,354	-0.6	2.8	4.5	3.7
Uganda	1,494	1,430	855	-1.5	-4.1	0.7	-6.8
URT	905	1,010	962	1.3	0.0	-1.4	-0.8
EAC-5	1,043	1,071	904	0.2	-1.3	0.4	-2.9
Dry beans							
Burundi	1,193	962	670	-2.3	-2.2	-2.7	-5.6
Kenya	751	427	556	-9.4	2.4	-3.3	2.0
Rwanda	761	660	924	-2.8	3.6	-0.1	1.3
Uganda	767	635	424	-6.1	-4.0	-1.0	-3.0
URT	752	798	898	0.7	2.1	-5.8	0.9
EAC-5	816	643	668	-4.2	0.7	-2.8	0.1

Note: Growth rates of the yields are computed from a log-linear time trend.
Source: Computed based on FAO CCBS database

First, what has been the experience during the decades of the 1990s and the 2000s? The statistics for the 1990s show that yield growth rates were negative for 16 of the 25 cases (5 countries times 5 staples). The growth rates for rice and beans were positive for only one of the five countries. The growth rate for maize, the most important staple, was only negative 0.1 % per annum (% p.a.). The EAC-5 numbers are weighted averages and so the region's performance is influenced by the growth rates of the large producers. For example, the URT's negative growth shows up in similar rate for EAC-5, and Kenya's weight in the overall maize growth rate. There was an improvement in the 2000s, with negative yield growth rates falling to 11 of the 25 cases. The performances were better for four of the five products and for the EAC-5 as a whole.

A comparison of the growth rates between the two decades helps to better assess the performance. Improvements could be in the form of a negative to positive growth, or lower to higher positive rate, or even a larger negative to a smaller negative rate. On these bases, there were 17 cases of improvements, or 68% of the 25 cases, in the 2000s. The yield growth rates improved for all five countries for beans, for

four countries for maize and rice, and for three countries for wheat. Sorghum was an outlier with improvement for only one country (Rwanda). As a result, there were improvements for EAC-5 as a whole for all staples other than sorghum. Some of the improvements were remarkable, e.g. for maize in Rwanda from a negative 4.4% p.a. in the 1990s to positive 10% in the 2000s, from 0.3% to 3.6% for maize in Uganda, 0.2 to 4.7% for rice in Uganda and -9.4% to 2.4% for beans in Kenya. Rwanda is the star performer for all five products.

Finally, a comparison of the yield performance between the earlier and later years of the 2000s (last two columns in Table 3.4.6) is also pertinent for this analysis in view of the implementation of the CU policies since 2006 but perhaps more importantly of the efforts made to increase food production in the 2000s, notably since the 2008 food price crisis. The data show 11 cases of improvements in the growth rates. For the EAC-5 aggregate, there were improvements for maize, rice and beans but not for wheat and sorghum. For maize, the EAC-5 growth rate turned positive 1.6% p.a. from a negative 2.7% p.a., largely due to the progress for Uganda and URT. For rice, growth rate yield growth rate increased from 1.3% to 2.5% p.a., with improvement in URT and substantial rises for Kenya and Uganda. In the case of wheat, growth rate for EAC-5 fell markedly from 5% to 1.8% as the growth rate halved in Kenya (but still positive) and turned negative elsewhere other than in Rwanda. Sorghum yields declined or decelerated in all five countries. Lastly, there was an improvement in the growth rate of the beans yield, from -2.8% p.a. to 0.1% p.a. at the EAC-5 level, with improvements for Kenya, Rwanda and URT.

Thus, overall, there has been some progress on crop yields, partly due to the renewed attention received by agriculture, as already noted. Specifically for the EAC region, the implementation of the CU since 2006 was an additional positive factor for productivity growth through trade and investment stimuli. The yield data reviewed above do show improvements in the 2000s relative to the 1990s, and more so in the later 2000s relative to early 2000s. However, the specific channels through which deeper trade integration contributes to productivity growth among the members of a CU are less clear. The integration process could reduce area (and production) for some crops, as trade induces specialization, but overall productivity along retained crop supply chains should increase. In reality, the integration process in the EAC is still at an early stage and so how trade will influence specialization is yet to be observed. What can be asserted, however, is that crop yields are still relatively low[18]; hence, there is ample room for them to grow.

3.4.5 Outlook for EAC food balances ten years ahead

An indication of the likely evolution of food supply/demand balances in the EAC region can be obtained from the OECD-FAO medium-term agricultural outlook projections. The annual *OECD-FAO Agricultural Outlook* is a widely used and respected source of information for projections of food balances ten-year ahead. These projections are derived from a medium-term modeling framework (the OECD-FAO *Aglink-Cosimo* model) based on past trends of performance of individual countries and an assessment of the major forces affecting world agricultural supply and demand, including parameters related to demographics, economic growth, technology, energy prices and agricultural policy affecting international markets, as well as, and more importantly, the best judgment of the FAO and OECD

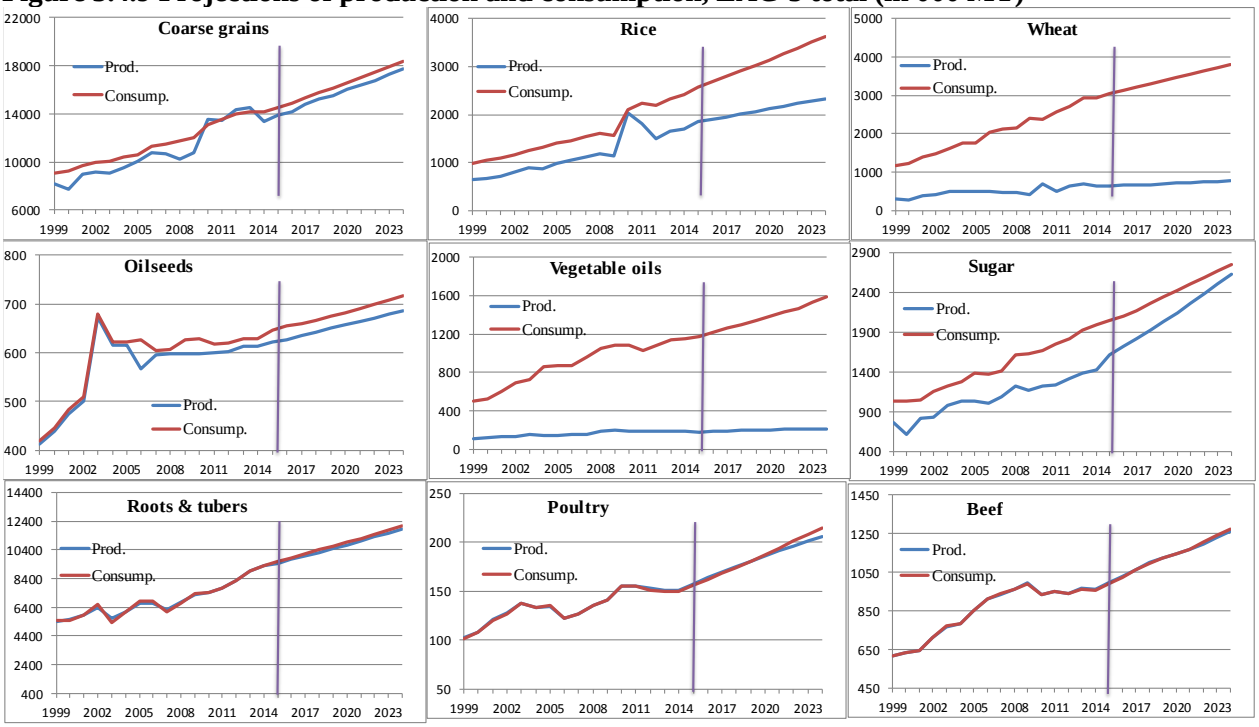
[18] Indeed, average yields of basic food staples in the EAC region are well below those in other world regions. It has been estimated that actual yields in the region amount to merely about one-half to one-third of what could be produced with proper application of fertilizers, irrigation and quality seeds (Keya, S. and P. Rubaihayo, 2013). It is reported that maize production in Rwanda is much closer to its economic optimum than that of either Uganda or Tanzania (USAID, 2013). Rwandan yields are higher than both of these countries especially substantially higher than those of Tanzania. Therefore, there seems to be potential in both Uganda and Tanzania to increase cereal output to an economic optimum by intensifying production through increased fertilizer use, commonly deemed to be derived from applications of approximately 40kg/ha N.

agricultural commodity experts. The latest 2015 *Agricultural Outlook* extends projections to the year 2024 (OECD-FAO, 2015).

Medium-term projections of food markets are valuable inputs to sound policy formulation. Among other things, projections help identify emerging gaps between production and consumption, and thus provide a basis for intervening to avert emerging imbalances through reprioritization of public spending and policy reforms.

What follows summarizes the projections for EAC-5 for nine main food products covered in the OECD-FAO projections. Figure 3.4.9 provides the evolution of the past trends in production and consumption (1999-2014) and projections for the next ten years (2015-2024). Related statistics are summarized in Table 3.4.7.

Figure 3.4.9 Projections of production and consumption, EAC-5 total (in 000 MT)



Note: In 2012-14, maize accounted for 85% of the total coarse grains consumption and 83% of production, followed by sorghum at 10% and11% respectively, with the rest 4-5% being millet.
Source: *OECD-FAO Agricultural Outlook 2015-2024* (forthcoming).

For EAC-5 total **coarse grains** (mainly maize) net imports are projected to increase by 372,000 MT (92% due to Kenya and 8% due Burundi) between 2012-14 and 2024 and net exports to shrink by 392,000 MT (81% due to URT, 12% Uganda and 8% Rwanda). Thus, overall, the net balance is projected to deteriorate by 764,000 MT for EAC-5. Import to consumption ratios will increase for Kenya and Burundi, while export to production ratios will deteriorate for the other three.

Table 3.4.7 Projections of production, consumption and trade, EAC-5 total (in 000 MT)

	-- Values 000 mt --		Growth rate % p.a.		-- Values 000 mt --		Growth rate % p.a.
	2012-14	2024	2015-24		2012-14	2024	2015-24
Coarse grains				**Sugar**			
Production	14,045	17,749	2.7	Production	1,377	2,626	5.4
Consumption	14,103	18,393	2.6	Consumption	1,910	2,744	3.4
Imports	789	1,162	0.6	Imports	746	489	-3.3
Exports	855	464	-1.6	Exports	205	298	1.3
Rice				**Roots and tubers**			
Production	1,624	2,326	2.5	Production	8,806	11,839	2.5
Consumption	2,316	3,636	3.9	Consumption	8,804	12,051	2.5
Imports	729	1,378	5.7	Imports	17	244	7.1
Exports	105	56	-7.1	Exports	19	32	5.0
Wheat				**Poultry**			
Production	664	776	2.0	Production	151	206	3.0
Consumption	2,859	3,817	2.5	Consumption	150	214	3.5
Imports	2,282	3,101	2.5	Imports	1	12	27.2
Exports	83	34	-3.3	Exports	3	3	2.0
Oil seeds				**Beef**			
Production	609	687	1.1	Production	956	1,262	2.5
Consumption	626	717	1.1	Consumption	953	1,274	2.7
Imports	21	34	1.0	Imports	2	19	23.9
Exports	4	4	-0.1	Exports	5	7	0.7
Vegtable ols							
Production	189	215	1.9				
Consumption	1,126	1,587	3.2				
Imports	969	1,385	3.4				
Exports	25	13	-1.8				

Note: In 2012-14, maize accounted for 85% of the total coarse grains consumption and 83% of production, followed by sorghum at 10% and11% respectively, with the rest 4-5% being millet.
Source: *OECD-FAO Agricultural Outlook 2015-2024* (forthcoming).

For **rice**, projections for EAC-5 indicate a widening gap between consumption and production, with imports increasing from 729,000 MT to 1.4 million MT between 2012-14 and 2024. During this period, EAC-5's production is projected to grow by 2.5% p.a. while consumption by 3.9% p.a. Some 65% of the extra imports would be due to URT, followed by 28% for Kenya.

For **wheat**, a large foreign exchange drain for the region, the projections show a much larger widening gap between consumption and production than that of rice. Between 2012-14 and 2024, EAC-5 is projected to import an extra 818,000 MT of wheat, 47% of which is due to Kenya and 39% by URT. The projections show an alarming gap for URT with 3.3% p.a. growth rate of consumption versus 0.03% p.a. rate for production.

Unlike rice and wheat, the gap between **sugar** consumption and production is projected to shrink, with EAC-5 production growth rate (5.4% p.a.) exceeding consumption growth rate (3.4% p.a.) markedly. As a result, the region's net import of sugar in 2024 is projected to be lower by 350,000 MT than the 2012-14 level. Over 80% of this reduction is due to URT where production growth rate will be 9.3% p.a. versus 3.9% p.a. of consumption growth.

The region is a large importer of edible oils but not much of **oilseeds**. Import to consumption ratio of oilseeds was only 3% in 2012-14 and is projected to rise to 5% by 2024. So overall, consumption growth for oilseeds is projected to exceed production growth by a small margin only. However, the outlook for **vegetable oils** is of considerable concern. Among all basic food products the growth rate of vegetable oils imports is the highest, at 3.4% p.a between 2012-14 and 2024. Additional vegetable oils production will cover only 6% of the extra consumption requirement during this period. Although the case of vegetable oils looks similar to that of wheat, the outlook is more alarming because unlike wheat, the region has considerable potentials to grow oilseeds and reduce import dependency of edible oils.

Roots and tubers are essentially non-traded foods, with import to consumption ratios in 1-2% range in all EAC countries. The projections indicate this pattern for 2024 also. But more importantly for food security, the projections indicate a favourable outlook with substantive increases in both production and consumption in all EAC countries. As seen in the graph, the strong uptrend that started since around 2008 continues to 2024.

As regards meats, the region is projected to produce an extra 54,000 MT of **poultry** meat between 2012-14 and 2024 and consume an extra 64,000 MT, thus importing 11,000 MT, 93% of which is accounted for by URT. Very little extra production or consumption is projected for Burundi, Kenya and Rwanda while fairly large increases (22,000 MT) in production and consumption are projected for Uganda, but with little extra trade. Finally, for **beef**, while production and consumption in EAC-5 was flat during 2008-2014 (following strong growth during 1999-2008), projections to 2024 show markedly positive growth rate, although not much trade, as projected production and consumption levels would be similar. The projected incremental imports of 17,000 MT for EAC-5 between 2012-14 and 2024 is accounted for by URT (68% of the total) and Kenya (30%).

Overall, as said at the outset, by identifying emerging gaps between consumption and production at the national level, projections provide essential signals for reallocating scarce public resources, as well as for taking corrective policy measures. In the context of the CU/CM integration process where national policy independence is limited, projections of likely regional outcomes are helpful in providing early warning about emerging regional trade imbalances vis a vis the rest of the world. In turn, this is of critical importance for supporting regional cooperation in policy making, for example whether certain common policies, such as continuation of agreed levels of Common External Tariffs for certain key food commodities is desirable, or adjustments in CETs may be called for.

Box 3.1 Reacting to climate change challenge to agriculture and food security in the EAC region

There is a vast literature on likely impacts of climate change on agriculture, livelihood and food security, as well as on mitigation and adaptation measures. At the global level, there seems to be a consensus that climate change will have a negative impact on crop productivity in low latitude tropical regions but a modest positive impact on high latitude temperate regions. The effect of that would be increasing food import dependency for many currently food deficit developing countries that are situated in tropical and sub-tropical areas. The EAC region would be adversely affected.

Small individual countries can only do so much when it comes to restraining global warming and thus to mitigate the impact of climate change. Therefore, most attention at the national level seems to be focused on adaptation measures, defined as adjustments to natural or human systems in response to actual or expected climate change. For low-income and largely agrarian economies, these measures are mainly related to agriculture.

The *EAC Food Security Action Plan* acknowledges climate change challenges and calls for related measures. It notes that the temporal and spatial variability of climate, especially rainfall, is the major risk facing producers, agro-processors and consumers in EAC. Analysis of climatic data shows that the coefficient of variation of rainfall in semi-arid tropics can be as high as 50% and most of the annual rainfall often falls in few rainfall events within three to five months of the year. Evidence is emerging that climate change is making the variability more intense with increased frequency of extreme events such as drought and floods, which sometimes occur within one season in one location.

Adaptation measures are prominent under the food availability and stability dimensions of food security in the Action Plan. Under availability, key adaptation measures include: i) development and use of improved/appropriate technologies/inputs adaptive to climate change impacts, namely high yielding, drought-tolerant and disease-resistant varieties and planting materials; ii) water utilization and efficiency; and iii) soil conservation measures. Likewise, under stability, prominent measures include effective and adequate food reserves, establishment and maintenance of storage facilities for food and animal feeds, strengthening capacity of relevant institutions in food and feeds security emergency response, an EAC early warning system, and promoting secondary financial markets supporting agricultural insurance and finance for addressing a variety of risks facing farmers and agro-business. The wide range of actions shows that responding to climate change cuts across broad areas of development, from crop varietal selection to weather insurance to social safety nets.

Individual EAC countries have also formulated national programmes and projects. An UNFCCC supported initiative led to the formulation of *National Adaptation Programme of Action* (NAPA) for most LDCs. This involved a national process of analyses and stakeholder consultations to identify priority projects on climate change adaptation. As of mid-2012, NAPAs were formulated for 47 LDCs with total priority projects numbering about 500[19]. A review of the NAPA database for adaptation projects and measures shows the prominence of agriculture, including fishery and forestry, with most measures directly or indirectly related to the sector. One could almost say that adaptation to climate change in the LDCs is first and foremost the adaptation of agriculture. In EAC, all four LDCs (Burundi, Rwanda, Uganda and URT) have their respective NAPAs formulated. Many non-LDCs also formulated their own versions of NAPAs through a similar process. This applies to Kenya whose latest comprehensive action plan, *National Climate Change Action Plan 2013-2017*, was unveiled in 2012[20].

[19] http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/4585.php.
[20] http://cdkn.org/wp-content/uploads/2013/03/Kenya-National-Climate-Change-Action-Plan.pdf.

3.5 The geography of regional food production and spatial and seasonal complementarities

There is limited knowledge of food markets at the sub-national and local levels in the region. In particular, not much information is systematically compiled that would allow a quantitative assessment of market structure, the degree of surplus or deficit position at the district or sub-district level, the seasonal variation of such positions, and the timing and scale of trade among different areas, nationally or intra-regionally. Moreover, for such information to be of operational value it would be needed for individual food commodities produced and consumed locally, including seasonal variation in consumption patterns of local populations in response to seasonal availability of different commodities. An important analytical question concerns the food production complementarity among EAC countries due to dissimilarities in agro-ecological systems and differences in resource endowments, leading to important opportunities for intra-EAC trade, spatially and seasonally. In practical terms, this is valuable information to policy makers, national food agencies managing food security reserves and other institutional procurement bodies on how they may time their food purchases, not only by avoiding undue stress to local markets but instead reinforcing trade links and thus strengthening regional food security.

For all these reasons, it was deemed essential that this study undertakes some preliminary analysis of the 'geography' of regional food systems (at national and sub-national levels) and explore related complementarities among EAC countries. Such complementarities are due to marked differences between countries in both the demand for and supply of major food commodities. These are explored in turn.

3.5.1 Demand side complementarities among EAC countries

Important differences among EAC countries exist as regards the predominant diet of the bulk of their populations. In the case of Kenya, among the four main food commodity staples identified in Table 3.5.1, cereals rank first, followed by starchy roots and tubers (SRTs), bananas/plantains and finally pulses. In URT, the order is slightly different with roots and tubers being more important than cereals in terms of their calorie contribution to the diet. Uganda and Rwanda are similar with SRTs and bananas/plantains taking the first place in the diet, while cereals take the third place followed by pulses. Finally, in Burundi SRTs also rank first but pulses are very important in the diet, followed by bananas/plantains, while cereals rank last.

Table 3.5.1 Ranking of main staples in local diets

	Kenya	URT	Uganda	Rwanda	Burundi
Cereals	**1**	**2**	3	3	4
Starchy roots and tubers	**2**	**1**	**1**	**1**	**1**
Bananas/Plantains	3	3	**2**	**2**	3
Pulses	4	4	4	4	**2**

While these marked differences in the predominant diets in the countries of the region are partly due to dissimilarities in traditionally prevailing food production patterns, to the extent that a country has the agro-ecological potential to produce what a neighbouring country eats, this would be a necessary condition for intra-regional trade.

Beyond the differences in the regular/normal demand for specific food commodities driven by the predominant consumption habits in each EAC country, there are also important differences among them

in irregular/abnormal requirements for food due to differences in their vulnerability to emergency situations (caused by natural or man-made factors).

As Table 3.5.2 shows, Eastern Africa is the most emergency-prone sub-region in Sub-Saharan Africa. In the 1980-2014 period, it had the highest number of occurrences and the highest caseload of affected populations. A total of 182 million individuals were affected by emergencies in Eastern Africa, which is higher than the aggregate of all other sub-regions, and accounted for 53% of the total caseload in Sub-Saharan Africa.

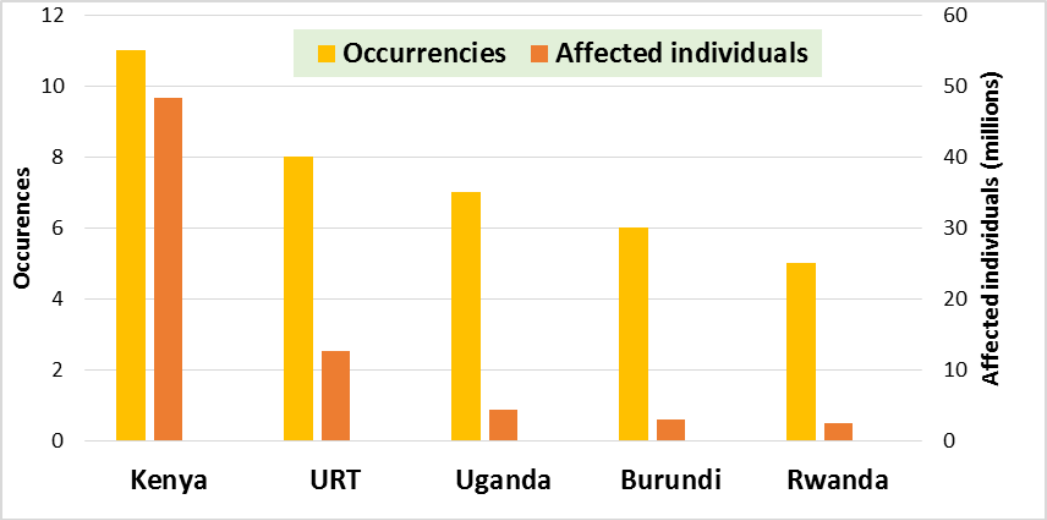
Table 3.5.2 Number of droughts and affected individuals in Sub-Saharan Africa (1980-2014)

Sub-region	Number of occurrences	Affected individuals (millions)
Eastern Africa	81	182
Southern Africa	66	12
Western Africa	51	82
Central Africa	20	68
Sub-Saharan Africa	**218**	**343**

Source: EM-DAT Database (accessed June 2015), www.emdat.be/database.

An emergency episode affects several countries, being typically a sub-regional or even a regional (continental) event, such as the extreme droughts of 1983–84, 1990–92 and 2001-02, which involved several countries across most sub-regions of Sub-Saharan Africa. However, marked differences exist in frequency of emergencies, their severity/impact and timing among different countries in the same sub-region. Among EAC countries, Kenya is by far the most emergency-prone, as Figure 3.5.1 shows. Between 1980 and 2014 drought occurred 11 times and affected about 50 million people, almost four times the caseload of URT, the second most affected country.

Figure 3.5.1 Number of emergencies and affected people in EAC countries (1980-2014)

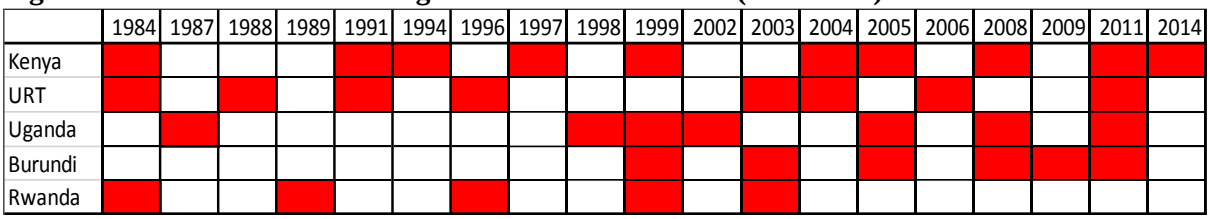


Source: EM-DAT Database (accessed June 2015), www.emdat.be/database.

It is also the case that emergencies are not necessarily contemporaneous events affecting all EAC countries simultaneously. During the 35-year period from 1980 to 2014, there were In 16 years during which no EAC country experienced an emergency. For the remaining 19 years when EAC countries experienced emergencies, in 10 cases this involved only a single EAC country, in 3 cases emergencies

affected two EAC countries, in 4 cases three EAC countries were affected and in 2 cases four EAC countries were affected. There was no emergency involving all five EAC countries. Most notably, drought affected simultaneously both Uganda and URT (the cereal surplus countries of the region) only once (in 2011), when the sub-region faced one of the worst droughts since 1950. In the other drought events of the 1980-2014 period, Uganda and URT were never involved during the same year. It follows from this analysis that overall there is great scope for regional food resources being mobilized to respond to emergency needs in other countries within the EAC region.

Figure 3.5.2 Distribution of emergencies in EAC countries (1980-2014)



Source: EM-DAT Database (accessed June 2015), www.emdat.be/database.

3.5.2 Supply side spatial and seasonal complementarities

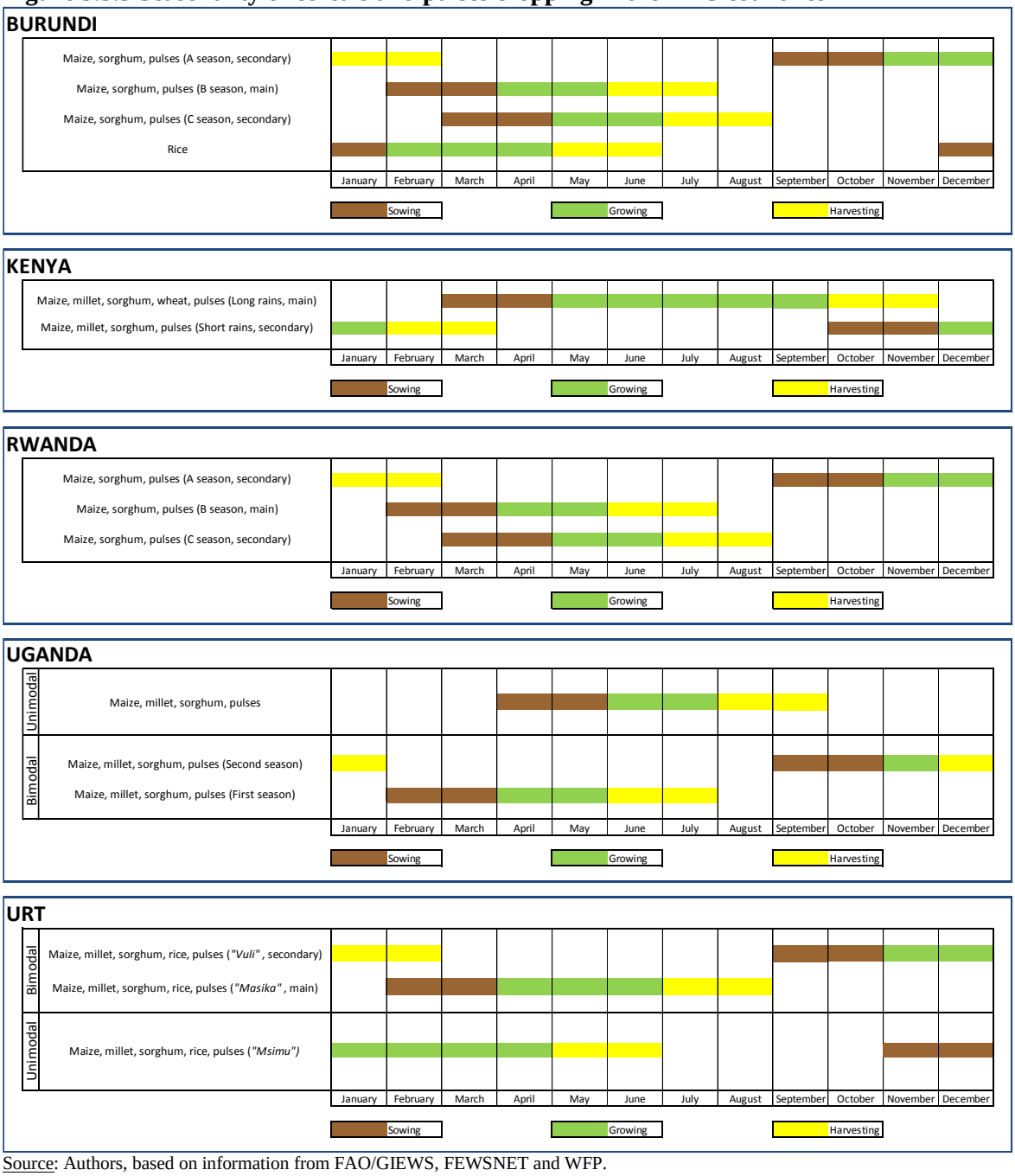
On the supply side, complementarities among countries are due to differences in agro-ecological factors related primarily to rainfall intensity and distribution which affect crop calendars and the timing of harvests ('*seasonal'* complementarity). In addition, differences in endowments (e.g. land and water resources, soils and technology) impact on the quantities produced in relation to local requirements in different countries ('*spatial'* complementarity).

Rainfall patterns and crop calendars

There is considerable diversity in planting and harvesting calendars for cereals and pulses across the five EAC countries due, inter alia, to marked variations in rainfall distribution across countries (see Annex 3.3). This diversity has been an important contributor to food security for individual countries as well as a source of complementarity for regional trade. Given limited irrigation coverage, rainfall distribution is the main determinant of what is produced and when. Figure 3.5.3 shows crop calendars for cereals and pulses for the five countries, revealing considerable dissimilarities among them in terms of the number and timing of harvests. Differences in cropping seasons are of critical importance for national (and regional) food security. For example, in Burundi, while 66% of maize comes from the A season, rice (the second most important cereal) is almost exclusively grown during the B season (95%), as also is the case for sorghum and wheat (90% and 87%, respectively).

At the overall regional level, differences in cropping seasons between countries are much more numerous, thus creating more opportunities for production complementarities. One important mismatch of harvest months is between the main deficit country, Kenya, on the one hand, and the two surplus countries, Uganda and URT, on the other. Only one of the four harvest months of Kenya, namely February, is common to the harvest months of the other two countries (Figure 3.5.3). Also, while Kenya does not have any harvest for six continuous months from April to September, both Uganda and URT have harvests for four months in this period (June to September for Uganda and May to August for URT). This mismatch is of crucial importance for trade complementarity. In fact, price data show that Kenya experiences modest seasonal price increases during its 5-6 months of otherwise lean season, most plausibly due to the substantial production complementarity with Uganda and URT.

Figure 3.5.3 Seasonality of cereals and pulses cropping in the EAC countries



Source: Authors, based on information from FAO/GIEWS, FEWSNET and WFP.

Seasonality of surpluses and deficits as the basis for trade complementarity

While there are important differences among EAC countries as regards the timing of harvests of major staple commodities, that fact alone does not constitute a basis for complementarity among them unless the quantities involved are also substantial. Figure 3.5.4 shows estimated monthly surpluses and deficits at the EAC-5 level for three key food products - maize, rice and dry beans.[21] The graphs show, for example,

[21] The method used is as follows. Total national output for each commodity is allocated to different harvest seasons based on prior information on seasonal shares in total output. In turn, these seasonal quantities are allocated

that for maize there are four months when deficits are significant – March, April, September and December. For beans, such deficits arise only for three months - March, April and September. In contrast, there are six such deficit months for rice. Not shown in the figure is the months when individual countries face deficits in these food products which are typically much numerous (about 7-8 months in a year). This marked reduction in food-deficit months at the regional level reveals the existence of valuable spatial and temporal complementarity of production among EAC countries which, however, becomes an asset for regional food security to the extent there is unrestricted trade among countries, i.e. the very aim of the EAC customs union.

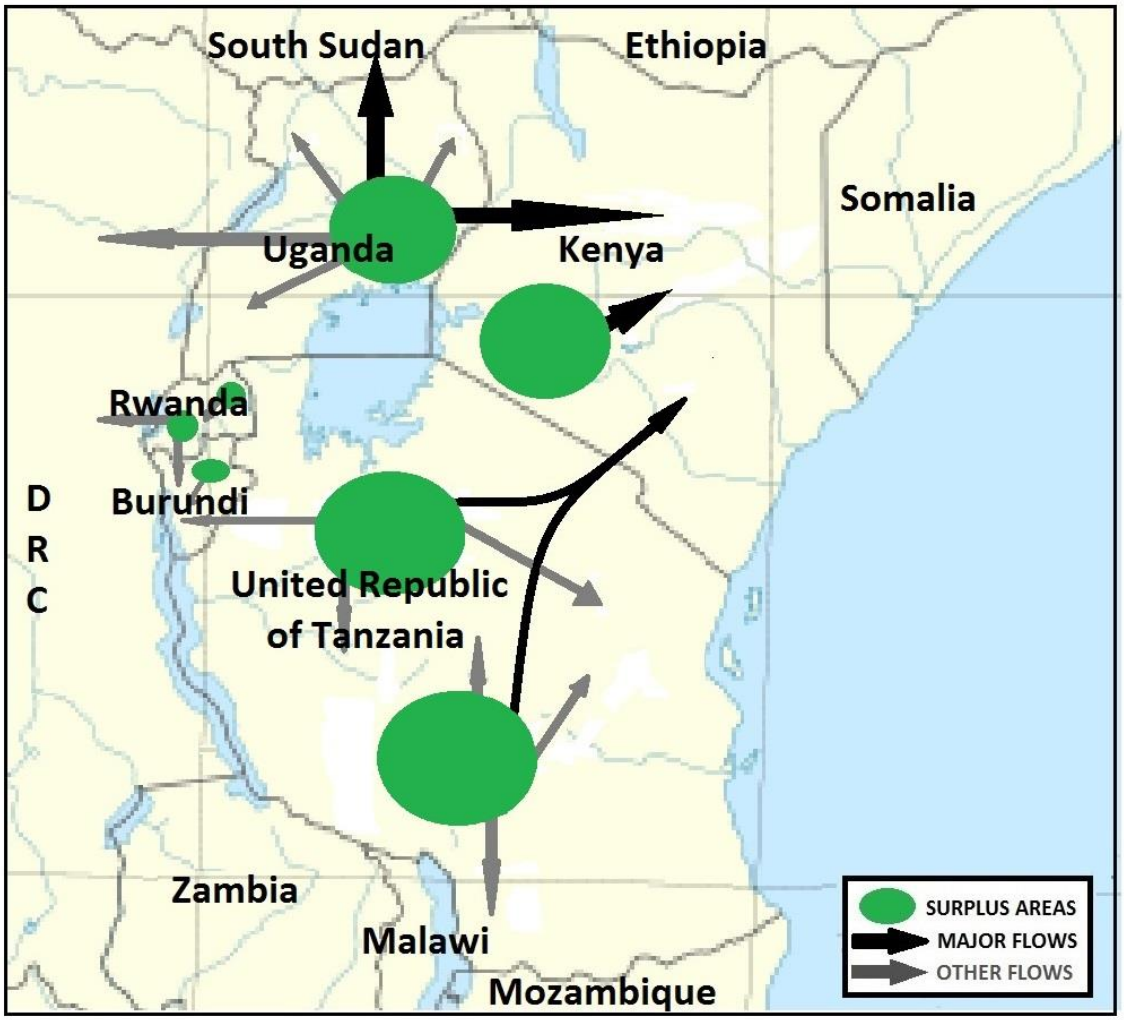
Figure 3.5.4 Monthly balances for selected staples (average 2010-13) at the EAC-5 level (000 MT)

Source: Authors based on FAO data.

equally between the harvest months of each season. Consumption of a particular commodity is assumed to be uniform across months, so that monthly consumption is obtained from total national utilization (from food balance sheets) divided by 12.

In reality, the seasonal regional surpluses identified in Figure 3.5.4 dictate the pattern and intensity of intra-EAC trade, both formal and informal. For example, in the case of maize, Kenya's deficits are met through imports from Uganda and URT. Burundi's deficits are satisfied through imports from URT and Rwanda. In addition, EAC countries export often substantial quantities to countries outside the EAC (see Chapter IV). Thus, URT also exports maize to Mozambique, Malawi and Zambia during production shortfalls in these countries. Similarly, Uganda exports substantial quantities of maize to South Sudan and DRC, which is also a main export market for Rwanda. Figure 3.5.5 provides a snapshot of these trade flows of maize in the greater sub-region[22].

Figure 3.5.5 The geography of maize trade flows in the EAC region

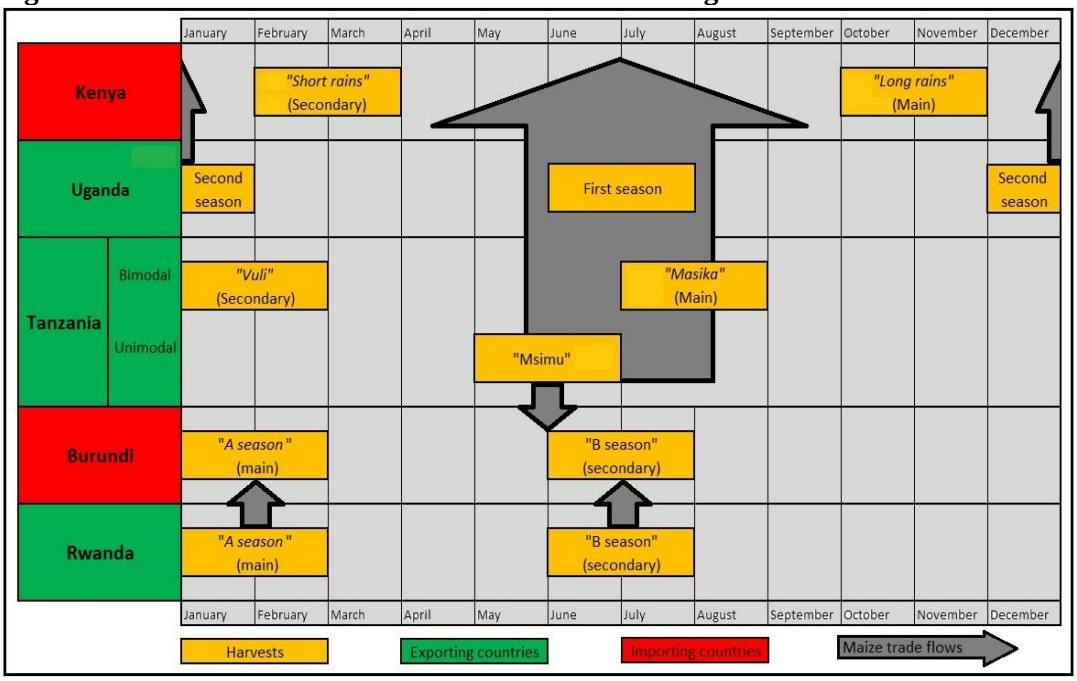


Source: Authors.

[22] Considering a concrete case, year 2013 for which data are available, the bulk of regional flows of maize were as follows: *URT to Kenya* – some 400,000 MT (usually, as much as 95% of URT maize exports are destined for Kenya); *Uganda to Kenya* – 201,700 MT, in addition to some 231,700 MT imported informally; *Uganda to South Sudan* – formal maize exports estimated at some 128,000 MT in addition to over 360,000 MT estimated informal exports; and *Surplus to deficit areas within Kenya* – as Kenya's maize production is relatively concentrated geographically, large parts of the country (e.g. pastoralist and agro pastoralist dryland areas) are supplied by surplus production elsewhere in the country.

Figure 3.5.6 provides further information on EAC trade flows by juxtaposing the seasonality of national harvests. As already discussed, this is due to the mismatch in production seasons between the surplus countries (Uganda and URT) and the deficit country Kenya. Thus, in Uganda, the first season harvest, which accounts for about half of the annual output, is gathered in June and July. In URT, the "Msimu" harvest, which accounts for almost 80% of the national yearly maize output, is gathered in May and June in unimodal areas in the southwest and west. In bimodal areas, the "Masika" main crop is harvested in July and August. Despite the fact that the high potential unimodal areas have larger surpluses available for trade, the bimodal regions are nearer to Kenya and thus have relative advantage for this trade due to lower transportation costs. By contrast, in Kenya, the main 'long rains' crop, which accounts for about 70% of the annual crop, is harvested from October onwards, with some supplies of green maize available in September. As a result, the 'long' lean season progresses in June and July and peaks in August, when local availabilities at national level in Kenya reach their minimum. In turn, the largest quantities of maize over a given year flow from URT and Uganda towards Kenya between May to August (largely during June-July).

Figure 3.5.6 Seasonal trade flows of maize in the EAC region



Source: Authors.

That these flows have contributed markedly in balancing supply and demand gaps at the regional level is also confirmed by the seasonal dynamics of maize prices. In Kenya, prices of maize in the main markets, which should peak in August if there was no trade, actually start falling from May onwards (see section 4.1.1) due to sustained imports from URT and Uganda. Another notable period of the year when substantial trade flow takes place is December-January, when the second season crop is harvested in Uganda. However, supplies at the regional level are less tight in these months primarily because in Kenya, the main 'long rains' harvest is just completed (the bulk is gathered in October and November but in some areas this continues for another month) and when the secondary 'short rains' harvest is about to start (gathered in January and February). As a result, maize prices in Uganda drop dramatically in December (see section 4.1.1), an outcome mainly attributed to the almost total lack of storage capacity in the country, forcing farmers and traders to sell all their stocks immediately after harvest.

3.5.3 The importance of market intelligence at a disaggregated local-market level

National public policies and measures aimed at improving the conduct of local food markets, as well as humanitarian agencies procuring supplies for relief operations, require accurate and timely data at the sub-national level where such operations take place. At the minimum, this necessitates data on the seasonal surplus/deficit position of local areas where such actions are envisaged, guiding both the size and timing of interventions. Some of these issues are discussed in the next Chapter, especially in section 4.3.3 on market impacts of local and regional purchases (LRPs).

An attempt was made in this study to compile statistics at local levels, e.g. districts, with the aim to identify surplus/deficit positions at those levels. Annex 3.3 presents seasonal and spatial production statistics at the level of a district (or a similar level) for Burundi, Rwanda and URT. It was not possible to compile similar data for Kenya and Uganda within the time constraints of this study.

It is evident from the data in Annex 3.3 that the degree of concentration of national output across districts differs substantially. Some of that is explained by the corresponding concentration of population in those districts having higher production. This is the case, for example in the 6-7 top maize production provinces in Burundi which are also among the most densely populated provinces in the country. As a result, despite large production shares, these provinces offer limited scope for supplying other deficit regions in the country or being a source of institutional procurement. On the other hand, where there is a mismatch between the concentration of production and that of population, as for example is the case in three provinces in the Eastern part of Rwanda (Kirehe, Nyatagare, Gatsibo) where there is good production potential, while also maize is of a lesser importance for the local diet. In this case, an estimated 18% of maize output is actually sold in the market. Clearly, knowledge of these characteristics of markets at the local level is of crucial importance in guiding public policy, as well as outside humanitarian actors, about the scope and timing of their interventions. There is no shortcut to this but sound and timely food production and consumption data at the local level.

In summarizing the above analysis, the main conclusions include: First, there is a degree of dissimilarity among EAC countries as regards the main staple commodities in the predominant diet, as well as in terms of their exceptional requirements in periods of food emergencies. Similarly, on the supply side there are important differences in agro-ecological systems across EAC countries leading to different crop calendars and harvesting seasons of basic food staples. This, coupled with important differences in resource endowments across countries, results in substantial complementarities among EAC countries in terms of their surplus/deficit position in food staples. This spatial and seasonal complementarity plays an important role in bridging the gaps in seasonal deficit-country import needs. While this mismatch between EAC countries is an important asset for regional food security, there is lack of adequate information on the size and timing of potential surpluses/deficits at the local level. Detail market information at that level is needed by national food agencies and humanitarian assistance operations so as procurement in local markets can be an important catalyst in helping farmers to link to markets (see section 4.3.3). It follows that more systematic and comprehensive gathering of spatial and seasonal data by national statistical agencies and early warning bodies would be warranted.

IV INTRA-REGIONAL TRADE IN FOOD PRODUCTS

Enhancing the level of intra-EAC trade is one of the core objectives of the EAC Treaty. This objective is articulated prominently in both Chapter 11 of the Treaty on trade and Chapter 18 on agriculture and food security, where it is made clear that trade integration should serve the goal of food security. The *EAC Food Security Action Plan 2010-2015*, which is the main framework for implementing the agriculture and food security provisions of the EAC Treaty, provides an indicative target for intra-EAC trade in food products. With the objective of ensuring that food is effectively sourced from surplus areas within the EAC region, the target set is to raise the share of intra-regional trade in the total regional market for food products to 30% by 2015, from a baseline of less than 10%.

This Chapter IV is divided into two sections. Section 4.1 analyses intra-EAC trade for three categories of agricultural products. The analysis is based on the UN COMTRADE statistics which are based on official data reported by individual countries. These statistics cover officially recorded trade only. At the time of writing, COMTRADE data were available up to 2013 but the 2013 numbers were not complete for all countries. So the analyses are based on data up to 2012. The region also has substantive trade that is not recorded, called Informal Cross-Border Trade (ICBT). This is reviewed separately in Section 4.2.

4.1 Trends in formal intra-EAC food and agricultural trade

This section analyses the evolution of intra-EAC trade for three categories of agricultural products: i) EAC sensitive food products (SnPs); ii) selected non-sensitive food products; and iii) all agricultural products (HS1 to HS24 less HS3, fishery products). For the SnPs and selected non-SnPs, statistics are also reviewed for individual food products. Summary statistics used for the assessment are average values of trade for 2000-03[23] and 2010-12, annualized growth rates between the two periods,[24] and percentages of intra-EAC imports and intra-EAC exports (i.e. imports from within EAC over all imports and exports to EAC over all exports of the respective products). Where pertinent, the drivers of this trade, including trade policy and physical and non-physical constraints, are also noted but these topics are addressed in detail in subsequent Chapters of this study.

Table 4.1.1 provides an order of magnitude of trade in the three categories of products. The EAC is a large importer of basic foods, with the SnPs and selected non-SnPs together accounting for almost 70% of the total agricultural imports in 2010-12. In contrast, only 22% of the total agricultural exports of the EAC are these basic foods.

Table 4.1.1 EAC trade in SnPs, selected non-SnPs and all agricultural products (average 2010-12)

	Imports from EAC		All imports		Exports to EAC		All exports	
	million $	%	million $	%	million $	%	million $	%
Sensitive foods (SnPs)	112	21	1,671	40	129	17	486	8
Selected non-SnPs	107	20	1,207	29	126	16	864	14
Rest of agriculture	311	59	1,319	31	515	67	4,654	78
All agriculture	530	100	4,197	100	770	100	6,004	100

Source: Based on COMTRADE statistics.

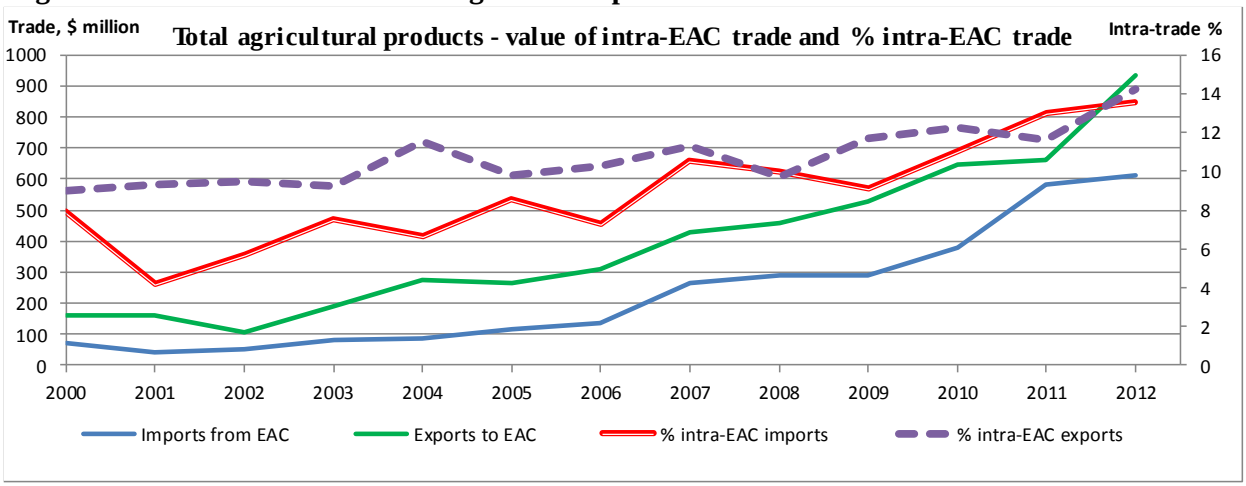
[23] For the first period, the average is based on four years' of trade data to take into account several missing data for 2000 and 2001.

[24] Annualized growth rates (in %) are computed as follows: $100*(\ln X_2 - \ln X_1) /n$, where ln is log, X_2 and X_1 are values for the second and first periods respectively, and n is the number of years in between (9 years), counting from the middle years of the two periods averaged, i.e. 2002 for the first period (essentially 2001-03 due to missing data) and 2011 for the second period (2010-12).

4.1.1 Intra-EAC trade in all agricultural products

Total EAC agricultural trade (imports plus exports) was just over $10 billion in 2010-12, about 6 billion of exports and 4 billion of imports (Table 4.1.2). Both imports and exports increased rapidly during the previous 10 years, with annual growth rates of 16% and 14% for imports and exports, respectively. The trade surplus itself grew at a rate of 11% per annum. Of the total trade (imports plus exports) in 2010-12, the share of Kenya alone was 47% (down from 54% in 2000-03), followed by about 20% for both Uganda and URT, 7% Rwanda and 4% Burundi. So, from a trade perspective, the EAC countries are markedly heterogeneous. While the share of exports is high for Kenya, Uganda and URT (about 60% in total trade), this is 50% for Rwanda and only 26% for Burundi. Figure 4.1.1 displays trends in the total agricultural trade as well as in percentage intra-EAC trade.[25] It also shows that for EAC-5, total intra-EAC exports have always exceeded total imports. While percentage intra-EAC imports and exports have been trending up, the annual rate of increase is higher for the former, i.e. the share of imports from within the region is increasing at a faster rate, which is a positive indicator of trade integration.

Figure 4.1.1 Intra-EAC trade in all agricultural products



Source: Based on COMTRADE statistics.

Table 4.1.2 shows that except for Burundi, annual growth rates of intra-EAC import values were higher than the growth rates for all imports. As a result, the share of intra-EAC imports increased by 8% p.a., from a level of 6% in 2000-03 to 13% in 2010-12. The performance of individual countries varies markedly, both as regards the initial level of the intra-trade (in 2000-03) as well as growth between the two periods. Thus, Kenya's low initial share of intra-EAC trade doubled for exports and quadrupled for imports. This contrasts with fairly small changes for Uganda and Rwanda from their initial high shares of intra-EAC trade.

Overall, the growth rate of the share of intra-EAC imports has been much faster than that for intra-EAC exports, at 8% p.a. versus 4% p.a. between the two periods (this also shows up clearly in Figure 4.1.1). This means that the EAC countries are sourcing relatively more of their agricultural imports from the region itself. However, with intra-EAC trade still at 13% in 2010-12, there is obviously a substantive potential to expand.

[25] Note that although in theory the value of intra-EAC imports should match intra-EAC exports, this rarely happens. Besides the problem with statistics, imports are valued at the c.i.f. level which includes transport and other costs while exports are valued without these extra costs, and so import value always exceeds export values.

Table 4.1.2 Trade in all agricultural products and share of intra-EAC trade, 2000-03 and 2010-12

	All agr. imports from EAC			All agr. imports from world			Intra-trade in all agr. imports		
	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate
	--- million US$ ---		% p.a.	--- million US$ ---		% p.a.	%	%	% p.a.
Burundi	12	72	20	35	284	23	33	25	-3
Kenya	7	132	32	441	1,692	15	2	8	17
Rwanda	11	125	27	54	366	21	21	34	6
Uganda	20	115	20	170	782	17	11	15	3
URT	12	86	22	268	1,072	15	4	8	7
EAC-5	**61**	**530**	**24**	**969**	**4,197**	**16**	**6**	**13**	**8**

	All agr. exports to EAC			All agr. exports to world			Intra-trade in all agr. exports		
	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate
	--- million US$ ---		% p.a.	--- million US$ ---		% p.a.	%	%	% p.a.
Burundi	5	10	6	36	102	12	15	10	-5
Kenya	42	247	20	980	3,066	13	4	8	7
Rwanda	19	125	21	40	348	24	46	36	-3
Uganda	54	247	17	282	1,292	17	19	19	0
URT	30	141	17	322	1,196	15	9	12	3
EAC-5	**150**	**770**	**18**	**1,660**	**6,004**	**14**	**9**	**13**	**4**

Note: Growth rates (Gr) per annum between the two periods.
Source: Authors, based on COMTRADE data.

4.1.2 Intra-EAC trade in sensitive food products (SnPs)[26]

How large is trade in SnPs relative to total agricultural trade in the EAC? The answer is that the SnPs, despite being only seven products and a small number of tariff lines (about 30 at the 8-digit HS level), amount to a fairly large share of the total agricultural trade, 21% in 2010-12 counting both imports and exports. Interestingly, the share was also 21% in 2000-03, although the value of trade in SnPs increased four times in this period from $545 million to $2,157 million. EAC-5's imports of SnPs were almost half (48%) of the total agricultural imports from the world in 2000-03 and 40% in 2010-12 (Table 4.1.3). In contrast, EAC-5's exports of SnPs were only 5% in 2000-03 and 8% in 2010-12 of the total agricultural exports. Thus the EAC continues to be heavily dependent on imports of basic foods while exporting other agricultural products. While the situation varies among EAC countries, import dependency on basic foods is high for all of them, although this has declined to some extent in 2010-12 compared to 2000-03. On the export side, Rwanda, Uganda and URT have made impressive progress in raising the share of SnPs in total exports.

Figure 4.1.2 provides a snapshot of the evolution of intra-EAC trade in SnPs (Table 4.1.4 presents the corresponding statistics). It shows steady increases in the value of intra-EAC trade but with frequent and marked ups and downs. The figure also shows (right Y-axis) that the share of intra-EAC exports in SnPs was relatively high even in 2000, at 35%, and continues to be high, while, in contrast, the share of intra-EAC imports was small, about 5%, in 2000, and continues to be so.

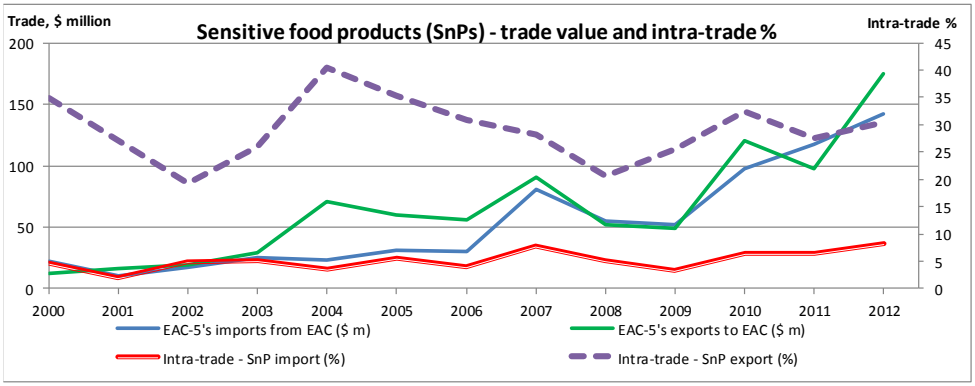
[26] The following EAC sensitive food products (SnPs) are included in the analysis in this study: milk and cream (HS0401/0402), wheat grain and meslin (HS1001), maize grain (HS1005), rice (HS1006), wheat flour (HS1101), maize and other cereal flour (HS1102 to HS1106), and sugar and jiggery (HS1701).

Table 4.1.3 SnPs in total intra-EAC and world trade of agricultural products

	2000-03 %	2010-12 %	2000-03 %	2010-12 %
	SnPs in all imports from EAC		**SnPs in all imports from world**	
Burundi	50	27	43	28
Kenya	23	29	47	40
Rwanda	33	20	44	34
Uganda	26	11	52	35
URT	15	19	50	49
EAC-5	**30**	**21**	**48**	**40**
	SnPs in all exports to EAC		**SnPs in all exports to world**	
Burundi	27	4	9	1
Kenya	13	6	2	1
Rwanda	1	3	1	12
Uganda	13	23	7	18
URT	18	37	9	14
EAC-5	**13**	**17**	**5**	**8**

Source: COMTRADE statistics.

Figure 4.1.2 Evolution of intra-EAC trade in SnPs



Source: Based on COMTRADE data.

Table 4.1.4 Trade in SnPs and share of intra-EAC trade, 2000-03 and 2010-12

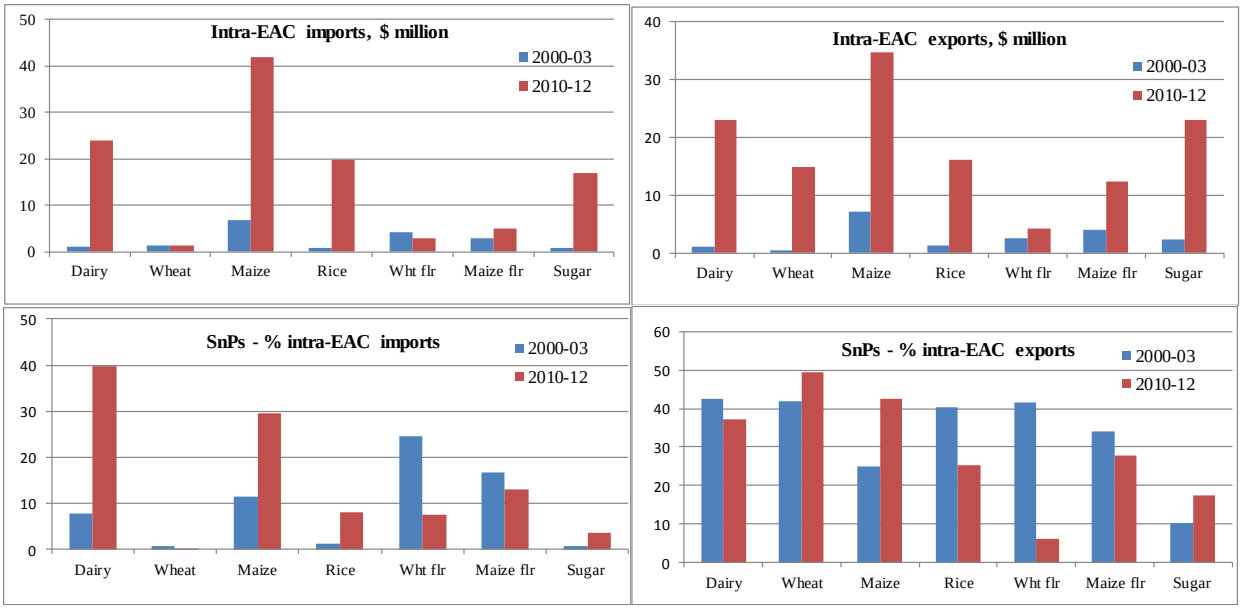
	SnP imports from EAC			Total SnP imports from world			Intra-trade in SnP imports		
	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate
	--- million US$ ---		% p.a.	--- million US$ ---		% p.a.	%	%	% p.a.
Burundi	5.9	19.5	13	15	79	18	38	25	-5
Kenya	1.7	38.6	35	208	672	13	1	6	22
Rwanda	3.7	25.4	21	24	124	18	15	21	3
Uganda	5.2	12.2	10	88	272	13	6	4	-3
URT	1.8	16.3	25	134	523	15	1	3	10
EAC-5	**18.2**	**111.9**	**20**	**469**	**1671**	**14**	**4**	**7**	**6**
	SnP exports to EAC			**Total SnP exports to world**			**Intra-trade in SnP exports**		
	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate
	--- million US$ ---		% p.a.	--- million US$ ---		% p.a.	%	%	% p.a.
Burundi	1.5	0.4	-15	3.1	0.9	-14	47	42	-1
Kenya	5.3	15.9	12	22.0	40.3	7	24	39	6
Rwanda	0.1	4.3	40	0.3	42.4	56	45	10	-17
Uganda	6.9	56.2	23	20.5	231.1	27	34	24	-4
URT	5.3	51.9	25	30.5	171.1	19	17	30	6
EAC-5	**19.1**	**128.7**	**21**	**76**	**486**	**21**	**25**	**27**	**1**

Note: Growth rates (Gr) per annum between the two periods.
Source: Authors, based on COMTRADE data.

In 2000-03, EAC-5's total imports of SnPs from the region were $18.2 million, which increased by 6.2 times to reach $111.9 million by 2010-12. Total SnP imports from the world also increased in this period, but proportionally less (3.6 times). As a result, the share of the intra-EAC trade almost doubled from 4% to 7% between these two periods, as expected with deepening trade integration. Intra-EAC exports of SnPs also increased similarly by 21% p.a. But exports to the rest of the world also increased similarly rapidly, and, as a result, the share of intra-EAC exports of SnPs increased only marginally from 25% to 27% between 2000-03 and 2010-12. Given the large weight of imports, intra-EAC trade in SnPs (import plus export) also increased from 7% to 11% between the two periods. The target set in the *EAC Food Security Action Plan* for intra-EAC trade in food products is 30% by 2015 (for all foods, not just the SnPs). So there is still a long way to the target, but the trend is in that direction.

Country-wise, intra-EAC imports of SnPs are fairly large for Burundi (38% and 25% in the two periods) and Rwanda (15% and 21% respectively) but very low for Kenya, Uganda and URT (in the 1-6% range). On the export side, the shares of intra-EAC exports are high for all EAC countries, in the 17-47% range in 2000-03 and 10-45% range in 2010-12. In the case of the three large traders, the shares of intra-EAC exports for Kenya and URT increased considerably (24 to 39% and 17 to 30%, respectively) but declined for Uganda from 34% to 24%.

Figure 4.1.3 Intra-EAC trade in sensitive food products (SnPs)



Source: Based on WITS/COMTRADE statistics.

How did the intra-EAC trade change for individual SnPs? Figure 4.1.3 shows both trade values and percentage intra-EAC trade. Between 2000-03 and 2010-12, intra-EAC trade in total SnPs increased by about $100 million most of which was accounted for by four of the seven SnPs: maize (37% of the total increment), diary (24%), rice (20%) and sugar (17%), while there was little change for wheat grains and wheat and maize flour. The lower half of the figure shows percentage intra-EAC trade for SnPs. There were marked rises in percentage intra-EAC imports for dairy (from 8 to 40%), maize (11 to 30%) and rice (1 to 8%), but declines for both wheat and maize flour. Intra-EAC exports also increased markedly for maize (25 to 42%) and sugar (4 to 10%). Note that in the case of sugar, while intra-EAC trade increased

considerably in value terms, the share of intra-EAC exports was low because sugar exports to the rest of the world also increased noticeably.[27]

4.1.3 Intra-trade in selected non-sensitive food products (non-SnPs)

While SnPs have been identified as sensitive in the EAC on the basis of different criteria (including food security) a number of other basic foods, although in the non-sensitive category (non-SnPs) are also of importance for food security and analysed here[28]. The total value of trade of these non-SnPs was $2,071 million in 2010-12, consisting of $1,207 of imports and $864 million of exports. The total value of non-SnPs amounts to 18% of all agricultural trade, almost the same as trade in SnPs. In 2010-12, of the total non-SnP trade, 57% was edible oils (but as high as 83% in the case of imports), 17% beans and other pulses, 12% fruits, 7% vegetables and 1-2% others.

Table 4.1.5 shows several statistics on intra-EAC trade while Figure 4.1.4 shows changes in the intra-EAC trade shares of individual non-SnPs. Comparing the annual growth rates of trade values (third and sixth columns), it is clear that intra-EAC total imports grew much faster (25% p.a.) than total imports from the world (15% p.a.), with similar large margins for Kenya, Rwanda and URT. Because of this, the share of intra-EAC imports increased from 4% to 9% from 2000-03 to 2010-13. On the export side, the growth rate of intra-EAC trade was similarly very high at the EAC-5 level (29% p.a.) compared with 13% p.a. of exports to the world. The result was that the share of intra-EAC exports increased from 3% to 15% between the two periods. Note that with 50% weight in exports, this overall result is dominated by Kenya, but even excluding Kenya the change was from 5% to 15%.

Table 4.1.5 Trade in non-SnPs and share of intra-EAC trade, 2000-03 and 2010-12

	Non-SnP imports from EAC			**Total non-SnP imports from world**			**Intra-trade in non-SnP imports**		
	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate
	--- million US$ ---		% p.a.	--- million US$ ---		% p.a.	%	%	% p.a.
Burundi	1.7	5.8	14	4.1	12.9	13	42	45	1
Kenya	2.7	27.1	26	162.4	592.7	14	2	5	11
Rwanda	4.6	45.0	25	13.2	58.2	17	35	77	9
Uganda	1.4	10.4	22	43.6	234.0	19	3	4	3
URT	0.7	18.7	36	80.9	308.9	15	1	6	21
EAC-5	**11**	**107**	**25**	**304**	**1,207**	**15**	**4**	**9**	**10**

	Non-SnP exports to EAC			**Total non-SnP exports to world**			**Intra-trade in non-SnP exports**		
	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate	2000-03	2010-12	Gr rate
	--- million US$ ---		% p.a.	--- million US$ ---		% p.a.	%	%	% p.a.
Burundi	0.1	0.1	-2	0.1	0.3	11	69	21	-13
Kenya	3.9	61.3	31	165.1	440.9	11	2	14	20
Rwanda	0.3	2.5	25	0.3	6.5	34	93	39	-10
Uganda	3.3	39.7	28	11.6	82.6	22	28	48	6
URT	1.6	22.3	30	83.1	334.0	15	2	7	14
EAC-5	**9**	**126**	**29**	**260**	**864**	**13**	**3**	**15**	**16**

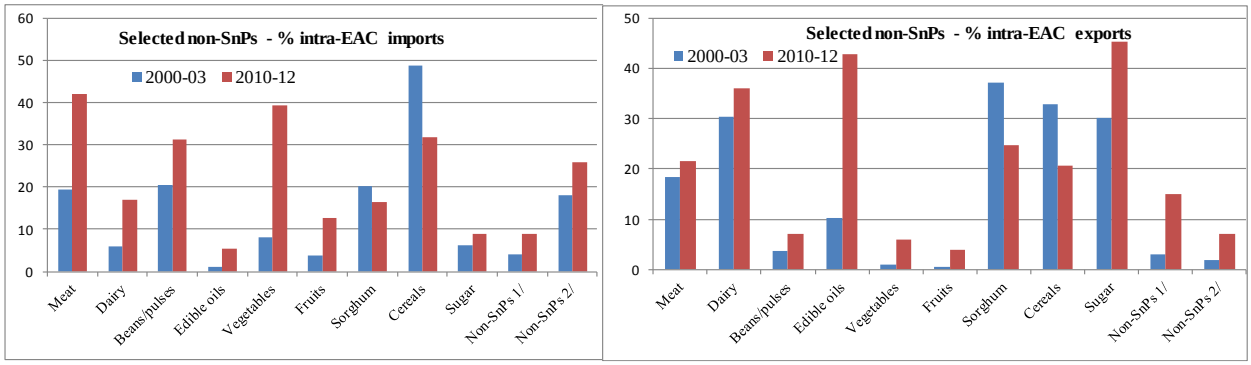
Note: Growth rates (Gr) per annum between the two periods.
Source: Authors, based on COMTRADE data.

[27] Although the EAC region is highly deficit in sugar ($346 million of imports in 2010-12), the COMTRADE data show that EAC also exported sugar worth $109 million in 2010-12 to rest of the world (of which 66% was by Uganda, 28% by URT, 4% by Rwanda and 2% by Kenya). These exports are most likely re-exports of imported sugar to neighboring countries as well as to EU and elsewhere under preferential market access agreements.

[28] These are meats, dairy products other than those included in SnPs, beans and pulses, edible oils, vegetables, fruits, sorghum, other cereals and sugar products other than those included in SnPs.

Figure 4.1.4 shows, in left panel, some rather large increases in the share of intra-EAC imports, namely for meat (19 to 42%) and vegetables (8 to 39%), and also for dairy and beans, but declines for sorghum and cereals overall. The very large weight of edible oils (80% in all total non-SnP imports) distorts the picture of intra-EAC trade; excluding edible oils, intra-EAC trade for the rest of the non-SnPs is much higher at 18% in 2000-03 and 26% in 2010-12, compared to 4% and 9% when edible oils are included (both results shown in Figure 4.1.4). The right panel shows that increases in intra-EAC exports are relatively small for several products with declines for sorghum and cereals. Edible oils and sugar products stand out, with large increases in intra-EAC exports. The overall intra-EAC exports for non-SnPs increased by five times from 3% to 15%, due to large weight of edible oils (reduced to 2% and 7%, respectively, when edible oils are excluded). There are also some interesting contrasts on intra-EAC trade in the two panels. For example, intra-EAC exports are much larger for dairy and sugar products, indicating that the region has good potential for substituting imports of these products from rest of the world. The opposite case is observed for beans, i.e. small shares of intra-EAC exports, likely reflecting the value of Kenya's large exports of fresh beans to Europe compared to what is traded within the region.

Figure 4.1.4 Intra-EAC trade in selected non-sensitive food products (non-SnPs)



Note: 1/ non-SnPs include edible oils; and 2/ non-SnPs exclude edible oils.
Source: Based on WITS/COMTRADE statistics.

In conclusion on intra-EAC trade, the main findings are as follows. First, the EAC is sourcing relatively more of its agricultural imports from the region itself, i.e. the share of intra-EAC imports have markedly increased 2010-12 compared to a decade earlier (2000-03). This is true for all categories of food and other agricultural products analysed. Intra-EAC trade increased for four of the five EAC countries (exception being Burundi), with Kenya and URT doubling their share of intra-EAC imports of agricultural products, albeit from a very low base, while Rwanda and Uganda's shares increasing by about 50% from an already high base. Second, despite the impressive increases in absolute quantities, the *share* of intra-EAC trade of food products, at 8% in 2010-12, falls well short of the 30% target set by the *EAC Food Security Action Plan*. In contrast, the share of intra-EAC imports of non-food agricultural products is much higher at 24%. Third, several food products show large increases in intra-EAC trade, which is an indication of revealed comparative advantage in regional trade. These are maize, dairy products, rice and sugar among SnPs and meat, vegetables, other dairy products and beans among non-SnPs. Overall, there is good evidence that the effects of the CU/CM process so far are of the expected direction. Nevertheless, the outcomes could have been much more convincing in the absence of various non-tariff barriers (NTBs) that continue to hamper intra-regional trade (these NTBs are discussed at length in Chapter V).

4.2 Informal Cross-Border Trade (ICBT)

It has been widely documented that a significant portion of trade in food and live animals in the region has the nature of informal cross-border trade (ICBT), not reported in the official trade statistics. There are several studies on ICBT in the region. One substantive contribution to information and analysis on ICBT

is from the Famine Early Warning Systems Network (FEWSNET) which monitors and quantifies ICBT for over 80 food commodities and livestock in east Africa and publishes the East Africa Cross Border Trade Bulletin on a quarterly basis.

One of the outcomes expected from the CU/CM policies is the gradual replacement of the ICBT by formal trade as NTBs, one main reason for informal trade, are removed. Periodic surveys on the state of the ICBT along the line undertaken by the FEWSNET, therefore, are valuable to assess the effectiveness of the removal of NTBs in the EAC region.

There is a consensus that the ICBT makes significant contributions to employment and incomes of a large proportion of small farmers, small traders and other poor people living along the borders, including very importantly women (see Box 4.1 below). It also contributes to food stability to some extent by improving the supply of foods from surplus to deficit areas, even when official export restrictions are in place. Informal trade is also associated with a number of negative aspects documented in various studies (e.g. OECD 2009). Thus, it is said that the ICBT contributes to creating unfair competition to formal trade, which reduces incentives to invest in the formal economy, while lowering business opportunities in regional and global markets. Secondly, it compromises on the measures put in place to safeguard health, safety and environmental concerns. Thirdly, informal trade erodes government revenues. Lastly, and no less important, ICBT also distorts evidence on trade performance, for example the effectiveness of the CU/CM process, which could lead to wrong policy conclusions.

Some of the reasons stressed in the literature on the persistence of widespread ICBT include difficulties facing small-scale traders with obtaining certificates of origin from offices that are typically located away from border stations. AfDB (2010) notes that even with the Simplified Trade Regimes (STR) established by COMESA, small-scale traders find it difficult to access the benefits of the STR because of costs such as processing fees, bribes and low awareness on the functioning of the STR. Formalizing ICBT is further complicated by the nature of trade where traders do not specialize on any product but deal with different products in different seasons, which means it does not pay them to acquire necessary documents such as business registration and certificates of origin for each product they deal in. Also, in the context of EAC, merely discouraging ICBT among the partner states does not necessarily encourage formal trade because traders can easily trade with other neighbouring countries such as South Sudan and DRC.

In what follows, the state of the ICBT is assessed on the basis of three sources of information. First, a review is made of the recorded ICBT trade flows as compiled in FEWSNET's Cross Border Trade Bulletins. Second, it presents the results of the survey of traders and other stakeholders undertaken for this study which also asks questions on ICBT. Third, it also draws upon the literature on ICBT.

National governments in the region do monitor ICBT flows to a varying extent in terms of the depth and periodicity, e.g. by Uganda and Rwanda (see below), focusing largely on their own trade. Some agencies also monitor ICBT while others undertake studies from time to time. FEWSNET undertakes one of the most comprehensive surveys on ICBT. In order to illustrate the nature and magnitude of the ICBT, Table 4.2.1 summarizes trade flows for 2013 published in the January 2014 issue of the Cross Border Trade Bulletin (CBTB) published by FEWSNET. Several features of this trade are noteworthy. First, an estimated total of 3.1 million MT of staples are traded informally among 11 countries in east Africa: the EAC-5 and six others (Djibouti, DRC, Ethiopia, Somalia, South Sudan and Sudan)[29]. For the main staples, the data show that while EAC-5 is the origin for 91% of informal trade, it absorbs as importer only 32% of this trade.

[29] This total includes several other staple foods such as millet (flour), cassava (chips and flour), groundnuts, potatoes, other roots and tubers, which all together accounted for around 6% of the total informal trade in the region.

Second, as regards the origin (exporters of informal trade), Uganda accounts for virtually most trade – 72% of all exports in volume terms. Uganda's share exceeds 85% for maize, sorghum, sugar, and wheat and maize flour. If the shares are re-scaled so that only the EAC countries are considered as exporters, Uganda also emerges as a top exporter of beans (88% of total) and sesame (100%). Next, Kenya is a large exporter for only one product, rice (81% of total). The only other somewhat prominent exporters are Rwanda and URT, both for rice, with shares of about 20% of the total for each of them. Looking at the aggregates, beans and sesame are the only two products for which non-EAC exporters have a share of over 10%.

Third, as regards the destination (importers of informal trade), over two-thirds (68%) of the 3.1 million MT is absorbed by non-EAC countries. The share of South Sudan alone is 59% and the rest 9% is shared by five other countries. For four products – sorghum, sugar, maize flour and wheat flour - South Sudan alone absorbed over 85% of all exports, but also sizable shares of maize (50% of the total), beans (50%) and rice (42%). The only other notable importer was Sudan for sesame (72% of the total) followed by beans (13%). Within the EAC-5, prominent informal importers are Rwanda for wheat (93% of the total), Kenya for maize (32%) and beans (27%), and Uganda for rice (15%).

Fourth, the CBTB does not provide bilateral trade flows among the EAC members, i.e. a matrix of trade flows mapping five EAC countries as exporters against them as importers, but the narratives in the bulletin provide useful information on this as follows.

Given the large weight of South Sudan on informal imports, it is seen as a major influence determining trade flows, food prices and volatility in the EAC region. Thus, periods of conflicts and periods of peace in South Sudan receive prominence in market analysis. Political disruptions in South Sudan render trading difficult, which in turn impacts on maize trade between Uganda and Kenya. Thus, the CBTB reports that total maize exports from Uganda to South Sudan increased by around one and half times between 2012 and 2013, when trade was not disrupted, and which was also the reason for the 27% reduced informal exports from Uganda to Kenya in 2013 compared to 2012. Most of Uganda's sorghum exports are now destined for South Sudan which originally relied on imports from Sudan. In the 2013 issue of the CBTB, it was said that sorghum imports by Rwanda in the first quarter of 2013 were 11 times higher compared to the 2010-11 average, with most of it coming from Uganda. This was attributed to the policy of the Rwandan government that promotes maize at the expense of sorghum, which has reduced domestic production of sorghum amidst a steady demand in some rural areas.

A similar explanation was given for dry beans for which Ugandan exports accounted for 75% of the total informal trade in 2013 while South Sudan and Kenya were the major markets (with 68 and 31% shares, respectively). In 2013, total dry bean imports from Uganda into Kenya declined by around 38% because of below-normal harvest and competition with South Sudan where bean exports increased by 40% due to relatively high prices fetched. The bulletin also reported considerable re-exports of the Rwandan beans to Kenya via Uganda.

As regards rice, according to the same source, informal trade increased by 12% in 2013, mostly driven by exports from URT, the largest producer in the region. Although Uganda was the largest ICBT exporter, some of this rice was believed to be re-exports from URT as were most rice exports from Rwanda and Burundi to DRC.

Table 4.2.1 Informal trade in staple food products in east Africa, 2013

Main informal exporters of various staple food products in 2013

Exporter ==>	Uganda	Tanzania	Rwanda	Kenya	Burundi	EAC-5	Others	Total	Quantity
	---------- % ----------								'000 mt
Maize	90	4	0	3	1	98	2	100	724,155
Rice	42	22	20	1	11	97	3	100	572,510
Bean	74	2	5	3	0	84	16	100	441,139
Sorghum	95	0	0	0	0	96	4	100	345,537
Sugar	90	1	-	0	-	91	9	100	276,670
Maize flour	94	1	3	-	0	98	2	100	232,566
Wheat flour	85	2	2	0	6	94	6	100	213,110
Sesame	28	0	-	-	-	28	72	100	166,740
Wheat	4	13	0	81	0	99	1	100	145,890

Main informal importers of various staple food products in 2013

Importer ==>	Uganda	Tanzania	Rwanda	Kenya	Burundi	EAC-5	Others	Total	Quantity
	---------- % ----------								'000 mt
Maize	0.2	9	7	32	0.3	49	51	100	724,155
Rice	15	1	23	5	8	52	48	100	572,510
Bean	2	3	0.4	27	3	35	65	100	441,139
Sorghum	0.4	0.1	1	4	0.0	6	94	100	345,537
Sugar	0.0	0.2	0.0	4	0.0	4	96	100	276,670
Maize flour	0.1	0.0	0.2	0.0	1	1	99	100	232,566
Wheat flour	0.0	5.7	0.5	0.5	2	8	92	100	213,110
Sesame	0.0	0.0	0.0	0.0	0.0	0.0	100	100	166,740
Wheat	0.1	0.0	93	5	1	100	0.2	100	145,890

Note: "Others" (i.e. non-EAC countries in the table) include Sudan, South Sudan, Somalia, Ethiopia, DRC and Djibouti.
Source: East Africa Crossborder Trade Bulletin, 31 January 2014, Annex Tables 1 and 2.
http://www.fews.net/sites/default/files/documents/reports/Quarterly%20GHA%20Cross%20Border%20Trade%20Bulletin%20January%202014.pdf

As for sugar, maize and wheat flour, informal exports and re-exports of maize flour in the region increased by 60%, with most of the flour flowing from Uganda and Rwanda to South Sudan and DRC respectively. Informal exports and re-exports of wheat flour increased by about 36% in 2013, most of the flour flowing from Uganda to South Sudan; URT to Rwanda; and Rwanda to Burundi and DRC. While wheat flour re-exports to eastern Ethiopia and Kenya from Somalia decreased by almost 70%, sugar re-exports from Somalia to eastern Ethiopia and Kenya increased by one and half times in 2013 despite high consumer prices stemming from tax payments and higher marketing costs especially on security along trading routes. This is attributed to high demand, inelasticity of the demand, and limited substitutability. Wheat flour, rather than wheat grain, is imported into South Sudan to reduce processing costs. This wheat flour itself is processed from imported wheat in Uganda or is re-exported from Kenya.

Another important source of information for ICBT is the joint annual publication by the Bank of Uganda and Uganda Bureau of Statistics based on ICBT surveys along the Ugandan border (BoU & UBS, 2014). The survey shows that during 2011-13 the total value of the ICBX (exports) was just over $410 million, or 15% of Uganda's total exports (but as high as 25% in 2010), while the value of ICBM (imports) was $54 million, or 1% of total imports. Agricultural products accounted for about 60% of all ICBT, both on the import and export sides. During 2011-13, the following 7 products accounted for about 70% of all agricultural ICBX (in order): fish, maize grains, beans, maize flour, cattle, wheat flour and eggs, while the

following 8 products made up 70% of the total ICBM (in order): unprocessed coffee, rice, cooking oil, beans, wheat flour, bananas, palm oil and groundnuts.

The survey also reports data by border points. It shows that 48% of the total exports passed through two non-EAC border exits - Elegu (South Sudan) 25% share, and Mpondwe (DRC) – 23% share. The next large exits points were Busia (Kenya) and Mutukula (Tanzania). On the import side, Busia alone accounted for 34% of total ICBM, followed by Mpondwe (17%). The largest destination for industrial goods is said to be DRC (but note that about 40% of the industrial goods are processed food products) while South Sudan is the main destination for agricultural commodities (35%) followed by DRC and Kenya (46% together).

For Rwanda, a study sponsored by USAID provides good analysis of the cross border trade (formal and informal) for nine food and agricultural products (USAID, 2013). Among the conclusions of this study, Rwanda's potential for increased livestock exports is seen to depend largely on developments in the DRC market, including investments in cold chain facilities in the DRC. As this market is almost fully characterized by informality, the study concludes that the current increased emphasis on formal trade may limit livestock exports the DRC. On maize, the study documents Rwanda's increasing trend in exporting maize meal to DRC (70% of its meal exports, almost all informally), while importing most maize from Uganda (almost all formally). In the case of beans, similar to maize, while about 70% of all imports are through formal channels, the reverse is the case for exports (predominantly informal, 67%). One reason is the location of border posts for the main supply and destination countries. The study also notes a somewhat surprising finding of a substantial proportion (73%) of informal exports to Uganda. While in theory under the EAC rules there should be no advantage to informality, yet formal exports have dwindled while informal trade with Uganda was reported to have increased substantially.

Rwanda has also formulated a comprehensive strategy on cross-border trade outlining how the country could improve policies and programmes to support cross-border trade, including informal trade whose contributions to food security and incomes for low-income people and small traders is fully recognized (MINICOM, 2012). The strategy stresses on the importance of the markets in the DRC for Rwandan exports, noting that the growth of the Rwandan exports to the DRC have been higher than to the EAC countries during 2002-2010.

In conclusion, the main findings on ICBT are as follows. First, estimated ICBT for 2013 of basic food staples covered in surveys of east African countries, at about 3.1 million MT, would amount roughly to some 70-80% of total trade in these products. While the EAC-5 (mainly Uganda) was the origin for 91% of ICBT exports in these products, it absorbed only 32% of ICBT imports. Second, official policy documents acknowledge that ICBT makes important contributions to employment and incomes for a large proportion of the poor and food insecure households. But the negative aspects of this trade are also recognized. One expectation of the CU/CM process is that the elimination of NTBs would gradually reduce informal trade. Both published accounts, stakeholder surveys and interviews indicate that this expectation has yet to materialize; if anything, ICBT in staples is believed to have increased. Third, the large ICBT from the EAC to neighbouring non-EAC countries has also been a source of price instability in EAC markets with import demand from those countries frequently affected by political instability and conflicts. Articulation of a policy framework at the EAC level could help in responding to such external market shocks.

Box 4.1 Women in informal cross border trade: the case of Rwanda

A World Bank report (World Bank, 2012) claims that 85% of cross-border traders in the Great Lake region are women. For the majority of them this activity is their only source of income. Women trade predominately in lower value, low profit unprocessed products from sectors that are weak and poorly organized. Often, agricultural products constitute the bulk of informally traded products by women. Other important products include consumables such as sanitary products, medicines, footwear and textiles.

Among the EAC countries, the strong gender dimension of cross-border trade is amply demonstrated in the case of Rwanda. Cross-border trade in Rwanda represents an important share of the country's total trade (formal and informal), accounting for some 20% in recent years[30]. In the case of exports, cross-border trade accounts for close to 30% of total exports, of which about 60% is informal, conducted predominantly by women. It is estimated that women comprise some three-quarters of all informal cross-border traders in Rwanda. An even more dominant role in informal cross-border trade is played by women in the border with DRC where estimates suggest that women comprise 84% of informal traders between Cyangugu and Bukavu (Titeca and Kimanuka 2012).

The predominance of women in informal trade across the DRC border occurs, notwithstanding the heightened harassment women face under difficult circumstances, and the constraints they have to overcome in view of limited capital resources and access to trade facilities, including basic storage at border crossing points. Nevertheless, despite the singular disadvantages they face, interviews with traders indicated that men were less able to tolerate the harassment that inevitably accompanied informal cross border trade, while women were perceived to have better negotiating skills (USAID, 2013).

Efforts are being made to facilitate greater formalization of cross-border trade between Rwanda and DRC as well as with other neighbouring countries (MINICOM, 2012). While clearly formalization of trade (and in general greater liberalization of markets) comes with many advantages and should be encouraged, this process should be matched with strategies to ensure the inclusion of women in the opportunities that this process may bring, including through wider representation in public and private trade networks. A recent assessment of the process of trade integration concluded that it has not yet been able to contribute to reducing existing gender disparities (UNCTAD, 2014).

Gender-based constraints in the trade sector as well as in other economic sectors need to be acknowledged and redressed[31]. Policymakers need to be cautious about the gender ramifications of trade policy and implement gender-specific and gender-redistributive measures as appropriate. For example, it is imperative to tackle gender-specific constraints that limit women's ability to actively engage in dynamic, commercially oriented trade sectors. Proactive measures may be called for towards re-structuring business incentives (e.g. special tax rates, exemptions, rebates, deductions, deferrals, and credit used to attract investors) in order to encourage gender inclusiveness in trade opportunities. Rwanda, as well as other countries in the region, should take advantage of the demonstrated aptitude of women as traders and ensure that they play a key role in the sector as it moves towards a more formalized modality.

[30] Based on 2011 data reported at MINICOM (2012).

[31] While Rwanda has made impressive advances in furthering the status of girls and women economically, professionally and politically, much remains to be done, particularly for rural women as regards access to economic assets and resources such as land ownership, access to supply-side services and credit (UNCTAD, 2014).

4.3 WFP and NFA procurement and trade: bridging gap between formal and informal markets

For many countries in sub-Saharan Africa (SSA), local and regional purchases (LRPs) of grains and other foods by humanitarian agencies (HAs) have often been a significant, or the principle, outlet for marketable surplus. The WFP is the most important and dominant HA. Other two market outlets for farmers are national food agencies (NFAs) and private traders. How these institutional and private players operate in the market in terms of such parameters as the volume targeted, prices offered, timing, channels used for procurement, etc. will have significant impact on farm income and welfare, production incentives, prices in local and regional markets, and overall food security. Their operations also influence regional trade flow. In the meantime, the LRPs are increasingly being favoured by all traditional donors of food aid.

In view of this, this section reviews the experience in the EAC region with food procurement by the WFP (and other HAs where relevant) as well as national food agencies (NFAs). The WFP experience is discussed in four short sub-sections – the LRPs, the new P4P programme, a review of studies on the market impact of the LRPs, and results of the survey of stakeholders undertaken for this study on LRPs and market impact. Section 4.3.4 then reviews similar issues related to the NFAs.

4.3.1 Local and regional procurement (LRP) of foods by WFP

Uganda consistently ranks among the top few developing countries in terms of the size of LRP purchases of foods by WFP. This is also the case in eastern and southern Africa. For this reason, most studies on market impacts tend to focus on Uganda and maize. Uganda's experience on LRP is summarized below, but before that Table 4.3.1 shows LRPs by WFP in four EAC countries. The average share of Uganda in the EAC-4 total was 42% during 2009-12 but it was 68% in 2009 and 53% in 2010 before the sharp decline of the LRPs in Uganda from 2011. As the LRPs fell sharply in Uganda from 2011, purchases more than doubled in URT in 2011 and further rose in 2012. Most recent data for Rwanda show that LRPs of maize have continued to grow beyond 2012.

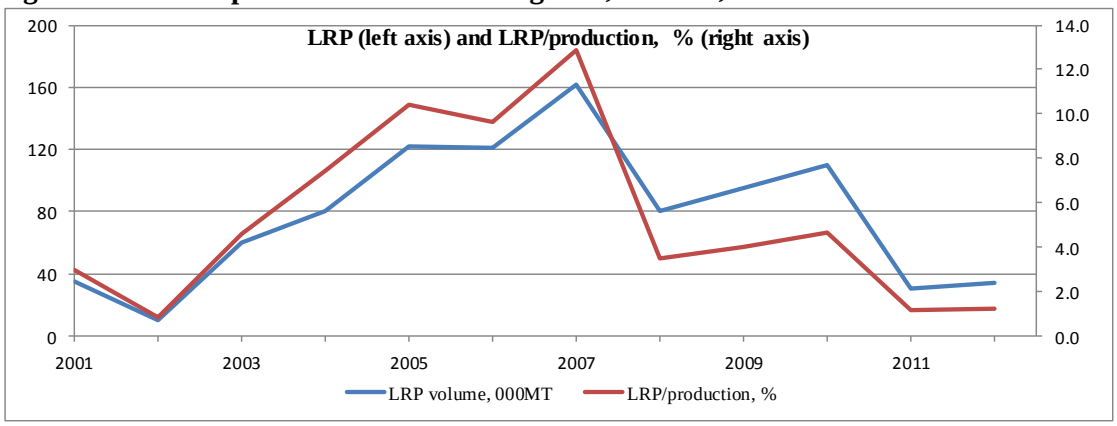
Table 4.3.1 WFP's LRPs in four EAC countries, all foods (000 MT)

	2009	2010	2011	2012	Avg2009-12	%
Kenya	28	62	56	37	46	25
Rwanda	10	10	7	22	12	7
Uganda	119	117	40	33	77	42
URT	18	33	65	76	48	26
EAC-4 total	174	222	169	168	183	100

Source: WFP P4P evaluation, 2013. The LRP data are for all foods but about 80% is estimated to be maize, followed by beans.

Figure 4.3.1 shows trends in Uganda's LRPs of maize during 2001-2012 along with the share of the LRP in total maize production. It shows a sharp rise of the LRPs from less than 10,000 MT in 2002 to over 160,000 MT in 2007 and a similar sharp decline to reach 33,000 MT in 2012. Until the peace agreements in the region in 2006-08, most of the LRPs were used for supporting refugees and relief activities within Uganda, and the rest exported for WFP operations in neighbouring countries. According to the MSU study (Tschirley et al. 2013), the LRPs of maize as a share of marketable surplus, averaged for 2001-12, was 12% for Uganda, 5% for URT and 2% for Kenya. For beans, the same study estimated this ratio to be about 13% for Uganda and less than 5% for other countries.

Figure 4.3.1 Local purchases of maize in Uganda, 2001-12, 000 MT



Source: Tschirley et al. (2013) for LRP purchases and FAO for maize production.

Despite the fact that WFP's procurement of total marketed surplus is about 10-15%, its LRP operations are considered to exert considerable market effects for reasons such as institutional clout, links to other development programmes and being a regional player (Walker et al 2007; Tschirley et al. 2013). In Uganda in particular, WFP's LRP is considered to be one of the key forces along with the demand from Kenya and South Sudan in impacting on seasonal price pattern and volatility, both between and within years. For example, there was a major maize price crash in 2001, resulting from the combined effect of a bumper crop in Kenya (which closed its borders to Ugandan maize) coupled with minimal WFP purchases for much of the year. By contrast, heavy WFP intervention in 2003 led to sharp rises in the Kampala prices in April-August period (Wandschneider and Hodges 2005).

Since around 2009, there has been a large shift in WFP's Uganda portfolio, away from emergency humanitarian action to food and nutrition security and to agriculture and market support (AMS) programmes. The LRP falls under the AMS. So the original goal of supporting markets through large-scale procurement was considerably scaled down to more development-oriented activities such as linking smallholders to markets through targeted programmes and satellite collection points (SCPs), strengthening farmers' organizations, and improving grain quality standards. This shift came around the same time as the launch in September 2008 of the Purchase for Progress (P4P) programme with similar goals (see next sub-section).

One target set under the AMS component was, by strengthening small farmers' capacity to market better quality foods, to procure 50% of the total LRP from smallholder farmer groups (SFG) by 2014. In order to establish links between the SFGs, traders and quality-oriented markets, a warehouse receipt system (WRS), which is regulated by the Uganda Commodity Exchange (UCE), was also set up. At the village level, WFP has been constructing and/or rehabilitating the SCPs, which are village based storage facilities with capacity ranging between 100 and 300 MT. The SCPs are equipped with cleaning, drying, and grading equipment.

In response to an observation made by an evaluation study of WFP's Uganda operations that smallholders preferred selling to local traders who paid instant cash rather than dealing with the WRS, the WFP revised in 2012 its approach by focusing more on enabling the SFGs to produce better quality grains, handle storage at household level and access local markets at better prices, thus avoiding distress sales. The 2014 evaluation report also reported that the Government of Uganda did acknowledge WFP's valuable contributions to: i) advocacy and technical support for the establishment of regional grain trade standards,

the Ugandan Commodity Exchange and WRS; and ii) research in fortification and micronutrients to support the development of national policies.

4.3.2 P4P operations in East Africa including EAC

The P4P programme was launched globally by the WFP in September 2008 as an innovative market development support programme. The pilot was implemented in 20 countries over a period of five years from 2008 to 2013. The P4P was to test new approaches to reach smallholder farmers (SHFs), link them to markets and build their capacity to deliver foods meeting quality standards required by the WFP. The vision of the P4P was to reach at least 500,000 SHFs by 2013, half of them women. As a pilot, the objective was not large-scale LRP operations. Thus, the total amount of the P4P purchase since its launch in September 2008 through 31 March 2013 has been only 310,651 MT of commodities contracted and 229,152 MT actually delivered.

Table 4.3.2 shows P4P purchases for four EAC countries (Burundi is not among the 20 P4P countries) and globally (i.e. in 20 pilot countries). The share of EAC in global total P4P varied considerably during 2009-12, with about 30% in 2009 and 2011 but 16% in 2010 and 8% in 2012 (average of 18% during the four years). This contrasts with the 38% share that EAC had in global non-P4P procurement. Also note that (third columns in the table) the share of P4P in total LRP is lower for EAC (in 3-6% range) than the global average (in 8-13% range). The initial target was to purchase at least 10% of the LRP in each pilot country, which was anticipated to grow as farmer's organizations (FOs) build their capacity. Note that although the share of the P4P in total LRP may be relatively low for the EAC countries, the Eastern and Southern Africa region as a whole accounted for over 70% of the globally contracted P4P purchases during 2009-12 (with 18%, 9% and 3% shares of Central America, West Africa and Asia).

Table 4.3.2 P4P purchases in four EAC countries (all foods, 000 MT)

	--------- 2009 ---------			--------- 2010 ---------			--------- 2011 ---------			--------- 2012 ---------		
	P4P	non-P4P		P4P	non-P4P		P4P	non-P4P		P4P	non-P4P	
	000 mt		% P4P	000 mt		% P4P	000 mt		% P4P	000 mt		% P4P
Kenya	0.6	27.0	2	4.2	57.6	7	3.3	52.9	6	1.1	36.2	3
Rwanda	0.0	9.7	0	2.9	7.0	30	1.2	6.0	17	1.0	20.9	4
Uganda	6.3	112.7	5	3.2	113.5	3	1.8	38.2	4	1.3	31.7	4
URT	2.1	15.5	12	3.4	29.9	10	4.6	60.6	7	1.5	74.6	2
EAC-4 total	**9.0**	**164.9**	**5**	**13.7**	**208.0**	**6**	**10.9**	**157.8**	**6**	**4.9**	**163.4**	**3**
World total 1/	30.0	335.1	8	84.4	593.4	12	42.1	480.4	8	61.1	402.9	13
EAC-4/world, %	30	49	-	16	35	-	26	33	-	8	41	-

Note: Burundi is not a P4P country. 1/ World total includes 20 P4P pilot countries only.
Source: WFP's evaluation of P4P programme, 2013.

Food procurements through the P4P mode have also been highly volatile. One reason was the high default rates on contracted delivery by farmers/FOs, mostly due to the subsequent increases in market prices which made defaulting attractive. The WFP review of the P4P programme gives some specific reasons for unanticipated price rises that led to the high defaults. These include a sudden surge of demand from neighbouring countries, unexpected presence in the market of national food agencies with offers of attractive prices, and FOs failing to meet the WFP quality standards.

The default on contracts is also the main reason for lower P4P contributions of the EAC countries. The WFP evaluation finds that Kenya, Uganda and Tanzania (along with Mozambique and Guatemala) had high default rates in both absolute and relative terms (relative to contracted amount). These countries typically contracted relatively large amounts but consistently defaulted more than other countries. During September 2008-March 2013, the default rates were 56% for Kenya, 35% for Uganda, 33% for URT and

30% for Rwanda, compared to 22% globally. Faced with this problem, contracted quantities were reduced in both Kenya and URT. In URT, WFP's procurement strategy for 2012 was largely centred on purchases from the National Food Reserve Agency (NFRA). WFP has also signed an understanding with the government to assist NFRA improve its purchasing practices from smallholder farmers, starting with the FOs participating in the P4P.

Under P4P, there are four procurement modalities: i) competitive tendering; ii) direct purchase; iii) forward delivery contracts; and iv) processing, with six vendor or supplier types under the following modalities: commodity exchange; FOs/cooperatives; NGOs; processors and manufacturers; traders and agents; and warehouse receipt systems (WRS). Table 4.3.3 shows a large variation in the P4P contracts by vendor type in different countries. For the EAC-4 total, 80% of the purchases were from FOs/coops while the share of these vendors was 45% in other countries of the region. Likewise, while 20-25% of the total purchases were through the WRS in Uganda and URT, no purchase was made through the WRS in Kenya and Rwanda. Commodity exchanges supplied most of the foods in Malawi (91% of total) and Zambia (82%). Traders' shares were about 10% in both EAC and elsewhere. What would be useful for fine-tuning procurement policy is evidence on strengths and weaknesses of the purchases from various types of vendors, but no comprehensive study of this nature was found in the literature.

Table 4.3.3 P4P contracts by type of vendors, September 2008 – March 2013 (all foods, 000 MT)

	Commod. Exchange	FO/ Coops	Processors	Traders/ agents	WRS	Total
Kenya	0	18	0.04	5	0	23
Rwanda	0	8	0	0	0	8
Uganda	0	15	0	0	5	20
URT	0	14	0	0	4	18
EAC-4	**0**	**54**	**0.04**	**5**	**9**	**68**
%	0	80	0	7	13	100
Other E-S Africa (5)	68	65	1	16	0	150
%	45	43	1	11	0	100
Total E-S Africa (9)	68	118	1	22	9	217
%	31	55	1	10	4	100

Note: "Other E-S Africa (5)" includes Ethiopia, Malawi, Mozambique, South Sudan and Zambia.
Source: WFP P4P evaluation study 2013.

Table 4.3.4 shows P4P purchases by type of food. In the EAC, maize accounts for 83% of all foods purchased, with some variations across countries, e.g. 73% for Kenya and 96% for Uganda. Next to maize in volume terms is pulses or dry beans. Maize is also the main food purchased in other countries of the region but its share in all foods is lower at 74%. Processed foods account for about 12% of the total purchases in this region but virtually none in the EAC.

Table 4.3.4 P4P purchases by type of food, September 2008 – March 2013 (000 MT)

	Maize	Rice	Pulses	Other cereals	Processd foods	Total
Kenya	16	0.04	2	4	0.393	23
Rwanda	6	0	2	0	0	8
Uganda	19	0	1	0	0	20
URT	15	0	3	0	0	18
EAC-4	**56**	**0**	**7**	**4**	**0**	**68**
%	83	0	10	6	1	100
Other E-S Africa (5)	111	0	20	0	18	150
%	74	0	14	0	12	100
Total E-S Africa (9)	168	0	27	4	18	217
%	77	0	13	2	8	100

Note: "Other E-S Africa (5)" includes Ethiopia, Malawi, Mozambique, South Sudan and Zambia.
Source: WFP P4P evaluation study 2013.

The Government of Rwanda adapted the P4P approach and its instruments to implement its own common purchase for progress (CP4P) programme as the main framework for food procurement from farmers with the objective of linking small farmers to markets. The government also secured the collaboration with WFP and its leverage both as a large and reputable institutional buyer as well as for its regional and global knowledge in managing the innovative approaches being tried. In an FAO study, Kelly and Mbizule (2014) provide a good overview of Rwanda's initial experience with CP4P programme as well as issues and challenges; the review is positive on the effects of this programme.

What makes the P4P programme highly relevant to the theme of this study is not so much the volume procured, which is currently small but could increase, but its innovative approaches to reach out to small farmers, especially by strengthening FOs, as well as its emphasis on the development of local food markets. There is already a great deal to learn from the pilot programs implemented in diverse countries with the use of different vendors. At this stage, it would be valuable to undertake a comparative study to evaluate the effectiveness of the P4P programme in different countries and market contexts. The study should also assess why contract defaults are widespread.

4.3.3 Market impact of LRPs

Review of literature

There are numerous empirical studies going back to the 1970s on the price and disincentive effects of food aid. With LRPs becoming substantive, similar questions are increasingly being asked on the market impact of procurement and several analyses have been emerging in more recent years, mostly commissioned by food agencies like the WPF and donors such as the EU, DFID and more recently the US. The 2008 Farm Bill of the US had mandated the USDA to carefully evaluate the market impact of the LRPs to ensure that "do no harm" conditions (defined in terms of disruption of market prices) are met (besides cost effectiveness and timeliness of LRPs).

Studies on the market impact of LRPs generally start by positing three potential impacts: i) price change, ii) price volatility and iii) change in the structure, conduct or performance of markets. Thus, market prices could rise, or even spike, due to LRP-induced demand. Volatility comes from uncertainty about the likelihood and timing of procurement, disturbing normal pattern of buying and selling. The third impact is felt when procurement is sustained as this alters market participants, and thus competition, even affecting investment by private actors.

What follows reports the findings of four recent impact studies. First, the Garg et al. (2013) study utilized econometrics methods to estimate the percentage change in price level associated with LRP (for contemporaneous and one-month lagged procurement). Their sample LRP sites covered seven countries and several commodities, including in Kenya (maize and beans) and Uganda (maize and sorghum). In their model, they controlled for other prospective confounding factors that influence prices such as inflation, climate shocks, transport costs, seasonality, parallel LRP activities by WFP and world market prices. The overall result was that LRP had no practically or statistically significant relationship with price levels in both the procurement and non-procurement markets and for any commodity, with the two exceptions for Niger and Kenya where modest effects were noted. This was also the case for the voucher program for maize and sorghum in Uganda. The study also found that LRP did not also have any statistically significant relationship with price volatility in any procurement or non-procurement market or commodity.

One reason for lack of impact could be that the Garg et al. study covered only USDA-supported LRP pilot projects which were small-scale and short-duration LRPs. The authors acknowledge that as the size of LRPs increases, there could be non-trivial impacts. For this reason they strongly suggest that agencies need to undertake *ex ante* response analysis to ensure the "do no harm" provisions of the USDA.

MSI/USDA (2012) is a large two-volume study (main report and annexes) undertaken by MSI for USDA to evaluate some 20 LRP pilot projects in 19 countries implemented as per the mandate of the 2008 US Farm Bill. These LRPs were implemented by a range of NGOs as well as WFP. On market impact, the evaluation question asked was: *To what quantifiable extent have the LRP projects contributed to increased prices or price volatility in the markets in which the procurement took place and, if observed, what conditions contributed to adverse market impacts?*

Although the study acknowledged that a market impact of a LRP should ideally look into three types of impacts as noted earlier (price level, volatility and market performance), the case studies were largely restricted to the first impact only. The methodology used was to search for evidence of detectable price rises due to LRP. Both qualitative and quantitative data were explored – experiences of vendors, beneficiaries and other sources on the one hand, and inspection of price series data on the other, as well as the possible influence of exogenous variables.

The main finding of the MSI/USDA study was that for all commodities procured for which there existed enough information to evaluate market impact, it was very "unlikely" that in 15 of the 19 cases the LRP had any market impact while in other four cases the LRP had "possibly" caused an impact. Overall, thus, the study could not uncover any negative impact that can be attributed to LRPs. The finding was similar for the three EAC countries covered (Kenya, Uganda and URT), that LRPs' impact on market prices was "unlikely".

The study also noted that LRPs size (or budget) did not matter when it came to market impact, but this could be because all LRP contracts analysed were small. The study is useful for other insights provided, e.g. on the pros and cons of procurement from different types of suppliers such as FOs, small versus large traders, commodity exchange, government food agencies, etc.

The third study reviewed was by Upton and Hill (2011) which also analysed procurement-price relationship for maize in Uganda using statistics on procurement and WFP purchase price. The main finding was that despite the LRP volumes being significant (the WFP was the largest single buyer in Uganda), there was no significant correlation between the volumes procured and price levels or volatility. On the other hand, the traders surveyed as part of the study felt otherwise. Traders believed that WFP purchases had significant impacts on market prices which affected traders' profitability. At times the

impact is negative when the WFP competes in the same area as traders, thus raising prices for traders and reducing their potential profitability. At other times, traders also gain when they have already procured and WFP comes in the same or neighbouring regions and raises market price. The study also notes that the traders' ability to speculate on the price based on their own perception of WFP purchases (timing and volume) is an important influence on market prices.

The fourth study reviewed is by Tschirley et al. (2013), the Michigan State University (MSU) researchers. Acknowledging that the weak relationship found by other studies could be due to the small volumes of the LRPs, this study selected countries and commodities with sizable LRPs by WFP. The study utilized econometric methods and undertook traders' surveys. The main findings were as follows. One, maize price effects were somewhat marked only for Uganda. Two, but price effects were economically meaningful only for years with high procurement. Three, overall welfare effects of the increased prices were fairly small on average. Four, but welfare effects were somewhat marked for about 1/3rd of the poorest households who were large net buyers with large consumption shares.

While price and welfare effects were generally small if not trivial, the study concluded that the LRPs had marked positive impact on market development, called systemic effects that WFP was able to generate by the way it conducts procurement. Identified systemic effects included: improved knowledge, practices and investments regarding quality; operational efficiencies from large-scale transactions under less uncertain prices and quantities, driving unit costs down; and effects on entries into sectors and on the ability of companies and sectors to compete in the commercial sector. These are the types of effects that, accumulating over time, drive transformational change in food systems over the course of development.

So, it was concluded that WFP has positively influenced the "quality culture" on maize in Uganda (and other foods in other countries in east Africa). In all these cases, traders and processors made investments to meet the WFP standards. In turn, traders reported increased operational efficiencies selling to WFP. This efficiency gain could be an asset for long-term efficiency in regional trade.

To summarize the main findings, the first three studies did not find any significant relationship between procurement and market impact (price level and volatility), with one exception of a modest impact in Kenya for maize. The main reason for this, acknowledged by all three studies, was the small-scale of LRPs and their short-duration. The fourth study which assessed cases with sizable LRPs by WFP found that the size of LRPs does matter considerably, e.g. for maize in Uganda. In addition, this study found several positive effects of WFP purchases on overall market development.

Results of the survey of stakeholders

Given the role played by WFP among the humanitarian agencies (HAs) as one key institutional player in food procurement and the many questions asked over the years about the market impact of LRPs, several questions in the stakeholders' survey under this study sought to elicit their perceptions on these issues. The following summarizes theie feedback.

Are HAs' purchases made in an ad hoc manner? Roughly half (53%) of the respondents felt that purchases by HAs are made in an *ad hoc* manner as per the agencies' own requirements. Among them, roughly two-thirds added that these purchases are *ad hoc* in terms of both volume and timing, while the rest thought so either on volume or timing ground. The remaining 47% said the purchases are not *ad hoc* but predictable in terms of both volume and timing.

Do purchases by HAs displace purchases by national food agencies and regular traders? Three-fourths of the respondents felt that this has not been an issue so far while the remainder replied that such purchases do have displacement effects occasionally. One respondent from a HA remarked on the

capacity of local markets to deal with the extra demand so as to avoid market destabilization. While, on the whole, this does not seem to be as big an issue as is often held (where displacement effect does occur), 56% of the respondents attributed it to the higher price offered by HAs and 44% to prompt payment. It was also said that quality standards demanded by procurement agencies also determine farmers' decision to sell to HAs. Some HAs also offer training on standards and organization of sales which also influence decisions to sell to them.

Do HAs adjust the volume of their purchases during periods of high and low food prices? Most respondents (82%) held that procurements seemed not to vary with high or low market prices. Only 6% of respondents thought that HAs procure less during high price periods (years/seasons) while the other 13% held that the agencies tend to procure more during periods of high prices. It is often held that buying more and aggressively when local prices are already high contributes to further destabilizing the market. It is also held that during periods of high prices, HAs tend to buy more because the demand for relief distribution is high in such periods. Considering the survey responses, there is a widespread view that HAs do not seem to be particularly sensitive to periods of low or high local prices in their procurement drive. Of the two respondents from HAs, one held that procurement does not vary with prices while the other replied that the agency does procure less during periods of high prices.

Do farmers tend to oversell to HAs? Because of the presumed better incentive offered by HAs (e.g. higher price, prompt payment), the issue is whether farmers tend to oversell, i.e. sell more than what they would ordinarily sell, possibly to the detriment of their own food needs later in the season. On this, the views were more or less fairy divided, with 42% saying that they believe this is happening while 58% felt that this has not been an issue so far. One commentator from URT said that because HAs often do not directly procure food but obtain their requirements through the National Food Reserve Agency (NFRA), they have no way of influencing the sales by farmers. This of course assumes that the NFRA procurement does not create that effect in the first place. A respondent from WFP said that the very objective of WFP's P4P programme, and its emphasis on procurement through farmers' organization, prevents the possibility of such negative effects and indeed protects farmers from speculative purchases by traders at low prices. It was also said that farmers tend not to over-sell because they know that prices will be higher during the lean season.

What is the impact of HAs' purchases on local prices? If farmers do over-sell, does that boost local prices to levels beyond the purchasing power of net food-buying households? Two-thirds of the respondents felt that it is unlikely that there has been such an impact on local prices, while the other 33% felt that local market prices tend to be over-boosted causing difficulty for net buyers. One commented that such an effect is unlikely because agency procurement is not that significant compared to purchases by traders.

The survey also included two questions related to the impact of relief food aid. The respondents were asked if they had experience on the ground, or were aware, of cases where regionally-procured food commodities distributed by HAs were found to be unsuitable or undesired by the beneficiaries. On this, 85% of the respondents replied that they were not aware of such cases. One respondent commented that this can happen at times due to quality deterioration during transportation and storage but not intentionally. In one case, the respondent had seen that beneficiaries re-sold to the market the less preferred foods obtained in this manner (maize flour in this case), as well as selling or exchanging for more expensive food items such as refined edible oil.

Another question concerned possible impact of relief food aid on local markets. Asked if respondents were aware of cases where local food prices have been excessively depressed due to food aid distribution, 90% of them replied that they were not aware of such cases. This was a long-standing issue on food aid, going to back to 1960s, that food aid in kind depressed market prices and farmers' incentives to produce food. But this does not seem to be an issue anymore. Respondents who answered in the positive were requested to provide examples. One answer was as follows: "I want to say YES but because I cannot give examples, I just opt to say NO". Another respondent who answered yes gave an example of the currently

depressed rice prices in South Sudan (a country not growing any rice) compared to the much higher rice prices in Northern Uganda where rice is grown, attributing the depressed price to excessive relief food aid.

4.3.4 Regional and national food security initiatives with emphasis on grain reserves

National food agencies (NFAs) are the main institutional outlets for farmers' marketed surplus, besides the HAs (with WFP the dominant player among them). The NFAs have broader mandates – besides procurement and emergency food relief, they also implement farm price support, hold reserve stocks and engage in open market sales to curb price rises. In many countries, the NFAs are also active in implementing programmes on integration of smallholder farmers to markets. Depending on the scale of their operations, NFAs also affect the involvement of private traders in food marketing, storage and trade. Lastly, through these activities as well as a more direct involvement in trade, NFAs could also help or hinder the growth of regional trade in food products.

While much is known about the functioning of NFAs and strategic grain reserves (SGRs) in individual countries, there is very little in the literature on the role and effectiveness of NFAs and SGRs in a regional context. With the exception of the European Community, there are no good examples of functioning NFAs/SGRs in a CU/CM environment. The ASEAN rice reserve, APTERR, operates in a free trade area (FTA). So is the case with the South Asian SAARC Food Bank. In West Africa, the RESOGEST is a regionally coordinated framework based on national food reserves. This is also the case with the PREPARE framework formulated in 2011 for ECOWAS upon the request of G-20. Both these frameworks were articulated for a FTA. As summarized below, the EAC food security strategy has made some proposals for a regional approach to managing national SGRs, but how exactly this will function in a CU/CM environment is not clear. One could ask, for example, how feasible is it for NFAs to support or influence farm or market prices with no border trade restrictions in an area of highly integrated food markets.

With a view to discussing these issues, what follows summarizes the EAC proposals for a regional approach to grain reserves. The current state of operation of NFAs and SGRs in the EAC member countries can be found in Annex 4.1.

EAC's proposals on the regional approach to SFRs and related issues are outlined in the *EAC Food Security Action Plan*. The proposals appear in two places. First, under the heading, *to create a harmonized approach for enhancement of food security in the EAC region*, the proposal was to establish by 2011-11 a regional mechanism for the management of SFR. Under this, six actions were outlined: i) establish and introduce EAC Food Information System; ii) establish a framework for pooling regional food balance sheets; iii) develop a regional food balance sheet on a monthly basis; iv) develop and adopt predictable regional model for management of regional SFR; v) establish food reserve facility both physical and financial; and vi) capacity building of stakeholders.

Second, under the heading, *improve stability of food supply and access in the EAC region*, the proposal was to enhance the capacity for emergency preparedness and response. Two targets were set: i) each Member state to have food and feed reserves of at least for 6 months by 2015 (from the baseline of 3 months), with a cost estimate of $600 million; and ii) each Member state to establish a contingency fund for 6 months of food reserves by 2015 (with $550 million cost).

Although all targets set have not been met by the deadlines (mostly 2015), good progress is being made in some areas, notably on the first three actions in the first set of proposals above. Work on regional food balance sheet with updates on a monthly basis is at an advanced level of completion. Once completed, this would provide a solid basis for the proposed EAC Food Information System. The other two actions

proposed lack some clarity, e.g. the "predictable regional model for management of regional strategic food reserve". Likewise, it is not clarified if the proposal to establish food reserve facility both physical and financial (point (v)), is meant for a regional reserve or the national reserves which are specified under the stability component of the Action Plan. No document was found during the course of this study that clarifies some of these proposals.

The Action Plan also recognizes the value of the "predictable regional model ……" for trade policy. Although, as said, it lacks some clarity, it seems to say that the "predictable regional model" will replace the current and largely *ad hoc* practice of making trade decisions (i.e. trade restrictions, import quotas, tariff changes, etc.) based on national food balances. Given the current difficulties in managing the CET stays and remissions on sensitive food products, such a framework would be valuable and so completing that work needs to be prioritized.

As regards the second set of proposals above, the two targets are to establish national reserves for six months of consumption and also contingency funds for six months of food reserves. The first proposal essentially calls for doubling, or more than doubling, of the current size of the national reserves. This seems like a highly ambitious proposal given that some EAC members have been facing continued difficulties financing even the current size of reserves. Also, it is not clear if the proposals are based on some study on optimal food reserves at the regional level. Uganda for one does not have a SGR nor is its policy to establish a food agency and food reserve to intervene in the market.

So, all in all, while good progress is being made on some proposals, others lack clarity. In particular, it is not clear if the intention is to establish a regional reserve or a system of regionally-coordinated national reserves, such as the PREPARE framework as proposed in a study for the ECOWAS region. However, the PREPARE framework is designed to respond only to emergencies and not to intervene in markets to influence prices. This aspect too needs to be clarified in the EAC proposals. Currently, the SGRs in Kenya, Rwanda and URT have the mandates to intervene to support farm price as well as to restrain market price (see Annex 4.1).

To conclude this section, there is a need for clarifying how the proposals on SFRs in the *EAC Food Security Action Plan* would work effectively in a CU/CM environment. There are two key elements in the EAC proposals on SGR. One is the size of the reserves. The proposal calls for doubling the size. But it is not clear why the SGRs have to be that large when moving to the CU/CM environment. If this was intended also for market intervention, it is not clear – based on literature and experience from elsewhere – if interventions aimed at influencing market price will work in a CU/CM environment. The EAC proposal also mentions regional mechanisms to manage SFRs, but the ideas are not clearly articulated. This issue is also linked to trade and other policies in the sense that, traditionally, governments have intervened through procurement to support farm prices and through open market operations to stabilize market prices. Such interventions are often made in conjunction with trade policy, e.g. changes in tariff rates, quotas, import controls and export restrictions. In a CU/CM context, domestic interventions by individual countries become less effective in influencing prices but trade policy will continue to be effective if the response is based on regional triggers. Therefore, there is a need for clarifying the respective roles of trade and reserve policies taking into account the CU/CM context.

V MARKET INTEGRATION AND ISSUES IN IMPLEMENTING THE CU/CM POLICIES

This Chapter covers two important topics: integration of food markets in the region and progress in the implementation of the CU/CM policies. The time span since these policies have come into effect has not been long enough to have statistically significant cause-effect relationships between specific policies and outcomes such as degree of market integration and increased intra-EAC trade. Nonetheless, certain trends should have emerged from the experience so far. Related to these expectations is the way different provisions in the CU/CM have been interpreted and implemented by the countries of the region. Hence, in the second part of this Chapter, the implementation experience is assessed based on official reports and information gathered from the stakeholder survey undertaken as well as interviews during field visits.

5.1 Food prices and regional food market integration

The analysis of food prices and market integration is presented in three sub-sections. The first reviews the evolution of food prices in EAC markets including co-movement of prices. The next sub-section analyses seasonality of prices while the last sub-section continues this analysis by examining episodes of price instability and price spikes. All analyses are based on prices of three staple foods, namely maize, rice and dry beans, which represent key staples in the diet and traded widely in the region, albeit different in terms of their degree of tradability within the region and with rest of the world. The prices used are for capital city markets of the five EAC countries and are sourced from FAO GIEWS food price database. The analyses cover the period January 2006 to December 2014.

5.1.1 The evolution of food prices and market integration

Price formation process in the region

Rwanda, Uganda and URT are net exporters of maize in the region while Kenya and Burundi are net importers. But the region as a whole is self-sufficient in maize and so little import takes place from the world market on a regular basis. Mainly for this reason, studies on market integration do not generally find statistically significant relationship between the world price and domestic prices (e.g. Minot 2011). On the other hand, there is a sizable formal and informal trade within the region and so the EAC maize markets are expected to be closely linked. For the same reason, demand shocks from neighbouring countries like South Sudan and DRC should also be important drivers of prices in the EAC region. Other factors identified as affecting price relationships are weather shocks and trade policy, namely export bans and *ad hoc* import policies (Baffes et al. 2015).

Granger causality tests for maize (Annex 5.1) using monthly price data for January 2006 to December 2014 showed that of the 18 relationships tested, prices in six markets influenced prices in other six markets. Significant causality was found, in both directions, for Kampala-Nairobi markets and Kigali-Nairobi markets. Kampala prices also caused Kigali prices while Dar es Salaam prices caused Kampala prices. The remaining 12 market pairs for which the causality was not statistically significant, included all six market pairs involving Bujumbura. This was however an unexpected result because Bujumbura does regularly import maize from other EAC countries. Also unexpected was the non-significant relationship between Dar es Salaam and Nairobi markets in both directions.

In the case of rice, given the fairly sizable import-to-consumption ratio of about 30% at the EAC-5 level, studies generally find prices in the EAC markets statistically related to the world rice price. For example, Delgado et al. (2005) had found for earlier years that the world rice market was integrated with all local markets in east Africa covered in their study and had price transmissions of 20-40%. In addition, local harvests were also found to have an important influence. Using data up to December 2008, Minot (2011)

also found a significant relationship between the world rice price and domestic prices in almost 50% of the markets in SSA covered by the study (including several EAC countries), in contrast to only 10% in the case of maize.

Granger causality tests for rice (Annex 5.1) show that ThaiA1 prices cause or influence prices in all four markets (data was not available for the Nairobi market). Within the EAC, Kampala, Kigali and Bujumbura markets influence prices in Dar es Salaam but not the other way around. This may seem as unexpected as rice mainly flows from URT to other markets. What could be happening is that prices in Dar es Salaam are primarily determined by demand from the three importing areas. The results also show that Kampala market influences prices in Kigali, but not with the reverse causality, while Kigali causes prices in Bujumbura.

For dry beans, as reviewed earlier Section 4.2, Uganda is the dominant regional exporter with the bulk of trade believed to be in the informal market. About 65% of its exports are absorbed by non-EAC countries, predominantly South Sudan. Therefore, demand from South Sudan should be a significant driver of beans prices in the region. Within the EAC markets, Granger causality tests confirmed that Kampala prices cause price movements in Nairobi, Kigali and Bujumbura, but not the inverse (see Annex 5.1). The results also point to an unexpected causality, whereby Dar es Salaam market influences Kampala prices and not the other way around. Dar es Salaam prices also cause Nairobi prices with no reverse causality. Overall, although the picture on intra-EAC causalities is somewhat foggy in view of the large share of the South Sudan market, it is mainly beans prices in Kampala (followed by Kigali) that cause prices in other markets, results which are also consistent with the ICBT data discussed in Chapter IV.

The evolution of prices and their co-movements

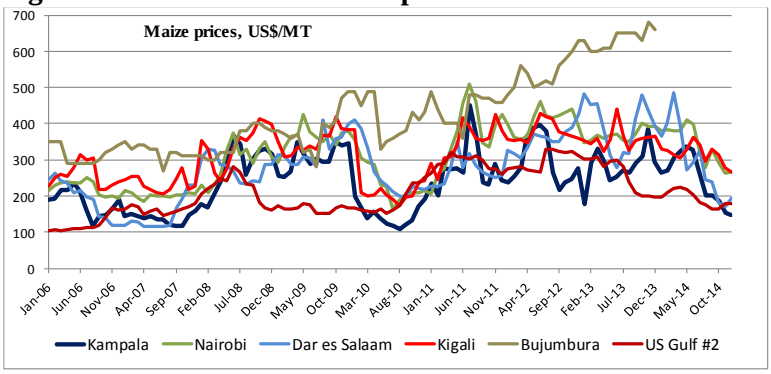
Figure 5.1.1 shows trends in monthly **maize** prices in the five EAC markets plus the main world market price (US#2, yellow, f.o.b. Gulf). Bilateral correlation coefficients among the markets are shown next to the graph. Being the main exporter, Kampala prices are mostly the lowest in the region, with an average of $240/MT during 2006-14, followed by $281/MT for Dar es Salaam, $312/MT for Kigali and Nairobi and $425/MT for Bujumbura. The graph also shows that the evolution of prices is associated with marked fluctuations, not just during specific seasons but almost throughout the year. On the whole, prices seem to move together, with the exception of the Bujumbura market from 2010 onward (this could also be due to the quality of the price data). The average of the 10 bilateral correlations among the five markets is 0.66, which indicates fairly close co-movement of prices. Five of the 10 correlations are 0.70 or higher, with Nairobi most correlated with other markets (average of Nairobi's four pairs of correlations is 0.74). As expected, Kampala prices are also strongly correlated with other markets (average 0.66). Correlations between the US#2 prices and the five EAC markets are lower (average 0.52).

The analysis of the maize prices reveals 3-4 phases or periods when prices behaved in a certain pattern. First, during January 2006 to November 2009, prices were steadily trending up in all five markets but with marked fluctuations. This phase also includes the 2007/08 spike in the world price of maize. Second, there was a large U-shaped slump in prices that lasted for 16 months from December 2009 to March 2011. Third, this slump was followed by a phase during mid-2011 to April 2014 when prices recovered but remained essentially flat with marked fluctuations, including some surges and depressions. And fourth, prices started falling from about mid-June 2014 which continues into early 2015.

In the first phase, between early 2006 and late 2009, maize prices rose by about 60% in Kampala, Kigali and Nairobi and 40% in Dar es Salaam. One driver of this was the spike in the world price of maize in 2007/08, but prices in the region increased much more than the increase in the world price (discussed later). A more plausible reason seems to be production growth lagging behind demand growth with

insufficient imports. The annual average growth rate of maize production in EAC-5 as a whole was 3.7%, with around 10% rises in 2006/07 and 2008/09 and 5% decline in 2007/08 and no change in 2009/10.

Figure 5.1.1 Evolution of maize prices in EAC markets and correlation coefficients (2006 to 2014)



Correlation coefficients of monthly maize prices, 2006 to 2014

	Kampala	*Nairobi*	*Dar'Salaa*	*Kigali*	*Bujumbura*
Kampala	1				
Nairobi	0.81	1			
Dar'Salaam	0.62	0.72	1		
Kigali	0.77	0.82	0.60	1	
Bujumbura	0.44	0.62	0.70	0.52	1
US # 2	0.44	0.58	0.44	0.51	0.61

Data source: FAO.

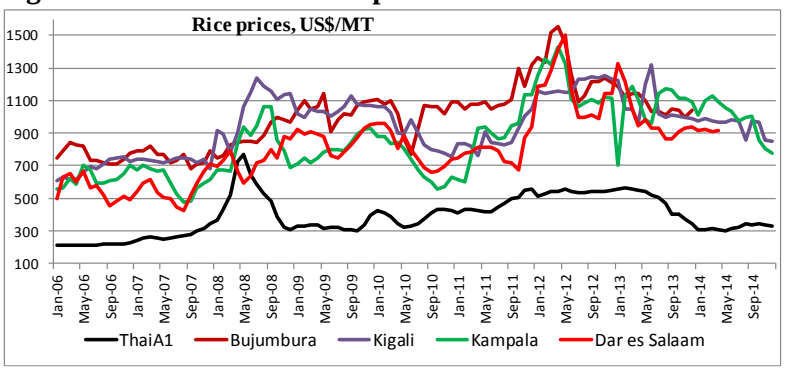
These steady rises were followed by a slump in prices to their lowest levels during late 2009 to mid-2010. In these eight months, maize prices fell by as much as 69% in Kampala, 57% in Nairobi, 52% in Dar es Salaam and 55% in Rwanda (as said, Bujumbura prices moved differently from the rest). The world market price of maize was virtually flat in this period and so could not be the reason for the slump. One plausible explanation is the 11% production growth (812,000 MT) at the EAC-5 level in 2008/09, with large increases in Uganda, but also in Rwanda and URT, which together more than offset the over half a million MT reduction in Kenya. The fact that maize prices slumped similarly in Nairobi, despite the output shock, is a strong proof that intra-trade played its due role then.

Despite these production gains, maize prices started rising in all four countries from August 2010 and reached their pre-decline levels by May 2011. Why prices rose so much in the face of large harvests is difficult to explain. Perhaps there were large exports to neighbouring countries outside the EAC. Another reason could be the second spike in the world price of maize (June 2010-April 2011). For a long period after that, prices were essentially flat but with large fluctuations. Finally, prices have been falling since around early 2014. One reason could be the decline in the world price of maize. The other, and more likely, reason could be the large harvest of 2012/13 at the EAC level (11% increase or an extra 1.2 million MT) and again a small gain in 2013/14. Production gains were shared similarly, at 9-10%, by Uganda, Kenya and Rwanda and by higher percentage increase by URT. EAC production declined by 11% or 1.3 million MT in 2014/15 but its effects should be felt later.

Figure 5.1.2 shows the evolution of monthly **rice** prices in four EAC markets (price data were not available for Nairobi) along with ThaA1 as the world reference price. The first impression from the graph is that the EAC rice prices are substantially higher than the world reference price, over twice as high. While the average price of ThaiA1 during 2006-14 was $400/MT, prices averaged $807/MT in Dar es Salaam, $844/MT in Kampala, $944/MT in Kigali and $994/MT in Bujumbura. Between Kampala and Dar es Salaam, the two markets with low prices in the region, Kampala prices were lower for 39 months of the 108 months covered. Prices in Bujumbura tend to be the highest most of the time.

The graph shows a fairly high degree of co-movement of prices. For 2006-14, the correlation coefficients among the market pairs ranged between 0.65 and 0.86, with a simple average of 0.75 for the six pairs between the four EAC markets. The EAC rice prices are also correlated strongly with the ThaiA1 price, averaging 0.60.

Figure 5.1.2 Evolution of rice prices in EAC markets and correlation coefficients (2006 to 2014)



Corrleation coefficients of monthly rice prices, 2006-14

	ThaiA1	*Bujumbura*	*Kigali*	*Kampala*
ThaiA1	1			
Bujumbura	0.61	1		
Kigali	0.64	0.65	1	
Kampala	0.60	0.76	0.71	1
Dar es Salaam	0.57	0.86	0.75	0.78

Data source: FAO.

The large gaps between the ThaiA1 price and the domestic prices have been a matter of policy concern in the region, mainly related to the CET and its periodic adjustments (tariff remissions). The gap tends to vary over time. Table 5.1.1 shows average gaps during different phases or periods of price evolution during 2006-14. First, from January 2006 to October 2007, i.e. prior to the onset of the 2007/08 spike in the world rice market, prices in the four markets fluctuated similarly but with no positive trend. The EAC prices averaged $656/MT, versus $238/MT for ThaiA1, for a gap of $418/MT or 175%. In the second phase (November 2007 to November 2008) which includes the 2008 spike, ThaiA1 price was poorly correlated with EAC prices with the exception of Kampala. The gap between the average ThaiA1 price for this period and the average of the four local prices narrowed down to 71%, from 175% earlier. In the third phase (December 2008 to June 2011), while ThaiA1 prices were low and stable, EAC prices remained high and volatile, but with no trends, with the gap between the Thai and local prices rising to $526/MT or 143%. The fourth phase (July 2011 to July 2012) includes a period when EAC prices spiked but not those in the world market. Rice price in EAC reached its peak level of $1,400/MT during April-May 2012, with the gap with the ThaiA1 price increasing further to $602/MT, or 115%. Finally, after August 2012, rice prices have been falling in the region but not as much as ThaiA1 price, with the consequence that the gap between the two increased further to $621/MT, or 146%.

Table 5.1.1 Gaps between EAC and world price of rice during various phases of price evolution

							Gap with ThaiA1	
	Period	ThaiA1	Bujumbura	Kigali	Kampala	Dar es Salaam	Avg EAC-4	USD/mt	%
Phase 1	Jan 06 to Oct 07	238	759	706	615	543	656	418	175
Phase 2	Nov 07 to Nov 08 1/	494	852	997	815	720	846	352	71
Phase 3	Dec 08 to Jun 11	369	1037	951	766	823	895	526	143
Phase 4	Jul 11 to Jul 12 2/	523	1279	1050	1137	1036	1125	602	115
Phase 5	Aug 12 to Dec 14	427	1112	1046	1042	992	1048	621	146
	Average all months	410	1008	950	875	823	914	504	123

Note: No rice prices were available in public domain for a Kenyan market.
1/ Period when the world rice price spiked. 2/ Period when EAC prices spiked (but not the world price)
Data source: FAO

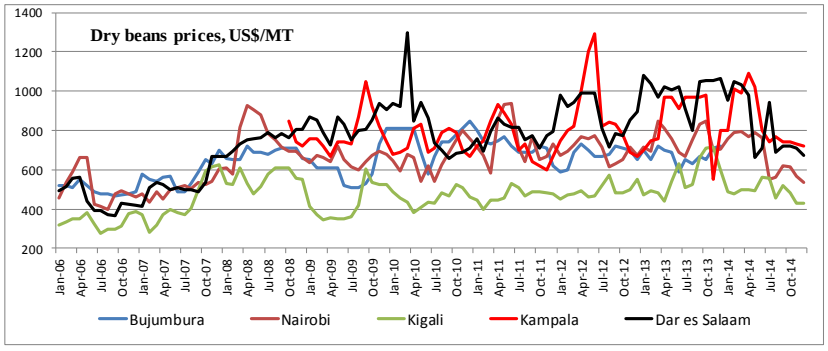
One plausible reason for the overall large price gap and the asymmetry of the gaps during spike episodes and other periods could be the implementation of the CET on rice, including frequent tariff adjustments (remissions). If one were to add $100 to the ThaiA1 price to cover transport and marketing cost etc. (say, to convert the f.o.b. to c.i.f), the gap for the entire period comes to about 80%, which is indeed close to the 75% CET. But the effective applied tariffs have been mostly lower than that due to remissions. So while the high CET explains the large gap to some extent, there should be other additional costs that

produce the large gap. Management of remissions, especially the timing, could be a source of uncertainty that contributed to the large variation in gaps between EAC and world rice prices.

In the case of **dry beans**, Figure 5.1.3 shows two broad phases of price evolution. First, prices trended up steadily during January 2006 to end-2008, from about $500 to 700/MT on average for the five EAC markets. Second, during 2009 to 2014 prices mostly fluctuated with no clear trends, at around $700/MT for the five markets. But beans prices varied markedly across the five countries, with prices consistently lowest in Kigali, about $485/MT during 2009-14, followed by about $650/MT in Nairobi and Bujumbura, $766/MT in Dar es Salaam and highest in Kampala at $808/MT. This comes as rather unexpected given that it is Uganda that is the main exporter. The prices presumably reflect quality differences across countries as there are several different types of beans.

The overall average of the 10 pairs of correlation coefficients is 0.41, lower than for maize and rice. Prices in Kampala and Nairobi, the main exporting and importing markets, are correlated at 0.39, lower than those for some of the other market pairs that are not recorded as being trading strongly, perhaps with the exception of Kigali-Kampala pair where the coefficient is larger (0.53). Price correlations between Nairobi, the main importing market, and other four markets are generally higher than other pairs, ranging between 0.39 and 0.65, with an average of 0.55.

Figure 5.1.3 Evolution of beans prices in EAC markets and correlation coefficients (2006 to 2014)



Correlation coefficients of monthly dry beans prices, 2006 to 2014

	Bujumbura	*Nairobi*	*Kigali*	*Kampala*
Bujumbura	1			
Nairobi	0.63	1		
Kigali	0.51	0.53	1	
Kampala	-0.16	0.39	0.17	1
Dar es Sal	0.60	0.65	0.52	0.29

Data source: FAO.

Are food markets becoming more integrated in recent years?

Prices among trading partners should co-move more closely as trade integration deepens. While this may be happening, prices are also influenced by exogenous forces and so it is often not that straightforward to establish this relationship with confidence. What follows tries to shed some light to this question by examining correlation coefficients of prices among the markets for two periods, January 2006 to December 2009 and January 2010 to December 2014. As 2010 was effectively the beginning of deeper integration under the CU/CM process, the expectation is that prices co-move more closely in the second period.

Table 5.1.2 shows correlation matrices for maize, rice and dry bean prices for the two periods. For maize, correlation coefficients among the five markets are lower in period 2 than in period 1 for 8 of the 10 pairs (two exceptions are Nairobi-Kigali and Dar es Salaam-Bujumbura). The average for the 10 bilateral correlations is 0.70 for period 1 and 0.62 for period 2. Correlations for each calendar year (12 months) separately also do not show any notable trend. These annual correlations, averaged for the 10 pairs, are: 0.66 for 2010, 0.35 for 2011, 0.22 for 2012, 0.16 for 2013 and 0.70 for 2014. So, overall, there is no clear trend of prices co-moving more strongly in recent years. A further analysis was done by computing price ratios across the markets, using Kampala prices (lowest in the region) as the denominator. This shows that

the price ratios have negative trends, suggesting convergence as expected. However, the slopes were less steep in period 2 than in period 1, i.e. price convergence slowed down over time, a finding similar to that indicated by correlation analysis.

Table 5.1.2 Correlation coefficients of monthly prices of maize, rice and dry beans among five EAC markets, 2006-2009 and 2010-2014

Maize - Period 1, Jan 2006 to Dec 2009

	Buj'mb	*Dar*	*Kampala*	*Kigali*	*Nairobi*
Bujumbura	1				
Dar es Salaam	0.50	1			
Kampala	0.61	0.74	1		
Kigali	0.63	0.73	0.81	1	
Nairobi	0.55	0.75	0.91	0.78	1
US Gulf #2	0.16	0.26	0.39	0.28	0.30

Rice - Period 1, Jan 2006 to Dec 2009

	Buj'mb	*Dar*	*Kampala*	*Kigali*
Bujumbura	1			
Dar es Salaam	0.89	1		
Kampala	0.64	0.60	1	
Kigali	0.74	0.72	0.83	1
ThaiA1	0.23	0.30	0.65	0.60

Dry beans - Period 1, Jan 2006 to Dec 2009

	Buj'mb	*Dar*	*Kampala*	*Kigali*
Bujumbura	1			
Dar es Salaam	0.71	1		
Kampala	-	-	1	
Kigali	0.76	0.56	-	1
Nairobi	0.70	0.75	-	0.58

Maize - Period 2, Jan 2010 to Dec 2014

	Buj'mb	*Dar*	*Kampala*	*Kigali*	*Nairobi*
Bujumbura	1				
Dar es Salaam	0.73	1			
Kampala	0.46	0.52	1		
Kigali	0.53	0.46	0.74	1	
Nairobi	0.50	0.60	0.79	0.86	1
US Gulf #2	0.26	0.26	0.48	0.61	0.52

Rice - Period 2, Jan 2010 to Dec 2014

	Buj'mb	*Dar*	*Kampala*	*Kigali*
Bujumbura	1			
Dar es Salaam	0.69	1		
Kampala	0.63	0.71	1	
Kigali	0.47	0.76	0.63	1
ThaiA1	0.71	0.55	0.40	0.57

Dry beans - Period 2, Jan 2010 to Dec 2014

	Buj'mb	*Dar*	*Kampala*	*Kigali*
Bujumbura	1			
Dar es Salaam	-0.20	1		
Kampala	-0.20	0.30	1	
Kigali	-0.28	0.28	0.07	1
Nairobi	0.09	0.27	0.42	0.27

Notes: 1) No rice price data was available for a Kenyan market; 2) For dry beans, the Kampala price series begins in October 2008, so no correlations are computed for the first period.
Source: Computed by authors based on FAO price data.

For rice, Table 5.1.2 shows that correlation coefficients for period 2 are lower than for period 1 for four of the six pairs. Period 2 correlations are higher only for Dar es Salaam's correlations with Kigali and Kampala. The overall average for the six pairs is 0.74 for period 1 and 0.65 for period 2. Thus, the overall finding for rice is similar to that for maize.

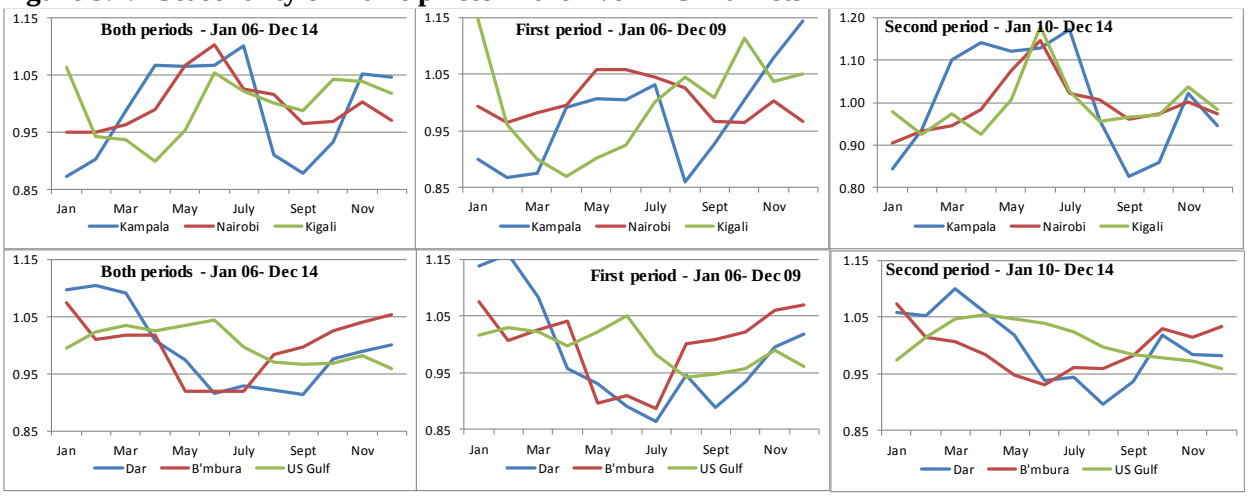
For dry beans, the results are most striking in that the second period pairs of correlations average only 0.07 versus 0.68 for period 1, with all the six correlations being lower for the second period (Kampala price series begin only from October 2008 and so correlations were not computed for the first period). For the second period, Kampala market was found to be poorly correlated with Bujumbura and Kigali markets but had a coefficient of 0.42 with the Nairobi market. Thus, overall, the results point to weak integration in the case of dry beans.

5.1.2 Seasonality of food prices in the region

Analysis of seasonality of prices provides further insights on integration as well as on the efficiency of food markets. For example, pronounced seasonality is one indicator of lack of storage and credit at the farm level in particular. Two questions asked here are how large are seasonal price swings, and are seasonal price gaps narrowing with the deeper integration of markets? Monthly seasonal indices were computed using the standard moving-average method.[32] Monthly seasonal indices for maize, rice and dry beans are graphed in Figures 5.1.4 to 5.1.6. In order to facilitate reading of the associated numbers, the main indicator of seasonality - the ratio of the highest to lowest indices within a year – is also shown next to the graphs.

[32] This involves the following three steps. First, 13-month moving averages (MA) of prices are computed using all the price data (e.g. Jan 2006 to Dec 2014). Second, ratio of the current price to MA is computed for each month. Finally, the seasonal indices are then obtained for each month by averaging the indices for the same month during the years covered (e.g. averaging July 2006, July 2007, July 2008, etc. for the July index).

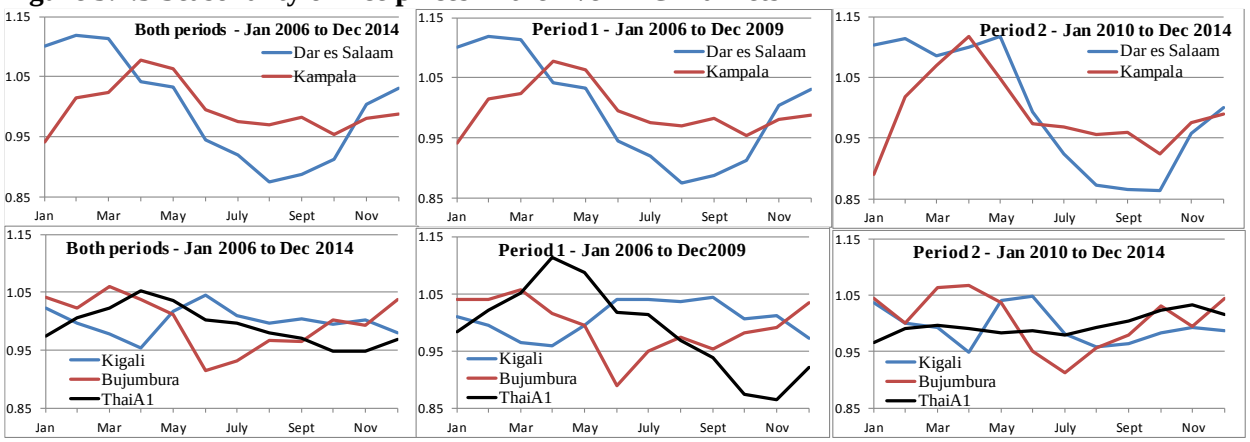
Figure 5.1.4 Seasonality of maize prices in the five EAC markets



Maize		Ratio of the highest to lowest seasonal indices					
		Kampala	Nairobi	Kigali	Dar es Salaam	Bujumbura	US Gulf
Both periods	Jan 2006 -Dec 2014	1.26	1.16	1.18	1.21	1.17	1.09
First period	Jan 2006 - Dec 2009	1.33	1.10	1.32	1.34	1.21	1.11
Second period	Jan 2010 - Dec 2014	1.42	1.26	1.28	1.23	1.15	1.10

Data source: FAO.

Figure 5.1.5 Seasonality of rice prices in the five EAC markets



Rice		Ratio of the highest to lowest seasonal indices					
		Kampala	Nairobi	Kigali	Dar es Salaam	Bujumbura	ThaiA1
Both periods	Jan 2006 -Dec 2014	1.15	n.a.	1.09	1.28	1.16	1.11
First period	Jan 2006 - Dec 2009	1.10	n.a.	1.09	1.29	1.19	1.29
Second period	Jan 2010 - Dec 2014	1.26	n.a.	1.11	1.29	1.17	1.07

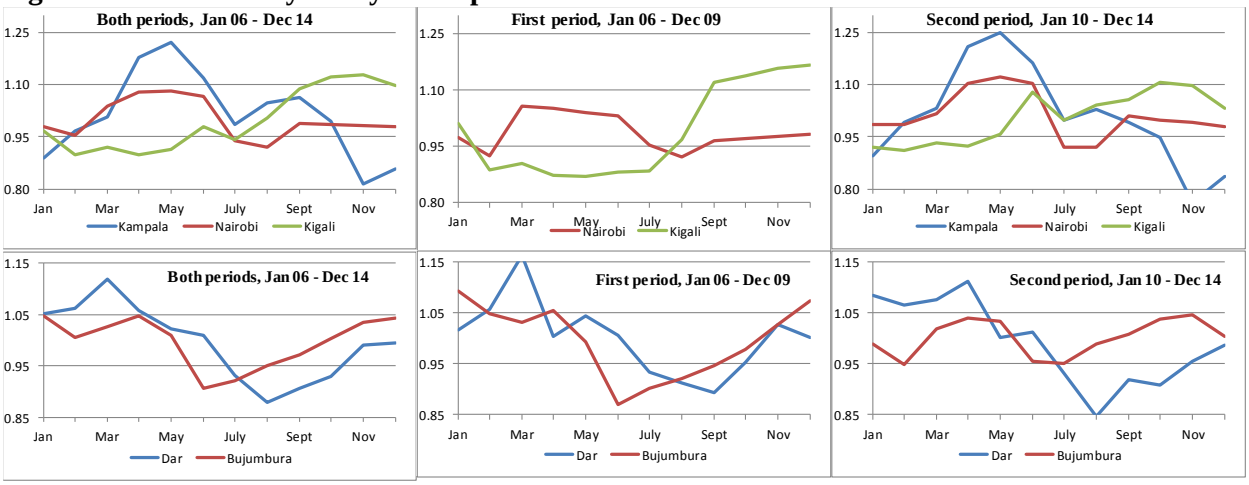
Data source: FAO.

In the case of **maize**, seasonal patterns for the Kampala and Nairobi markets look broadly similar, with highs in May-July and lows in September-November. The correlation between the seasonal indices is also high, at 0.62. In contrast, seasonality of the Dar es Salaam market is different and almost the opposite. This indeed is a positive factor for regional trade as this indicates trade complementarity (see section 3.5 for details). Seasonality patterns in Dar es Salaam and Bujumbura appear similar.

Kampala market stands out from the rest in terms of the depth of seasonality of maize prices. This is clear in the graph as well as in the ratio of maximum to minimum monthly indices, which is the highest for Kampala, at 1.42 (a 42% seasonal gap), versus in the 1.23-1.28 range for Dar es Salaam, Nairobi and Kigali markets, and 1.10 for the world maize price. The graph shows that maize prices in Kampala

virtually collapse beginning around July until around September, a decline of 0.11 points/month. This is twice as high a rate of decline as in other markets.

Figure 5.1.6 Seasonality of dry beans prices in the five EAC markets



Dry beans		Ratio of the highest to lowest seasonal indices				
		Kampala	Nairobi	Kigali	Dar es Salaam	Bujumbura
Both periods	Jan 2006 -Dec 2014	1.50	1.17	1.26	1.27	1.16
First period	Jan 2006 - Dec 2009	n.a.	1.15	1.34	1.30	1.26
Second period	Jan 2010 - Dec 2014	1.64	1.22	1.21	1.31	1.10

Data source: FAO.

In the nine years covered, Kampala market experienced more price slumps of larger magnitude than other markets. Kampala and Nairobi markets are more closely connected by maize trade than others. Most likely for this reason, the timing of the beginning and end of the slumps for these two markets is almost the same. Yet, prices in Nairobi do not often crash as steeply as in Kampala, and, in one case, in 2013/14, prices did not decline in Nairobi while prices crashed in Kampala. Field visits during the course of this study confirmed that there is a severe problem of maize storage in the surplus regions of Uganda. As a result, prices collapse after harvest and surplus maize is bought by traders at low prices and shipped to Kenya. One reason given for Kenya's much lower seasonal slumps is its large storage capacity, thanks to past investments by the NCPB. Such a parastatal did not and does not exist in Uganda. In URT too, large-scale storage capacity was built during the socialist era which continues to be used by the private sector as well.

In the case of **dry beans** as well, Kampala market shows the highest degree of seasonality, with the ratio of 1.64 (a 64% seasonal gap), typically between May-June and October-November. In contrast, the seasonality gap is about half this level for Dar es Salaam and one-third for Kigali and Nairobi. The contrast between the Kampala and Nairobi markets in particular is striking given the high volume of formal and informal trade between Kenya and Uganda.

Finally, for **rice**, seasonality does not exceed 30% and is highest for Dar es Salaam, not Kampala, although the difference is small. For the entire period (2006-14), it is interesting to note that seasonality for Kampala and Kigali markets was fairly close to that for the world market price of rice.

The second and related question asked at the outset is whether seasonal price gaps are narrowing with deeper trade integration. This was assessed by comparing seasonal indices for two periods, 2006 to 2009 and 2010 to 2014 as shown in Figures 5.1.4 to 5.1.6 above and the associated data. Ignoring small changes, the numbers show that seasonality for maize increased in 2 of the 5 markets (Kampala and Nairobi), for rice in 1 of 4 rice markets (Kampala) and for dry beans in 1 of the 4 markets. So, there were

marked increases in 4 cases (31%), marked declines in 4 cases (31%) and little change in the other 5 cases (38%). Thus, overall, seasonality did not decline in period 2 in about 70% of the cases.

High seasonality is a clear indication of systemic problems in food markets, notably lack of storage, credit as well as competition. Seasonality inflicts a cost to all farmers but it is smallholder farmers who, being forced to make distress sales, suffer the most. Therefore, reducing seasonality by addressing these problems generates high payoff in terms of both food security and stronger supply response. Uganda, in particular, has pronounced seasonality, which is not desirable given the prominent role it plays as a supplier of basic food stuffs in the EAC region.

5.1.3 Price instability and experience with spikes and slumps

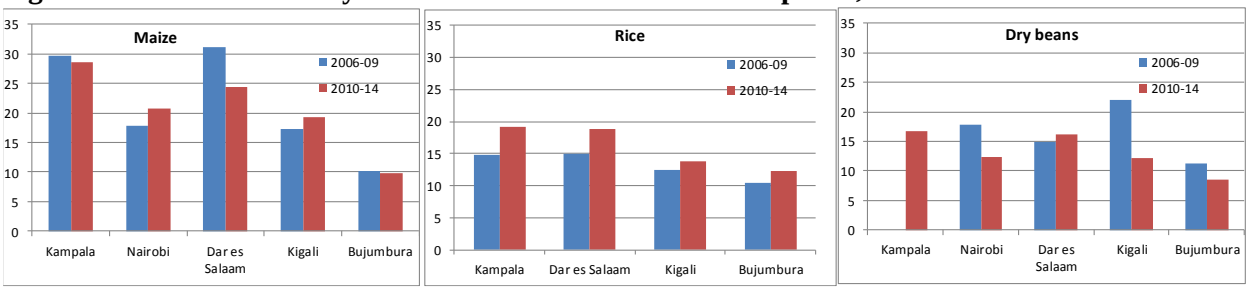
Three related aspects of behaviour of food prices are explored here: the extent of price instability, transmission of price instability, and experience with price spikes and slumps.

How large is food price instability? Is instability falling?

The indicator used for assessing price instability is Coefficient of Variation (CoV) which is computed as the standard deviation of percentage deviations of monthly prices from their quadratic trends. A percentage deviation from its trend value indicates the size of a shock, positive or negative. Correlation coefficients computed from these shocks indicate the extent to which the shocks themselves co-move across the markets. The expectations are that with deeper trade integration CoVs should decline and correlations of shocks should increase.

Figure 5.1.7 displays the CoVs for maize, rice and beans prices. It shows that price instability is higher for **maize** than for rice and beans. Comparing between the two periods, the CoV declined notably only in Dar es Salaam, even increasing slightly for Nairobi and Kigali. Thus, overall, maize prices in the region continue to remain as unstable in period 2 as in period 1.

Figure 5.1.7 Price instability – coefficients of variation of food prices, 2006-09 and 2010-2014



Note: The CoV is computed as the standard deviation of percentage deviations of monthly prices from their (quadratic) trend values. For rice, price data for the Nairobi market were not available.
Source: Authors, based on FAO price data.

For **rice**, prices were more unstable in period 2 than in period 1, with the CoVs increasing for all four markets by between 12 and 30%, despite the fact that the world price of rice became much more stable in period 2 than in period 1 (with the price spike of 2007/08). So the increased instability in period 2 could not be due to the import price. Among EAC domestic reasons, production shocks could be a factor. But uncertainty among traders, farmers and consumers due to the timing of trade policy seems to be an important reason as well. As discussed in Section 5.2, there were periods of confusion about the announcement and timing of tariff reductions (remissions) on the one hand and import control on the other.

In the case of **dry beans**, overall price instability in the region has been of the same order of magnitude as that of rice. However, unlike rice, the CoV for dry beans declined markedly in period 2, from 22 to 12% for Kigali and 18 to 12% for Nairobi.

Are price shocks more strongly correlated in recent years?

Correlation coefficients of price shocks, computed from percentage deviations of the prices from their trend values (Table 5.1.3), indicate the strength of co-movement of price shocks among the five EAC markets. For **maize**, there were no marked differences in the correlations between period 1 and period 2 across the five markets, or, in other words, no notable change in the degree of transmission of instability across the five markets. In the case of **rice**, price shocks were more strongly correlated in period 2 than in period 1. The simple average of the six pairs of correlation coefficients for the four markets increased from 0.35 in period 1 to 0.57 in period 2. Most notable increases were for Dar es Salaam (from about 0.20 to over 0.60), the main rice producer and exporter, and the Kampala and Kigali markets.

Table 5.1.3 Correlation coefficients of percentage deviations of prices from trends

Maize - first period, Jan 2006 to Dec 2009

	Kampala	*Nairobi*	*Dar es Salaam*	*Kigali*
Kampala	1			
Nairobi	0.82	1		
Dar es Salaam	0.57	0.59	1	
Kigali	0.66	0.60	0.50	1
Bujumbura	0.30	0.09	0.04	0.34

Maize - second period, Jan 2010 to Dec 2014

	Kampala	*Nairobi*	*Dar es Salaam*	*Kigali*
Kampala	1			
Nairobi	0.76	1		
Dar es Salaam	0.46	0.55	1	
Kigali	0.72	0.83	0.39	1
Bujumbura	-0.01	0.10	0.44	0.01

Rice - first period, Jan 2006 to Dec 2009

	Bujumbura	*Kigali*	*Kampala*	*Dar es Salaam*
Bujumbura	1			
Kigali	0.08	1		
Kampala	0.31	0.60	1	
Dar es Salaam	0.70	0.16	0.24	1
ThaiA1	-0.14	0.30	0.51	-0.04

Rice - second period, Jan 2010 to Dec 2014

	Bujumbura	*Kigali*	*Kampala*	*Dar es Salaam*
Bujumbura	1			
Kigali	0.31	1		
Kampala	0.56	0.58	1	
Dar es Salaam	0.64	0.67	0.64	1
ThaiA1	0.49	0.56	0.50	0.51

Dry beans - first period, Jan 2006 to Dec 2009

	Bujumbura	*Nairobi*	*Kigali*	*Dar es Salaam*
Bujumbura	1			
Nairobi	0.52	1		
Kigali	0.54	0.36	1	
Dar es Salaam	0.46	0.63	0.20	1.00
Kampala	-	-	-	-

Dry beans - second period, Jan 2010 to Dec 2014

	Bujumbura	*Nairobi*	*Kigali*	*Dar es Salaam*
Bujumbura	1			
Nairobi	0.17	1		
Kigali	-0.03	0.28	1	
Dar es Salaam	0.04	0.22	0.23	1
Kampala	-0.10	0.42	-0.03	0.26

Note: Correlation coefficients are computed from percentage deviations of prices from their (quadratic) trend values.
Source: Authors, based on FAO price data.

For **dry beans**, there were sharp declines in correlation coefficients in period 2, with the only significant correlation between Kampala and Nairobi. Thus, there were instances when a large shock in Kampala, the main exporter, was not transmitted to other markets. For example during May-June 2012, Kampala had a large spike (up to +57% from trend) but price in Nairobi was not affected, while Kigali experienced a price decline and Dar es Salaam a modest increase. Likewise, when beans prices in Kampala collapsed by 35% in November 2013, the price rose by 39% in Kigali, 20% in Dar es Salaam and no change in Nairobi. Why beans price shocks are so poorly correlated is not easy to answer with the information at hand. One plausible explanation could be demand shocks coming from outside the EAC, namely from South Sudan which absorbs a substantial volume of beans from the region, fully obscuring the shocks emanating within the EAC markets.

Experience during price spikes and slumps

Food prices in the region suffer occasionally from price spikes and slumps. The trigger could be shocks from the world market, such as in 2007/08 and 2010/11, but also from domestic harvests and *ad hoc* trade and other policies. In response to the food price crisis of 2007/08, considerable research has taken place all over the world on how to mitigate such shocks as well as how to minimize negative consequences. Some experiences with recent price shocks in the region are discussed here.

During the first global price spike in 2007-08, the world price of **maize** (US yellow #2) increased by $135 per MT, or by 83%, between July 2007 and June 2008. In the region, prices in Kampala and Nairobi reached their peaks at the same time in June 2008 but the spikes were larger than in the world price (increases of $232/MT in Kampala and $174/MT in Nairobi versus $135/MT for US#2). This overshooting seems to be due to a bad timing, i.e. simultaneously with the spike in the world price, the region also suffered from production shocks. Maize output in EAC-5 was lower in 2007/08 by 5% (about 426,000 MT) due to the declines of 10% in Kenya and 4% in URT while there was no change in Uganda

Subsequently, the region suffered a large price slump during December 2009 to August 2010 when maize prices collapsed by 69% in Uganda, 57% in Nairobi, 52% in Dar es Salaam and 55% in Rwanda. As the world price was virtually flat since November 2008, the slump was primarily caused by good harvests in more than one major producing country – output in EAC-5 was higher by 11% (about 812,000 MT) in 2008/09, with large increase in Uganda but also in Rwanda and URT which together more than offset the over half a million MT reduction in Kenya. Harvests turned to be bumper in 2010/11 also, with a massive 31% increase (2.6 million MT) at the EAC-5 level. This experience also demonstrates the lack of mechanisms in the region to hold market prices by withdrawing surpluses from the market, for example through reserves and/or exports.

In the case of **rice**, there were two recent price spikes felt across the region, in 2007/08 and 2011/12. In the first, during the period when the world rice price began to soar, spiked and declined (November 2007 to November 2008), prices in EAC markets behaved similarly but the timing and magnitude of the price increases varied. Prices in Kigali and Kampala followed the ThaiA1 spike with a lag of 2-3 months, which is not unreasonable, but prices in Dar es Salaam peaked two months earlier while those in Bujumbura continued to rise and peaked one year later, when ThaiA1 prices had long reverted to lower levels. Thus, while the timing of the price spikes experienced varied across the EAC countries, their cause was due to the world price spike as there was no harvest shock in the region itself – in fact, EAC-5 harvest was 8% higher in 2007/08.

The second rice price spike in the region occurred during March to June 2012 when rice price reached as high as $1,506/MT in Dar es Salaam and $1,425 in Kampala. This time there was no spike in the world market although the ThaiA1 rice price was also rising for some time. However, the main reason seems to be harvest shocks for two consecutive seasons, 11% reduction at the EAC-5 level in 2011/12 and 17% fall in 2012/13. The reductions in output in those two years (about 500,000 MT) were not fully offset by imports (just over 200,000 MT). The other reason seems to be uncertainty in the market created by announcement on tariff remissions as well as import restrictions.

In the case of **dry beans**, the incidences of price spikes were relatively far fewer. A spike of over 40% from trend occurred only 1-2 times in about 100 months in the five markets and a spike of over 30% only about 4-5 times. There were also no cases of negative deviations of over 40%. As beans prices are poorly correlated across the five markets, transmission of price shocks is limited. For example, the 50-57% price spike in Kampala during May-June 2012 was not transmitted in any other market. Another important factor in price transmission is the role played by large exports to South Sudan, which absorbs large quantities of EAC exports especially from Uganda. In turn, as countries outside the EAC impact on price

shock experienced in the domestic markets of the region, it may be necessary to articulate policy measures at the EAC level to respond to such external shocks to the extent that these undermine EAC market integration and trade.

To conclude this sub-section, the main findings are as follows. First, on market integration, prices of maize and rice in the five EAC markets were found to co-move fairly closely, with somewhat weaker correlations for dry beans. Comparing the correlations over time, the price data only partially support the expectation that market integration is stronger for recent years due to deeper trade integration. Second, food markets were found to suffer from large seasonal gaps, with the problem particularly acute in the Kampala market for maize and dry beans, pointing to problems of storage, credit and competition at the farm and local level markets. Moreover, seasonality gaps have not markedly narrowed for a majority of the cases assessed. Third, price instability was found to be higher for maize than for rice and beans, and generally higher in the main producing/exporting areas than in importing areas. There was an increase in price instability in recent years for rice but no change for maize and a decline for beans.

Several of these findings have implications for policy and management of the food markets. For example, pronounced seasonality of prices point to serious deficiencies in storage, credit and market competition, inflicting high costs for smallholder farmers as well as supply response. This assessment was also confirmed by interviews in field visits. The problem is most acute in Uganda. Second, EAC rice prices have been substantially higher than the world price, much more than could be explained by applied effective CET, indicating market inefficiencies along the supply chain. Both literature and field interviews pointed to uncertainty facing rice traders and farmers due to ad hoc changes in tariff remissions, which also contributed to higher price instability in recent years. The third substantive implication is for the EAC to formulate a policy framework for responding to shocks emanating from non-EAC neighbouring countries, especially for maize and dry beans. Such a framework needs to encompass both trade policy (notably export policy) and rules for institutional procurement and reserves management.

5.2 Progress in the implementation of CU/CM instruments

Trade is addressed in the EAC Treaty in Chapter 11, titled *Co-operation in Trade Liberalisation and Development* (Articles 74 to 78)[33]. For the purpose of this study, the most pertinent provision in Chapter 11 is Article 75, the establishment of the Customs Union (CU). In paragraph 1 of this Article, thirteen trade-related instruments are listed which include: application of the principle of asymmetry, elimination of internal tariffs and other charges of equivalent effect, elimination of NTBs, establishment of a CET, rules of origin, trade remedy measures, customs co-operation, competition, duty drawback, refund and remission of duties and taxes, re-exportation, and simplification and harmonization of trade documentation and procedures. The subsequent paragraphs of Article 75 provide for further instruments and rules, which include the principle of progressiveness with a transitional period in implementing the CU, establishment of authorities, restriction on imposing new duties and taxes or increase in existing ones.

[33] Article 74 states that the Partner States shall develop and adopt an East African Trade Regime and co-operate in trade liberalisation and development in accordance therewith. Article 75 provides the main elements of the Customs Union (CU). Article 76 establishes the Common Market (CM) with free movement of labour, goods, services, capital and the right of establishment. Article 77 calls upon Partner States to take measures to address imbalances in implementing the CU and CM protocols. Finally, Article 78 provides for a safeguard clause that states that in the event of serious injury following the application of various trade provisions, the Partner State shall, after informing the EAC Council, take necessary safeguard measures. It also adds that the Council shall examine the method and effect of the application of existing safeguard measures and take decisions thereon.

While the scope of the EAC integration process is far reaching and extends to all sectors of the economies of the member countries, the scope of this study is limited to certain aspects of these commitments which directly impact on trade in food products, in particular from the perspective of food security. This section discusses the implementation record of these trade-related provisions of the EAC protocols and identifies several issues related to the manner and extent that these provisions have been implemented so far.

Among the many rules and instruments provisioned in the CU/CM protocols, as noted above, the following are identified here for review for being most pertinent for trade in food products and food security:

- Elimination of tariffs on intra-regional trade
- Elimination of non-tariff barriers
- Implementation of a common external tariff
- Harmonization and mutual recognition of standards

5.2.1 Elimination of tariffs on intra-regional trade

The gradual elimination of internal tariffs, adopted in 2005 under the CU, was completed in January 2010. In consideration for the differences in the size and structure of the EAC economies, an asymmetrical tariff reduction approach was adopted with a transitional period of five years. Thus, all of Kenya's imports from URT and Uganda attracted zero tariffs, while exports from Kenya to URT and Uganda were categorized into two lists. Category A goods benefited from duty-free status within the community while category B products (880 importable goods from Kenya to URT and 443 from Kenya to Uganda) were subject to duties until 2010. From 2010 onwards, there were no longer any internal tariffs on intra-EAC trade.

Burundi and Rwanda acceded to the EAC Treaty on 18 June 2007 and started implementing the provisions of the CU from July 2009. Tariffs on trade between Kenya and Burundi and between Kenya and Rwanda had already been eliminated under the COMESA agreement.

While tariffs as such have been eliminated between EAC Member states, all Members except Rwanda have imposed measures with equivalent effect to tariffs which increase import costs or import unit values. These have been of different types including additional taxes and charges (tariff-equivalent measures) and measures related to rules of origin.

Under the EAC CM Protocol, member states undertake to progressively harmonize their tax policies and laws on domestic taxes, with a view to removing tax distortions, *inter alia* for facilitating the free movement of goods within the Community. Individual countries' internal tax systems may differ as taxes (or subsidies) are used as strategic instruments to strengthen the national position "in international competition on location advantages" within the regional community.[34] There are substantial differences in, *inter alia*, the definitions of tax bases and rates in the EAC countries, as well as in experience of VAT implementation. However, as regards the latter, with the exception of Kenya, which charges VAT at 16% on most goods and services, all other EAC members use a standard rate of 18% (URT reduced its VAT rate from 20% to 18% in 2009). [35]
In terms of the overall progress towards elimination of tariffs and equivalent measures, a 2014 study by WB/IFC/EAC gives Rwanda the highest score (91.4%), followed by Burundi (90%), Kenya (85.4%),

[34] EAC Secretariat (2009), *Tax systems and tax harmonization in the EAC*, Arusha.
[35] Kenya introduced VAT in 1990, URT in 1996, and Uganda in 1998, while Rwanda and Burundi adopted the VAT system only in 2009. WTO (2013), *Trade Policy Review*, Report by the Secretariat, East African Community, WT/TPR/S/271/Rev.1, 31 May 2013

Uganda (72.2%) and URT (66%). Of the total cases of reported charges with equivalent effect to tariffs, URT accounts for 40%, Uganda 30%, Kenya 20%, Burundi 10% and Rwanda 0%. These charges were assessed to affect intra-regional trade, especially dairy and other agricultural products. This issue is reviewed in more detail under NTBs in section 5.2.2.

5.2.2 Elimination of non-tariff barriers (NTBs)

While good progress has been made on eliminating tariffs on intra-EAC trade flows, addressing trade restrictive NTBs has been less successful.

Reform of the NTBs was recognized from the start as a difficult task and the CU Protocol had provided for ways to identify, monitor, collate, review and eventually remove NTBs. Article 13 of the Protocol on the *Establishment of the East African Customs Union* urges member states to remove all NTBs, with immediate effect, and not to impose any new ones, as well as to refrain from enacting legislation or applying administrative measures which directly or indirectly discriminate against the same or like products from within the EAC. In addition, member states have formulated a mechanism for identifying and monitoring the elimination of NTBs.

The mechanism required countries to establish National Monitoring Committees (NMCs) on NTBs, including private sector representatives. The NMCs receive complaints from businesses and try to solve the issues bilaterally first and only at a later stage refer the disputes for resolution to the Regional Forum on NTBs at the EAC Secretariat. At the regional level, the Regional Forum meets first, followed by a dedicated Ministerial meeting on NTBs. The *EAC Elimination of Non-Tariff Barriers Bill, 2015* was finally enacted by the East African Legislative Assembly (EALA) on 24 March 2015 during the Assembly's session in Bujumbura following intense debate by legislators.

Monitoring of systemic NTBs

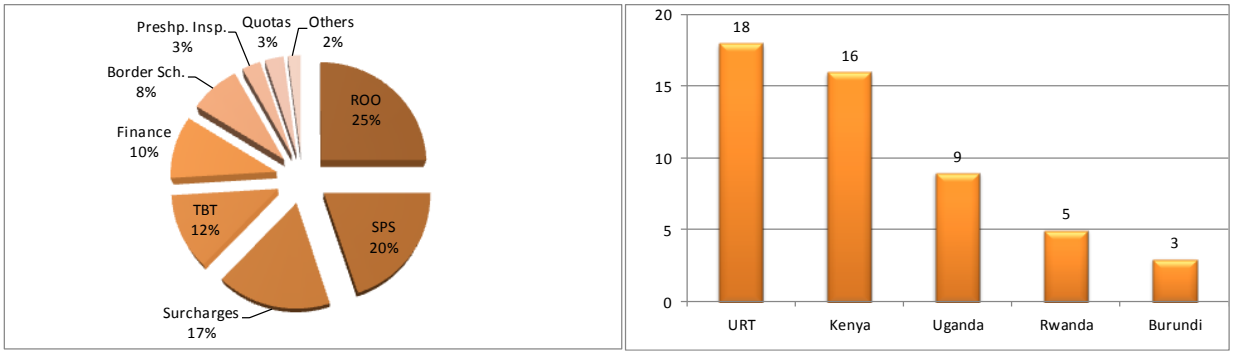
The EAC Secretariat regularly publishes quarterly reports on NTBs, titled *Status of Elimination of NTBs within the EAC*, the 7th and latest issue published in September 2014. These publications report in long tables the current status of NTBs in three categories: i) unresolved cases; ii) new reported NTBs; and iii) cases resolved to date.

The publications highlight what has been achieved in resolving NTBs. They provide information on specific NTBs, arguments made by the source and affected countries and the specific solution sought. The reports also help track progress over time and they are seen as means for galvanizing more support for the removal of NTBs.

Most NTBs are well known, although there is no perfect uniformity in how various agencies and researchers classify them, but most classifications are close. Figure 5.2.1 (left panel) shows the status of NTBs for the EAC region, based on the UNCTAD classification of NTBs. It shows that during 2008-13, the categories with the most unresolved NTBs were Rules of Origin, SPS and various surcharges, followed by TBT and other barriers.

Although less explicit in the graph itself, the following is a prominent list of NTBs reported in various EAC-related studies: customs and administrative documentation procedures; cumbersome inspection requirements; police road blocks; varying trade regulations; varying, cumbersome and costly transiting procedures; duplicated functions of agencies involved in verifying quality, quantity and dutiable value of imports and exports; and business registration and licensing. Included in these categories, and very prominent even in official meetings, is the problem of bribes.

Figure 5.2.1 Reported NTBs by category (left graph) and their number (right graph), 2008-13

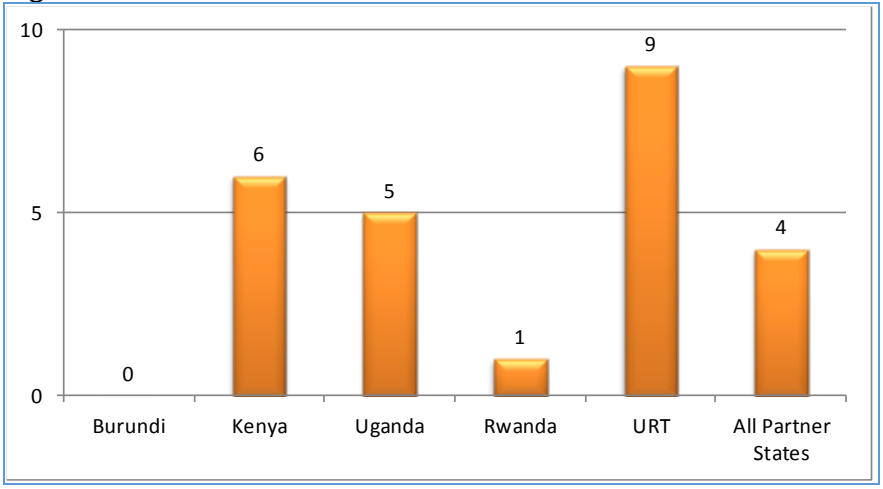


Source: WB/IFC/EAC (2014), from EAC Timebound Program, UNCTAD, World Bank staff calculations.

Figure 5.2.1 (right panel) shows the number of NTBs by country pending to be eliminated during 2008-13, as documented in the WB/IFC/EAC study. Of the 51 reported NTBs, URT accounted for 18 (35% of the total), Kenya 16 (31%), Uganda 9 (18%), Rwanda 5 (10%) and Burundi 3 (6%). As regards resolved versus unresolved NTBs, Kenya had the most unresolved NTBs (7), followed by Uganda (5), URT (5), Rwanda (3) and Burundi (1). Also Kenya had the most NTBs involving SPS measures, while URT and Uganda had the most involving rules of origin (RoO). As may be expected, the larger the volume of trade of a country, the greater the number of NTBs, whether resolved or unresolved.

In the September 2014 issue of the *Status* report, a total of 22 NTBs remained unresolved, eight new NTBs were reported and 69 NTBs were reported resolved. Three months later, at the 16th Regional Forum on NTBs in December 2014, 18 NTBs were recorded as unresolved, 4 NTBs recorded as new and 79 NTBs recorded as resolved cumulatively. Thus, in three months, there were 4 fewer NTBs to be unresolved, 4 fewer NTBs were recorded as new, and 10 more NTBs were recorded as resolved cumulatively. Of the unresolved NTBs, 9 concerned URT, 6 Kenya, 5 Uganda, 1 Rwanda and none Burundi, while four NTBs concerned all partner states (Figure 5.2.2).

Figure 5.2.2 Number of unresolved NTBs as of December 2014



Note: There are NTBs imposed by One, Two, Three, and Four Partner States which means the number of NTBs reflected above cannot be counted to obtain a total of 18 unresolved NTBs.
Source: EAC (2014), *The status of elimination of NTBs in East African Community*, EAC Secretariat.

NTBs involving specific food and agriculture products

Given the focus of this study on food and agriculture, what follows reviews the NTBs as reported in the EAC reports by first focusing on those cases where specific food and agricultural products are involved directly (Table 5.2.1).

Table 5.2.1 Status of the EAC Time Bound Programme on elimination of NTBs – cases directly involving food and agricultural products (as of September 2014)

Product affected	Nature of NTB	Source of the NTB	Affected country	Status/resolution
a) NTBs not resolved				
- Beef & beef products	Ugandan restriction of beef & beef products from Kenya	Uganda	Kenya	Dispute not resolved
- Tea	Non-recognition of SPS certificate	Kenya	Uganda & Burundi	Asked to recognize certificate
- Cigarettes	Local content requirement (75% local tobacco)	URT	Kenya	URT to repeal the law by June 2015
- Rice	Non-adherence to EAC RoO	Rwanda & Uganda	URT	Asked tp adhere to EAC RoO
- Dairy products	Numerous monetary charges levied on imported products	URT	Kenya	Members' various charges yet to be harmonized in EAC
- Sugar	Prior permission for imports and costly registration fee	Kenya	Uganda	Reply - requirement is not discriminatory
b) New NTBs reported				
- Sugar/ glucose	Charging of 25% duty on products manufactured in Kenya using glucose imported under EAC duty remission	Uganda	Kenya	Uganda to study Kenya's evidence and report back
c) Resolved NTBs				
- Milk and milk products	Holding, retesting milk and milk products bearing quality marks and imposition of import quotas	Kenya	Uganda & URT	Issue resolved
- Day old chicks	Kenyan import ban on Ugandan day old chicks	Kenya	Uganda	Kenya has lifted the ban
- Food products	Cumbersome testing procedures for food exports and imports into Tanzania	URT	Kenya	URT has simplified the procedures
- Dairy	Uganda's charging of 1.5% dairy levy	Uganda	Kenya	Uganda said this is a domestic tax. Resolved
- Milk	Uganda's certification procedures on milk exports from Kenya	Uganda	Kenya	Resolved – milk is allowed as long as it has certification
- Tea	Delays in issuing bonds at Kenya-Uganda border for tea meant for Mombasa auction	Kenya	Rwanda	Resolved - Kenya is issuing the Bonds
- Farm products	Kenya's import levy on farm products from Tanzania	Kenya	URT	Kenya has abolished the levy
- Rice	Imposition by Uganda of 75% CET (or $200/ton) on rice wholly produced in Kenya	Uganda	Kenya	Resolved – Kenyan grown rice gets full EAC preferntial access
- Food products	Export restriction by Burundi	Burundi	Rwanda	Prohibitions abolished
- Rice, small fish and palm oil	Export restriction by Burundi	Burundi	Rwanda	Resolved
- Tea	Kenyan requirement that Ugandan tea for Mombasa auction should be stored at 3 selected Customs Transit Go-down in Mombasa.	Kenya	Uganda	Kenya to abolish this requirement.

Source: Compiled from *Status of Elimination of NTBs as of September 2014* (EAC 2014). http://www.eac.int/trade/index.php?option=com_docman&Itemid=132

In relation to agricultural products, as of September 2014, there were six cases of the NTBs not resolved, one new case and 12 cases of resolved NTBs (Table 5.2.1). The table also shows the nature of the NTB, source and affected country and final status and recommendation. Prominent commodities involved are rice, sugar, dairy products and tea. As regards the nature of the NTBs (second column), a rough count of the various measures shows the following: 7 cases of para tariffs and charges, extra levy, import registration etc.; 6 SPS-related cases such as non-recognition of certificates and testing procedures; 2 cases of tariff and levy on intra-trade despite the CU; 2 cases of export restrictions; and one case each of the following - import ban, import quota, local content requirement, and Rules of Origin.

A reading of the status/resolution (details in the *Status* reports) shows that most if not all NTBs appeared to be non-compatible with the CU rules and so it was fairly easy to withdraw them. In other cases, it was said that countries acknowledged the non-compatibility of the measures but argued that domestic legislation and/or essential infrastructure sometimes delay the lifting of these NTBs. That being the case, one is left with the impression that the prospect of removing remaining NTBs is good. In large part this is because most of these NTBs are stated in a transparent way which shows the lack of compatibility with EAC CU rules. The problem arises when NTBs are not clearly stated and it is difficult to point to specific incompatibility. Several generic NTBs, e.g. bribes, are of this difficult category.

Cost of NTBs

The cost of NTBs has also been a subject of concern and analysis. A recent survey conducted in 19 countries in EAC, COMESA and SADC on the real impact of NTBs on intra-regional trade established that on average 20% of shipments in a year faced some form of NTBs. The average direct additional cost of NTBs per shipment was $3,500, excluding bribes, while companies spent approximately $145,000 per month on employees' time and accommodation costs due to NTBs and delays.

One study, based on 2007/08 data, looks at the cost of NTBs in relation to total transfer cost, including transportation. These costs account for 35% of total transfer costs in Kenya, 12% in URT, and 55% in Uganda. NTBs are less costly in URT, according to this study, than in the rest of East Africa (RESAKSS, 2009, p. 23). However, this is partly because transport costs are so high in URT. Also the study lumps together bribes and legitimate transfer costs.

A World Bank study estimates the average cost of bribes in URT in 2007-2008 to be $3.84/MT. Of this, $0.48 is the estimated cost of delays in terms of tied up capital and driver time (World Bank, 2009, pp. 54-55). Overall, the results for URT are similar once differences in methodology are taken into account. That is, NTBs take up about 10% of the total transfer costs, the rest being transport (74%), handling (10%), cess (3%), storage (2%), and drying (1%) (World Bank, 2009, p. 44). None of these studies, however, takes into account the fact that these delays may result in the trader missing market opportunities, which are more difficult to measure. One key purpose of the WTO Trade Facilitation Agreement is eliminating NTBs. Box 5.1 introduces the Agreement as well as preparations of the EAC countries towards complying with the Agreement.

5.2.3 Implementation of the Common External Tariff on sensitive food products (SnPs)

As per Article 12 of the EAC CU Protocol, a Common External Tariff (CET) has been adopted with a three-band structure - 0% for raw materials, 10% for intermediate goods, and 25% for finished goods. As part of this process, a total of 59 tariff lines (at HS8 level) including all products have been designated as EAC sensitive products. Of these 59, 28 tariff lines are for basic foods (Table 5.2.2). The CET rates for these sensitive food products (SnPs) are in most cases substantially higher than the 25% maximum rate for non-sensitive products.

Box 5.1 WTO Trade Facilitation Agreement and EAC countries' compliance

Both physical and institutional constraints hinder the smooth flow of trade. These constraints are of concern to all countries and hence the need at the international level to agree on trade facilitation measures aimed at enhancing countries' ability to compete in international markets by reducing uncertainty, lowering the cost of trading and maximizing efficiency, while safeguarding legitimate regulatory objectives. The WTO negotiations on a Trade Facilitation Agreement (TFA), concluded at the Bali Ministerial Conference in December 2013, are an important step in that direction. The TFA contains provisions for expediting the movement, release and clearance of goods, including goods in transit. It also sets out measures for effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues. It further contains provisions for technical assistance and capacity building in this area. The TFA will enter into force once two-thirds of the WTO members have completed their domestic ratification process.

As members of the WTO, EAC countries are committed to implement the TFA. However, as either developing or least-developed countries (LDCs), they can benefit from the special and differential treatment (SDT) provisions of the TFA that allow the classification of provisions of the Agreement under three categories: Category A are those provisions that members will implement by the time the Agreement enters into force (or in the case of a LDC member within one year after entry into force), those to be implemented after a transitional period following the entry into force of the Agreement (Category B), and those to be implemented on a date after a transitional period following the entry into force of the Agreement and requiring the acquisition of assistance and support for capacity building (Category C).

To benefit from SDT, developing and LDCs have to categorize the various trade facilitation measures and identify those that they will only be able to implement upon the receipt of technical assistance and support for capacity building. The EAC Secretariat is guiding the national consultative processes in building up a matrix of provisions under the three categories required by the TFA prior to their notification to the WTO Secretariat. While this consultative process is still on-going, as of March 2015, out of some 36 measures being considered, on average some 31% were in Category A, 29% in Category B and the remainder 40% in Category C.

Category C being the largest is indicative of the importance placed by the EAC countries on the need for technical assistance and capacity building as a pre-condition for fully implementing the Agreement. What is also worth observing is that there is no uniformity among EAC countries as regards the classification of measures between the three categories. The five countries' classification of measures under Category A ranges from 14% to 44% of all measures, for Category B from 17% to 47% and for Category C from 25% to 60%. These differences as regards individual countries' assessment of their capacity to comply with the various provisions of the TFA reveal also the difficulties they still face for an effective intra-regional cooperation between customs and other related authorities on trade facilitation and customs compliance issues.

Source: Authors, based on data reported in EAC Secretariat reports.

Before discussing issues on implementation of the CET, one pertinent observation should be noted. All EAC countries are original members of the WTO and so had their own schedule of commitments on tariffs and internal support measures. There is no uniformity among countries especially for individual agricultural commodities. While the WTO bound tariffs of all EAC countries are generally high, one potential problem that they may face is that the EAC CET could exceed their individual WTO bound rates, which will not be WTO-compatible. This may be the case for the nine tariff lines of SnPs (rice and

sugar) for which applied mixed tariffs under the CET may exceed bound *ad valorem* rates, depending on the unit import price of the product (Table 5.2.3).

Table 5.2.2 EAC CETs for sensitive food products

Product	HS number	# lines (HS8 level)	CET %
Milk, cream	0401/0402	12	60
Wheat, meslin	1001.90.20 +.90	2	35
Maize grain	1005.90.00	1	50
Rice 1/	1006	4	75
Wheat & meslin flour	1101.00.00	1	60
Maize flour	1102.30.00	1	50
Sugar 2/	1701.11.90;.12.90;91.00;99.10;99.90	5	100
Jaggery	1701.11.10 +.12.10	2	35
Total		28	-

1/ For rice, the CET is a compound tariff of the 75% *ad valorem* rate or US$200/MT, whichever is higher.
2/ For sugar, the tariff is 100% *ad valorem* or US$200/MT, whichever is higher.
Source*:* EAC Secretariat.

Table 5.2.3 SnPs for which applied MFN rates may be higher than WTO bound rates, 2011

HS code	Description	Applied MFN tariff (higher rates applies in all cases)	Bound rates (%)				
			Burundi	Kenya	Rwanda	Uganda	URT
10061000	Rice in the husk (paddy or rough)	75% or $200/MT	100	100	80	80	120
10062000	Husked (brown) rice	75% or $200/MT	100	100	80	80	120
10063000	Semi-milled or wholly milled rice, whether or not polished or glazed	75% or $200/MT	100	100	80	80	120
10064000	Broken rice	75% or $200/MT	100	100	80	80	120
17011190	Cane sugar: other than Jaggery	100 % or $200/MT	100	100	80	80	120
17011290	Beet sugar: other than Jaggery	100 % or $200/MT	100	100	80	80	120
17019100	Other than raw sugar: containing added flavouring or colouring matter	100 % or $200/MT	100	100	80	80	120
17019910	Other than raw sugar: sugar for industrial use	100 % or $200/MT	100	100	80	80	120
17019990	Other than raw sugar: other not including sugar for industrial use	100 % or $200/MT	100	100	80	80	120

Source: Adapted from WTO (2013), Table III.4.

Experience up to now in the implementation of the CET for food and agricultural products has brought to surface certain difficulties. One basic issue of contention is the level of the CETs for sensitive products, considering that the members of the EAC (or any CU for that matter) rarely have uniform product sensitivities. Thus a common CET becomes a source of divisiveness, especially if the CET level is

substantially different from the applicable tariff prior to the CU. Table 5.2.4 shows that for the sensitive cereal products the CET rates are substantially higher than the tariffs applied by individual countries prior to the formation of the CU, but not uniformly so for all.

Table 5.2.4 Post-2005 CETs for SnPs compared with 2003 applied tariffs of three EAC countries

		National tariff rates, 2003 (%)					
		Kenya		Tanzania		Uganda	
Product	**EAC CET %**	**MFN**	**EAC**	**MFN**	**EAC**	**MFN**	**EAC**
Milk, cream	60	25	2.5	26 *	5 *	15	6
Wheat, meslin	35	35	3.5	10	2	0	0
Maize	50	25	2.5	25	5	7	4
Rice	75 **	35	3.5	15 *	3 *	15	6
Wheat & meslin flour	60	35	3.5	25	5	15	6
Maize flour	50	15	1.5	25	5	15	6
Sugar	100 **	100	10	25 *	5 *	15	6
Jaggery	35 **	15	1.5	25 *	5 *	15	6

* Various surcharges apply – see Stahl (2005). ** Compound tariffs (see Table 5.2.2).
Source: Adapted from Stahl (2005).

On the subject of maintaining a list of sensitive foods as part and parcel of the CU/CM policy, a number of questions were asked to stakeholders in the special survey conducted for this study. The first question was *whether there is a rationale for having a sensitive list with higher tariffs?* The response was overwhelmingly, as high as 96%, affirmative. Many respondents provided reasons for taking this position. The most common rationale given was the classic infant industry argument, that the EAC agriculture has potential to grow but this requires extra protection. About one third of those who said so explicitly used the phrase "infant industry". Some added that protection should be time-bound. The other prominent rationale given was that the demand for food in the region will grow faster and so domestic productive capacity needs strengthening. The need for safeguarding small farmers and small businesses was also mentioned by some. One view expressed went so far that it called for extending the higher tariffs on SnPs to all food products.

To a question whether the EAC list of SnPs and their tariff rates are primarily based on the interest of their own country or the broader EAC integration, 80% of the respondents said it was the latter.

Stakeholders were also asked whether the current list is too long, or too short, or about right. To the question *whether more foods should be added to the current sensitive list,* views were divided. Half of the respondents said yes to adding more food products. Among the foods named included spices, seafood products, fruits, vegetables, live animals, ground nuts, cassava and its products, as well as sorghum, beans and poultry. Some even suggested cotton and agri-inputs. One suggestion was to add all domestic crops including matoke, beans and potatoes. Another suggestion was that the sensitive list should be linked to the risk of dumping.

The other half of the respondents did not wish to add any more food in the list. Reasons given included that the current list already covers all sensitive food security products as well as those with high demand in the region. One view was that there is no rationale for adding other products as the region currently lacks comparative advantage in many products with low scope for realizing economies of scale over the medium term.

A related question asked was *whether the current sensitive list should be shortened?* Sixty percent of the respondents replied in the affirmative while the rest did not wish to see the list shortened. Those in support for a shorter list identified various foods for deletion: delete all current sensitive foods (i.e. no sensitive list); delete all dairy products; delete sugar and rice; and delete wheat. One respondent listed the following foods for deletion: maize and wheat and their flours, several dairy products, rice and sugar/jiggery. Other comments suggested that any change in the list would be meaningful only after a careful analysis is done, and that there should be a time limit for a product to be in the list (the classic infant industry argument).

A second contentious issue, very much related to the level of the CETs, is the flexibility for discretionary adjustment of the CETs upon request by a member country. The use of the flexibility provision has increased considerably in recent years. This practice creates an unfair playing field for those who do not seek and use the flexibility and also undermines competition and effectiveness of the CET itself (Sharma, 2011).

The flexibility for adjusting applicable CETs is envisaged in the CU Protocol where it is said that upon the agreement of the EAC Council of Ministers (CoM), the Parties may "review the common external tariff structure and approve measures designed to remedy any adverse effects which any of the Partner States may experience by reason of the implementation." There are two possibilities for the discretionary application of the CET rates on a temporary basis.

First, under the "stay application" provision, the EAC CoM can accept a new CET upon the request of a member, which essentially amounts to a temporary suspension of the EAC CET. The new rate should be published in the EAC Gazette. Second, there is the "duty remission" provision designed specifically for domestic manufacturing firms. For this, a list of manufacturers and quantities entitled to the duty remission are approved and published in the EAC Gazette. A restriction is placed whereby the finished products manufactured from the raw materials benefitting from duty remission attracts duties, levies and other charges provided as per the EAC CET when sold in other member countries.

According to WB/IFC/EAC (2014), for all products, there were a total of 172 temporary stays of application during June 2011 and June 2013, with breakdown as follows: 56 (33%) for Rwanda, 41 (24%) for Kenya, 35 (20%) for Uganda, 11 (17%) for Burundi and 11 (6%) for URT. The study came to a number of conclusions. First, the stays of application affected only a small proportion of EAC imports, in the 1-3% range across Partner States. Second, the average duration of the applied measures was about one year. Third, the top products for stays of application were automotive (trucks, buses and cars), wheat, wheat flour and rice, and none was among the top goods produced by Partner States except to some extent for rice (URT and Rwanda) and wheat (Uganda).

Table 5.2.5 presents statistics on stays of application for selected sensitive food products during the four financial years, 2011/12 to 2014/15. It is clear that Members sought stays the most for wheat grain. Also prominent is continued stays sought by Kenya for rice. The table also shows stays associated with quotas, similar to a Tariff-rate Quota (TRQ), granted to Burundi, whereby the reduced tariff is applicable to a specified import volume only. In all cases, the stays are granted for one year (financial year).

An FAO study on EAC CET, focused on cereals and covering 2005-2011, illustrates some of the reasons provided by EAC members while requesting tariff exemptions (Vitale et al. 2013):

- Rice – the desire on the part of Kenya to provide to Pakistan better market access to its rice market, in return for better access for Kenyan tea to the Pakistani market. Thus, Kenya applied only 35% duty to Pakistani rice. This was later extended to all rice exporters who were facing the higher CET.

- Maize – the global food price crisis of 2008 when Kenya and URT obtained full tariff remission (duty free) for maize imports during the first half of that year. Kenya used full remission again during January 2009 to June 2010 following a bad harvest and soaring domestic prices.
- Wheat –wheat imports have enjoyed duty remissions most of the years and in most EAC members, thus applied tariffs have been effectively lower than the 35% CET, prominent reasons being the two spikes in the world price and domestic supply-demand imbalances.
- Wheat and maize flour –CETs on these products have not been targeted for revisions, even in times of severe shortages. Instead, governments have opted for importing raw grains for processing so as to sustain domestic milling capacity. This clearly seemed to be the reason for the absence of stay requests for wheat flour by Kenya, URT and Uganda, all with substantive processing facilities.

Table 5.2.5 Reduced CETs under "Stay of Application" provision for selected EAC sensitive food products during 2011 to 2014 (tariff rates in %)

Country	Rice	Wheat grain	Wheat flour	Maize grain	Maize flour
Kenya	35% 2011-14	10% 2012			
Uganda		0% 2011&12 10% 2013&14			
URT		0% 2011&12 10% 2013&14			
Burundi	0% 2012 30% 2013	0% 2012 (Q) 0% 2013	35% 2011 0% 2012 (Q) 0% 2013	0% 2012 (Q)	0% 2012 (Q) 30% 2013 (Q)
Rwanda	30% 2011-13 45% 2014	0% 2013&14	35% 2011-13		

Notes: The years refer to EAC financial year, i.e. 2011 means 2011/12 (1 July 2011 to 30 June 2012) and so on. In all cases, the CET stays are for one year. The letter "Q" with some products for Burundi refers to Quota, i.e. reduced duties apply to a specified import volume (similar to a tariff-rate quota). The full CET rates for these products were given in Table 5.2.2.
Source: Authors, compiled from EAC Gazettes for 2011 to 2014 (June issues).

The survey of stakeholders undertaken for this study included three questions on the provision of tariff exemptions. On *stays of application for food security reasons*, almost 70% of the respondents were of the view that this flexibility is desirable. One prominent rationale given was that trade policy should be flexible and responsive to market demand and affordability considerations. Also mentioned was the need for protecting consumers from frequent price spikes. Comments made by the other 30% who did not favour the provision pointed to its *ad hoc* nature which has disrupted the normal functioning of the national and regional food markets rather than strengthening the markets, eventually undermining the process of integration. Another comment was that this practice has been exploited by traders and middlemen rather than benefitting consumers as intended.

As for the *tariff remissions aimed at agro-industry*, about 80% of the respondents favoured this provision, mainly on infant industry argument, i.e. that the EAC agro-processing sector needs affordable raw materials to be competitive, to grow and to realize the economies of scale. Those who did not favour the provision made the argument that remissions are exploited by middlemen to make profits rather than benefitting the industries, or consumers or other groups in the supply chain. As above, it was also said that this practice distorts markets and hinders regional trade integration. The importance of regular review

of the provisions was also emphasized taking into account changes in member countries' policy and trade integration with other RECs in the region, namely the COMESA and SADC. One respondent called for linking this provision to the EAC Industrial Policy.

Setting an appropriate level of tariff on a sensitive product is never easy even for individual countries not belonging to a CU. This becomes a real challenge when it comes to setting CETs for a CU, as the number of stakeholders (traders, processors, farmers and consumers) whose product sensitivities often vary and make it very difficult to find common ground. Inflexible across-the-board common tariffs pose difficulties for individual partner countries being in different stages of development, with different production capacities and public policy objectives, especially in the delicate area of food security. Inflexible CETs limit the policy space, particularly in periods of instability in the world market. For this reason, there is a widespread support for some flexibility in most developing countries. The main worry is that flexibility provisions are misused and decisions made at the political level in an *ad hoc* manner.

The EAC has a built-in programme for the review of CETs, including both the overall CET rates and flexibility provisions. Presumably in view of the difficulties in addressing the complex issues, as noted above, the Summit of Heads of State in 2012 extended the period of review of the CET to 2015. Some of the proposals include reduction of import duty on food supplements from 25% to 10%, and reduction of import duty on raw materials used in the manufacture of animal and poultry feeds from 10% to zero[36]. It is understood that a group of experts from the five EAC counties are presently reviewing the CET levels with the view to present their findings and recommendations to the Member states in the course of 2015.

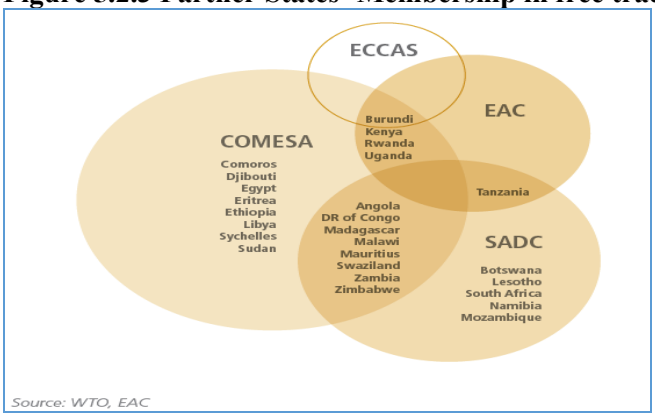
Stakeholders in the survey for this study were asked for their views about the desirability of some rule-based formula for triggering *tariff stays* and *remissions.* The respondents were asked how these provisions could be made less *ad hoc* and more rule-based, for example, by basing the tariff reductions on: i) forecast of supply shortfalls at the regional, not national, level; ii) variations in world market prices; and iii) both. Somewhat surprisingly, 44% of the respondents selected regional shortfalls as the trigger and only 6% the world price. The remaining 50% favoured using both triggers. The ongoing efforts by the EAC Secretariat is to put in place regional food balance sheets for all important foodstuffs and to use them for *inter alia* regional trade policy decisions.

A third CET-related issue is the perforation of the common tariffs due to participation of the EAC members in other FTAs in the region (Figure 5.2.3). In addition to EAC, Burundi is also a member of COMESA and ECCAS, Kenya is also a member of COMESA and IGAD, Rwanda is also a member of COMESA, URT is also a member of SADC, while Uganda is also a member of COMESA and IGAD. This means that EAC Members may apply different external tariffs than the EAC CET, thus diluting the latter. Resulting conflict between members of different blocs of jurisdiction leads to legal uncertainties where more than one agreement applies. In practice, it is impossible for a country to apply two different CETs and be a member of two CUs.

A review by the WB/IFC/EAC study concludes that the perforation of the CET as a result of EAC countries' membership in other FTAs does not affect a particularly high share of trade. Overall, the analysis finds that only a relatively small share of trade (6.5% - 13.5%, depending on the country) is with countries of these FTAs outside the EAC CET (WB/IFC/EAC, 2014). What is not indicated is the commodities responsible for such perforation of the EAC CET, and whether this includes largely food commodities or non-food commodities. Also, most probably, the above share is much higher for food products.

[36] *The EastAfrican*. http://www.trademarkea.com/external-tariffs-review-pushed-to-2015

Figure 5.2.3 Partner States' Membership in free trade areas



Source: WB/IFC/EAC (2014).

It is likely that processed products will be affected more due to differences in Rules of Origin (RoO) in addition to differences in CETs. For example, while URT importing maize-meal from, say, South Africa (a SADC partner) applies zero tariff and uses SADC RoO, Kenya importing the same commodity from South Africa would apply the EAC CET but no RoO will apply. Similarly, while Kenya trading with Ethiopia (a COMESA partner) would apply zero tariff and the COMESA RoO, URT trading with the same would use CET tariffs and no RoO. In both cases, however, once the goods enter the EAC territory, the goods can move anywhere within the Member countries. Hence, in theory at least, to the extent that EAC CETs are high, which is the case for most food products, the law of least resistance would prevail and goods would come into the EAC from these "semi-third" countries paying no tariff at all. Of course this would make sense to the extent that the extra cost for moving goods from one EAC country to another is less than the EAC CET, i.e. in the case of maize-meal, to the extent that transporting from URT to Kenya costs less than Kenya paying the CET and importing directly from South Africa.

The combination of different CETs and different RoO among different FTAs in east and southern Africa creates a really intractable situation and real impediment to the certainty that agents in the trading business would wish to have. EAC member countries are usually torn between competing regulations and commitments and thus end up having to devote more time and resources on managing regional integration rather than actually participating in it. This can be a real source of policy inconsistencies as countries grapple with multiple loyalties. It also complicates revenue administration as differing tariff rates prompt many importers to declare their imports under the lowest tariff regime, which has led to massive smuggling and customs fraud. Such losses arising from fraud and other "spillages" have been estimated in millions of dollars (Odhiambo, 2011). A solution to this problem may come from the proposal to create a larger free trade area bringing together SADC, COMESA and the EAC.

The stakeholder survey for this study had three simple questions on perceptions about the Tripartite FTA. On the overall perception about the Tripartite FTA, 100% of the respondents replied positively by saying that this FTA is desirable from the standpoint of the ECA countries. Likewise, all respondents replied that the Tripartite FTA offers more opportunities for EAC producers and traders. Not a single respondent felt otherwise, i.e. nobody said, for example, that this could hurt the interest of consumers, farmers, industrialists or traders especially on the ground of competition and the loss of market share.

Asked if the formation of the Tripartite FTA should be postponed until the EAC food markets are integrated and competitive, almost everyone said that this should not be postponed. In supporting the Tripartite FTA without any delay, the most common comment made was that this offers much larger trading opportunities with less prohibitive NTBs, and thus also a plus for food security. This presumably reflects a fact that a larger FTA often makes it easier to remove NTBs that are politically difficult to

remove in a smaller FTA. Some comments also recognized that a Tripartite FTA will put to rest the lingering problems due to membership in multiple FTAs. One respondent also recognized that the Tripartite FTA would be the next step towards a continental FTA as called for in the Abuja Treaty.

5.2.4 Harmonization of food standards: is the bar set too high?

The EAC has been especially active in pursuing harmonization of standards in an effort to facilitate trade among Member countries. Harmonization of standards in the EAC region is carried out under the auspices of the East African Standards Committee (EASC)[37] in collaboration with the National Bureaus of Standards in each of the five Member countries[38] and in partnership with commodity-specific organizations and development partners. Development of standards and technical regulations in the EAC seeks to respond to regulatory needs (e.g. security, safety, and environment considerations); market requirements; scientific and technological development; national Government and EAC Council of Ministers' priorities; and export promotion needs (SQMT Act of 2006). Thus, standard setting and their harmonization across the EAC region are important factors not only for the quality and safety of food consumed but also for avoiding unjustifiable barriers to intra-regional trade, as well as securing access to global markets.

In the food sector, as called for by Article 38 of the Protocol on the Establishment of the East African Community Customs Union, the EAC Protocol on Sanitary and Phytosanitary Measures has been concluded and recently approved by the EAC Heads of State and Partner States in July 2013[39]. The EAC SPS protocol was developed with a view to protecting human, animal, and plant live and health, and promoting trade in agri-food products. Its objectives include: establishment of a framework to guide the development, adoption, enforcement, and harmonization of SPS measures within the Community in accordance with the provisions of the WTO-SPS Agreement; provision of a framework for operation and implementation of the EAC harmonized SPS measures; establishment of pest-free areas, and promotion of safe trade in agricultural products within the region and with others (WTO 2013).

The development of regional standards in basic staple commodities such as grains and pulses involved the Eastern Africa Grain Council (EAGC), the USAID East Africa Trade Hub and the WFP which has been a main actor as a buyer of grain commodities in the region for its humanitarian assistance operations (see Chapter IV). Standards for some 22 commodities were approved by the EASC in July 2013, concerning food products mostly produced and traded among the five EAC countries or sourced and traded in international markets (12 standards concerned grains and 10 pulses)[40]. These EAGC-approved standards include specifications for mycotoxin (aflatoxin) contamination tolerances, together with various other quantitative limits on measurable quality attributes such as maximum moisture content, foreign matter contamination, discoloration, and maximum allowable share of broken or shrivelled grains. The standards

[37] The EASC was established in accordance with Section 4 of the East African Community Standardization, Quality Assurance, Metrology and Testing (SQMT) Act, 2006 (SQMT Act of 2006).

[38] Bureau Burundais de Normalisation et Contrôle de la Qualité (BBN), Kenya Bureau of Standards (KEBS), Rwanda Bureau of Standards (RBS), Tanzania Bureau of Standards (TBS) and Uganda National Bureau of Standards (UNBS).

[39] Harmonization of standards in the EAC dates back to 1999 when the first standards for wheat flour and maize grains were harmonized.

[40] Maize Grains, Rough Rice –Paddy, Finger Millet, Milled Maize products, Brown Rice, Pearl Millet, Wheat Grain, Milled Rice, Sorghum Grain, Millet Flour, Wheat Flour and Sorghum Flour; standards for pulses include: Dry Beans & Pulses, Dry Soybeans, Dry Whole Peas, Dry Split peas, Chick Peas, Cow Peas, Pigeon Peas, Lentils, Faba Beans and Green Grams. In addition there are harmonized standards for Seed potato, Groundnuts (raw and roasted), Edible corn oil, Edible soybean oil, Edible cottonseed oil, Edible sunflower oil, Edible groundnut oil, Edible palm oil, as well as for Tubers such as cassava, potatoes and derived products.

also include detailed hygiene, packing, and labelling requirements together with instructions for sampling and conformity analysis.

As a general rule, the process of arriving at harmonized regional standards is based on pre-existing national standards taking also into account applicable international norms, in particular those of the Codex Alimentarius Commission, adjusted to reflect the local context. Taking maize as an example, as Table 5.2.6 demonstrates, the EAC harmonized standards, while reflecting pre-EAC national norms, are generally much more demanding than the Codex standard for maize. This is particularly true with regard to maximum moisture content where the EAC standard at 13.5% compares to a 15% under Codex. The EAC standards also include a specification for total defective grain that did not exist in either Kenya or Uganda before harmonization as well as limits for shrivelled grains that also did not exist in either Kenya or URT before harmonization. Also, both of these attributes are not part of the of Codex standard for maize.

The EAC standards for grains and pulses, so developed, are applied to varying degrees by the EAC Member countries. Aside from differences in interpretation and grading methods between countries, the variance in meeting agreed standards is due also to compliance capacity at different levels in the supply chain as well as prevailing market conditions which often provide little incentive for compliance. A case in point is Uganda. Uganda's Agriculture and Market Support (AMS) programme implemented in cooperation with WFP's Purchase for Progress (P4P) is premised on the significant potential that Uganda and its smallholder farmers have to supply national and regional markets (WFP 2013).

Table 5.2.6 Comparison of Current EAC Standards for Maize with National Specifications before Harmonization and that of Codex Alimentarius

	2003 (before EAC harmonization)			Current 2005 EAS		CODEX
	Kenya	Tanzania	Uganda	Grade 1	Grade 2	Standard
Moisture content (maximum)	13.5%	14%	13%	13.5%	13.5%	15%
Aflatoxin (max) Aflatoxin B1 Fumonisin	10ppb - -	10ppb - -	10ppb - -	10 ppb 5 ppb -	10 ppb 5 ppb -	Set by CODEX Commission
Foreign matter Inorganic matter	1% -	0.5% -	1% -	0.5% 0.25%	1% 0.5%	1.5% 0.5%
Broken grains	2%	2%	2%	2%	4%	6%
a. Insect damaged grains	3%	1%	2%	1%	3%	7%
b. Rotten, diseased grains	4%	3.5%	1%	2%	4%	7%
c. Discolored grains	4%	3.5%	1%	0.5%	1%	2%
d. Other colored grains	2%	3%	-	-	-	-
e. Live insect infestation	0%	0%	0%	-	-	-
f. Immature/ shriveled grains	-	-	1%	1%	2%	-
Total defective grain (Sum a to f)	-	**6.5%**	-	**4%**	**5%**	-
Filth	-	-	-	0.1%	0.1%	0.1%

Source: Keyser (2012).

In support of the harmonization process in Uganda, the WFP-supported AMS/P4P programme was launched in 2009 with improving the quality of maize as one of its main objectives, by providing support to the entire value chain of the grain market (i.e. promoting appropriate inputs, good agricultural practices as well as appropriate post-harvest handling activities and technologies). WFP was initially committed itself to buy grade 1 maize of the EAC standard specifications. However, it became almost impossible for WFP to procure grade 1 maize despite being a much preferred buyer than private sector traders as it paid in time and farmers also benefited from other advantages in packaging and transporting grain. In view of

this inability to secure grade 1 maize, WFP's purchasing commitment has been revised under phase 2 of the implementation of the AMS/P4P programme (2011-12). The new strategy established among other things that WFP would henceforth be purchasing grade 2 maize, when grade 1 proved to be insufficiently available. Even so, it has not been uncommon for traders to pass off grade 3 maize as grade 2 in response to WFP's tenders for grade 2 maize (WFP 2013).

While Ugandan farmers are generally aware of quality maize, their ability to produce that quality is limited by lack of suitable and affordable infrastructure for basic post-harvest treatment such as cleaning, drying and storage. The same is the case in other countries of the region including Rwanda and Burundi. Drying at farms and among local traders is still taking place nearly entirely in open air, often on the ground, sometimes on cane mats, and very seldom on plastic tarpaulins or cement slabs. Farmers still depend on dry weather to be able to dry their maize sufficiently. This is particularly the case for the first season harvest when intermittent rains often continue to fall and the risk of deterioration of grain is high[41].

At the same time there is little incentive to bear the cost of upgrading quality either locally or more appropriately at well-equipped regional warehouse facilities[42]. By doing so they would bear an immediate cost and defer sale to a later time, without any guarantee of receiving a higher price due to lack of quality-differentiated markets accessible by the small-scale farmers. Traders' purchasing practices contribute to this phenomenon, with much of regional trade moving informally, primarily as a result of buying activity of traders from South Sudan, DRC and Kenya who buy bulk quantities without regard to quality. Maize at 15.5% humidity may get the same price as maize at 13.5% humidity. Therefore, it is not surprising that farmers make the rational decision to sell generally inferior quality grain to the informal market immediately after harvest. In doing so, however, while farmers meet their need for immediate cash, they have no bargaining power vis a vis traders on the price they receive, having no yardstick of the quality of their produce in relation to an established and uniformly recognized standard. Eventually, the consumer also does not benefit from this process due to the high costs of cleaning and processing the grain which is added to the price paid for what ends to be a generally inferior quality maize.

Another reason for the lack of enforcement of quality grain standards in Uganda is that maize is essentially a food crop grown for trade and cash. Unlike other neighbouring countries, Uganda is not principally a maize eater ('matooke'/bananas, sorghum, rice and millet are the main staple foods) [43]. Yet another constraint faced by farmer organizations in Uganda and elsewhere which dissuades them from investing in upgrading infrastructure is access to finance. Agricultural loans when offered are given in the least attractive terms, bearing an interest rate of up to 25% for 5 years with one year grace period, while a builder can obtain a loan at 16-18% rate for 20 years and with a 5 years grace period.

While informal trade does not comply with any standards, what is traded formally, as exports from Uganda to Kenya for example, must meet the strict EAC standards. For example, in the case of moisture content, Ugandan maize with 14% moisture would be rejected by customs at the Kenyan border as the maximum allowed moisture content of maize imported into Kenya is that of the EAC standard of 13.5%. At the same time, however, there would not necessarily be enforcement of humidity content of

[41] Due to the wet conditions, and the need to replant in the same fields, farmers find it difficult to field-dry crops and they therefore tend to sell it on quickly, at moisture levels above 15%, levels at which it is prone to moulding and development of mycotoxins, notably aflatoxins.

[42] Essentially, upgrading is only possible if the grain is taken at adequately equipped warehouses. The cost of transport, drying and storage has been quoted as 250 UG£/kg which is roughly 100% of the price that the farmer would expect to get selling his low-quality grain informally at the farmgate.

[43] There are some indications, however, that maize is becoming more of a staple in Uganda, with far larger plots of arable land being planted with maize (potentially due to WFP's significant historical procurement activity) and the rising demand from neighbouring countries.

domestically produced and traded maize in Kenya which could exceed the 13.5% EAC limit. The same would be the case for domestically produced and traded maize in Uganda, the moisture content of which would not necessarily respect the 13.5% limit. It is of no surprise that this dichotomy between enforcing strict standards only when maize formally crosses the border while domestically traded maize is practically unchecked, offers a huge incentive for the majority of maize to avoid formal crossings and be transported across in small informal loads by bicycle and other roundabout means.

If this is the case, then the key question to ask is what the value of setting such strict EAC standards is. To the extent that the ultimate objective of setting food standards and harmonizing them regionally is to improve the intra-regional trade environment for basic foods and to ensure that grains of high quality are being consumed, the present situation does not achieve either of these goals. As regards facilitating formal trade between EAC countries, that does not seem to be the case, considering the experience of WFP discussed above as well as private sector formal traders who complain that supplies of maize attaining the EAC standards are hardly available or, to the extent that acceptable quality can be found, it comes at a very high cost.

As regards the second objective, of ensuring that quality grain is consumed in the region, that objective is also unattainable by formal adherence to stringent EAC standards. While such standards are enforced for the relatively small amounts formally traded, whether from another EAC country or outside the EAC, these standards are rarely adhered to by locally produced and traded maize. Taking Kenya as an example again, it has been reported that quality does not seem to be a major concern for the wholesale and retail traders (USAID-KAVES, 2014). Large cereal trading enterprises and millers indicated that local maize often has a lot of impurities (soil and other foreign matter) and poor drying can result in high levels of aflatoxins. Therefore, despite recognizing the importance of standards, de facto, a double standard prevails in the region, whereby formally traded grains are subject to strict EAC standards while locally produced grains are generally not subject to any standards at all.

It may well be the case, therefore, that the average consumer eats worse quality grain with the strict EAC standards in place than what he/she would have consumed with less stringent standards applicable across the board whether for imported or locally produced grain. At the other end of the supply chain, as already mentioned, the stringent EAC standards do not also serve the interests of the farmer, especially the smallholder, who has no means of delivering the EAC standard grain and thus is obliged to sell at the informal market which, being not regulated, is unlikely to be advantageous for him. One respondent described this situation as "traders are always the winners!"

Yet another paradox with the present EAC harmonization policy is the mandatory nature of grain standards, as stipulated by the SQMT Act. This mandatory compliance, however, includes both food safety issues (i.e. maximum aflatoxin levels) but also "secondary" attributes such as broken, discoloured, and shrivelled grains. However, the latter are of no significance to health and in fact are common attributes of grain produced by smallholder farmers[44]. Nonetheless they are excluded, de facto, from the formal supply chain and are obliged to take the informal market route, although they normally pose no risk in terms of food safety. Yet another oddity in the present situation is that the SQMT Act actually commits Member countries to ensure that domestic standards are fully harmonized with the EAC standards, which technically implies that any grain that does not fully comply with EAC minimum

[44] While discoloration and deformed shape can sometimes be indicators of mycotoxin more often this is the result of being dried on mats by smallholder farmers so is perfectly safe to consume. Problems with undersize pips are also common for smallholder farmers as a result of not using fertilizer or other inputs at the right time or in the right quantities (Keyser, 2012).

standards requirements cannot be traded in domestic markets either[45]. This is hardly the case as by all accounts the majority of domestically traded grain does not meet EAC standards.

While harmonization of standards has been an important pillar of the WTO SPS Agreement, harmonization is not the only way to facilitate trade and to improve the quality and safety of food consumed. Standard setting and their harmonization whether regionally or vis a vis global standards needs to take fully into account the capacity of producers (especially smallholder farmers) to comply with them as well as the capacity of inspection agencies to enforce them. Harmonized high standards are of little value if they cannot be implemented and/or be enforced. Worse, such standards can be used as a NTB if full compliance cannot be verified, as is the case with the majority of smallholder farmers in the EAC. Similarly, such standards serve no purpose to the extent that they raise the price of delivering a compliant product beyond the level consumers can afford[46].

An alternative to a strict harmonization of standards is the concept of equivalence, also an important pillar of the SPS Agreement. Equivalence agreements between trading partners entail a recognition that each country's respective standards, despite being different, may achieve similar levels of protection. Such agreements still allow countries to use different standards and different methods of inspecting products. Thus, if an exporting country can demonstrate that the measures it applies to its exports achieve the same level of health protection as in the importing country, then the importing country is expected to accept the exporting country's standards and methods. While system-wide equivalence can be complex to negotiate and achieve, product-specific equivalence is much less onerous and can be a good option for EAC countries to achieve acceptable levels of SPS protection.

5.3 Lingering constraints to intra-EAC trade and stakeholders' perceptions

The flow of commodities traded internationally encounters a variety of obstacles along the supply chain, whether at borders or internally within the exporting and the importing country. Especially in situations such as the EAC where national boundaries are meant to be redundant for trade, the behind the border policies and physical barriers to the smooth flow of commodities become more apparent. As became evident above, beyond the traditionally considered impediments to trade, being border policies and procedures related to customs (such as documentation and inspection requirements), other physical and institutional constraints before or after goods clear the border, are of critical importance. Improving efficiency and predictability throughout the supply chain reduces delays and uncertainty, thereby lowering costs for both importers and exporters.

Analytically, the constraints typically identified as hampering trade between countries whether on an MFN basis or under a regional trade arrangement are often described as being of either "hard" and "soft"

[45] An additional point is that compared with the effort put into regulating regional trade and to enforcing trade standards at border posts, relatively little attention is given to the more mundane task of ensuring quality in domestic markets. It can even be argued that money spent on developing regional standards and mechanisms for controlling what comes into a country is wasted unless matched with effective systems for quality assurance domestically (Keyser, 2012).

[46] These arguments were advanced forcefully by Jensen and Keyser (2012) also in the context of harmonized EAC standards pertaining to milk and other dairy products. New EAC dairy standards, largely based on the Codex Alimentarius, cover raw milk, pasteurized milk, UHT milk, powdered milk, sweetened and condensed milk, butter, yoghurt, and dairy ices and ice cream. Basing standards on the Codex Alimentarius assumes that consumer incomes and production infrastructure in the countries of the region are equivalent to Western levels, which is hardly the case. Moreover, while in developed countries people mainly consume fresh pasteurized milk, in the EAC countries most milk is consumed raw after boiling. Thus, avoidance of bacteria is effectively achieved without the expensive pasteurization process.

type (AfDB 2012). On the "hard" side there are those having to do with supply-side aspects, including quantity, quality and regularity of supplies at competitive prices vis a vis imported supplies from outside the region. "Hard" constraints also include transport networks, road conditions and other logistic infrastructure, quality storage, means for quality control and other basic value-addition processing facilities, ICT systems and related information services, as well as infrastructure necessary for certification of food products so that they meet essential SPS and other technical standards normally demanded by the market.

On the "soft" side of constraints hampering trade are all those rules and regulations leading to lack of harmonization of customs and border procedures, lack of basic means by customs agencies to assess compliance with standards, excessive delays at numerous and unnecessary checkpoints/roadblocks, non-harmonized transportation regulations and vehicle standards, weighbridges along the supply chain, illegal payments to domestic and border officials, lack of awareness of those involved in transport of their legal obligations and rights coupled with a sub-standard institutional capacity (and related human resources) to apply established rules and regulations in an efficient and predictable manner.

By and large, "hard" constraints normally necessitate the building of physical structures and other material infrastructure, which entail long gestation periods to be implemented and become operational, and they are generally expensive, necessitating public and private sector investment and expectations for reasonable returns. Also, as a general rule, the transportation business is fairly well acquainted with what to expect in terms of physical infrastructure. There is a degree of certainty on the conditions prevailing on the ground and how to deal with the difficulties they may entail.

On the other hand, "soft" constraints are thought to be those that can be removed quickly and are relatively inexpensive to alleviate as they do not necessitate the building of infrastructure. In some cases this could require simply issuing administrative decisions and putting in place or deploying existing machinery to enforce them. They can have an immediate and positive effect on trade. However, they often also face resistance from vested interests who can no longer benefit from the status quo. The uncertainty related to the arbitrary application of such "soft" measures and their unpredictable consequences can be highly disruptive to trade flows.

Among 160 countries surveyed by the World Bank (World Bank, 2013), EAC countries ranked in the bottom 60 in the Logistic Performance Index (LPI). Their performance is significantly lower than in advanced countries for customs processing, infrastructure, border services and timeliness, in all of which the EAC countries as a group ranked between 104 and 107 out of 160 countries (EAPC, 2014). Similarly, the five EAC countries were classified in the bottom 60 in the freedom-to-trade index ranking, among 152 countries surveyed[47].

Among the various constraints, high transport costs remain a challenge for the countries of the region, especially for the three landlocked EAC countries. Because of an unpredictable railway system, over 95% of EAC trade moves by road every year. More than 70% of trade between EAC countries traverses two major corridors: Northern Corridor, which links Kenya, Uganda, and Rwanda, and the Central Corridor, which links URT, Uganda, Rwanda, and Burundi. For external trade the Northern Corridor is served by the Mombasa port and the Central Corridor by the Dar es Salaam port. For countries such as Burundi and Rwanda, inland transport costs account for over 70% of the total import/export costs.

Several studies/surveys have analyzed the components of transport costs along the two major transport corridors, including number of checkpoints, average border crossing times, efficiency of the goods clearance process, quality of transport and ICT infrastructure, quality and competence of logistics

[47] http://www.freetheworld.com/datasets_efw.html.

services, manner with which disputes with government agencies have been handled, fairness of customs valuations, accuracy and timeliness of information when regulations change, incidences of corruption and irregular payments to official agencies (e.g. SCEA, 2013; AfDB, 2013, Rwanda National Monitoring Committee on NTBs, 2014, among others)

While the state of road corridors in EAC is considered to be in reasonably good condition compared with the other African sub-regions and there have been marked improvement in recent years, surface transportation costs associated with logistics in EAC region are assessed higher than in any other region in the world (AfDB, 2013). This is mostly attributable to administrative and customs delays at ports and hold-ups at national borders and checkpoints along internal road networks[48].

The variable/fixed cost ratio for trucking businesses in East Africa is around 60/40, compared to 15/85 in developed countries. A higher variable/fixed cost ratio is often an indication of higher transportation cost, especially from informal trade barriers. Some 19% of the trucking companies' total operation cost is accounted for by many unexpected overcharges and bribes being paid at check points and weighbridges on the borders. Irregular payments, commonly known as "speed money", are a common occurrence. They are paid by shippers through their clearing agents to either obtain preferential treatment while dealing with customs or to expedite the customs clearance process. One survey reports that 61% of the respondents indicated that they encounter such incidences and identified the customs and police departments as the leading recipients of these irregular payments with customs at 32% and the police at 28%. It is also the case that small trucking companies (80% of the truck market), which operate on thin margins, are more vulnerable than larger firms to these charges (EAPC, 2014).

Besides direct costs from overcharges and bribes, the indirect costs due to long delays at borders are even more daunting. Among developing countries, the EAC is one of the regions experiencing the longest time delays at borders. One estimate of the average waiting time at the borders of EAC countries is 13 hours which is about 130 times longer than in most OECD countries (EAPC, 2014). Such delays are caused by many factors, including complex cargo-clearance procedures, excessive documentation requirements and inadequate infrastructure. For example, a single trip between Mombasa and Kigali requires 52 documents and signatures. In the United States and Canada, truckers cross the border in less than an hour.

A recent survey of delays between the source and terminal market in the EAC countries is reported in Table 5.3.1, separately for exports and imports. Delays in inland transport are reported high for all EAC countries and especially so for the landlocked (Burundi, Rwanda, and Uganda) for both exports and imports. In terms of the costs of such delays, an important parameter especially for agricultural produce is their degree of perishability. As expected, countries that mainly export and import perishable products (e.g., certain food produce) are affected more compared to those that trade mainly in less-perishable products, such as coffee and tea.

A way of appreciating the high cost of these delays is to express them in terms of "tariff equivalents" which highlight the fact that time delays have similar adverse effects on trade as tariffs do (Hummels et al., 2007). Tariff equivalents of delays, calculated as the product of the per-day delay costs and number

[48] Some of these problems are being recognized and addressed at the regional level. For example, in October 2012, the EAC sectoral council cleared the legal content of two bills for tabling to the East African Legislative Assembly later in the year. The two bills will establish the operation of the planned one-stop border posts and the application of a uniform vehicle weight (axle load) limit for the region (Vehicle Load Control Bill). This should speed up customs procedures and regularize truck loads to reduce deterioration of the road networks (AfDB, 2013).

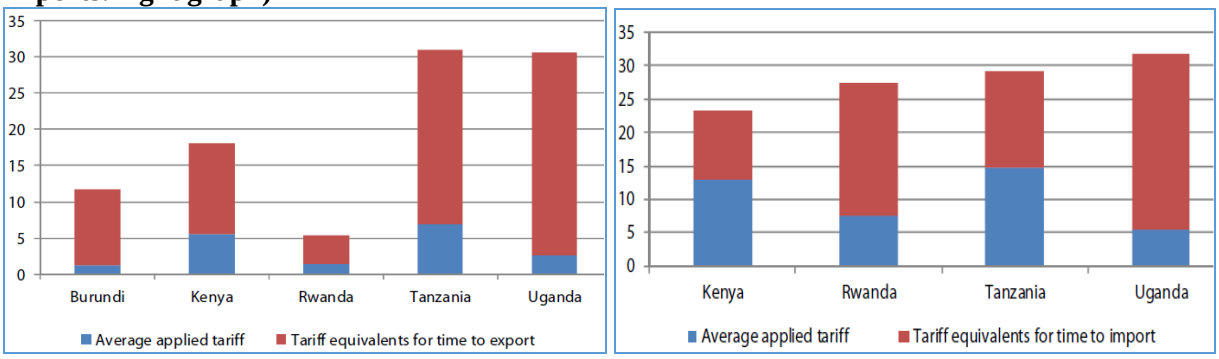
of days of delay, are compared to the applied tariffs faced by importers and exporters (Figure 5.3.1). Compared to conventional tariff rates, the calculated tariff equivalent of trade time delays are much higher for all countries and for both exports and imports. In the case of exports, the implication of the high tariff equivalents of trade delays is to reduce the competitiveness of exports from the EAC in international markets. On the import side, while the high cost of tariff equivalent of trade delays make imported commodities more expensive than what otherwise would have been (consequently providing some support to import substitution), this also increases the cost of imported inputs, thus increasing the cost of domestic producers. A pointing example of the effects of such trade time delays is the case of Rwandan coffee growers for which trade time delays (the tariff equivalent of them) were estimated to impose a 36% extra tariff in their export markets relative to their Colombian counterparts.

Table 5.3.1 Per-day delay costs and days of delay in trade, by country

Country	Per-day delay costs as share of total value (%)	Days of delay in trade			
		Inland transport	Customs	Port	Total
		Imports			
Burundi	(a)	25	5	10	40
Kenya	0.8	4	3	6	13
Rwanda	0.9	13	3	6	22
Tanzania	0.9	1	5	10	16
Uganda	1.1	13	5	6	24
		Exports			
Burundi	0.5	13	4	4	21
Kenya	0.9	4	4	6	14
Rwanda	0.2	10	4	6	20
Tanzania	2.4	2	4	4	10
Uganda	1.0	18	4	6	28

Source: US ITC (2012).

Figure 5.3.1 Tariff equivalents of trade delays vs. average applied tariffs (exports: left graph; imports: right graph)



Source: US ITC (2012)

The benefits from alleviating physical and institutional constraints to trade are obvious and have long been recognized. These benefits come from upgrading transportation infrastructure and undertaking customs administration reforms both of which result in reduced trading costs and delays throughout the supply chain. In turn, these can lead to a whole host of positive outcomes, including expanded trade and investment, improved tariff collections, more trade diversification, and economic growth.

With the formation of the EAC, there was the expectation that constraints to intra-regional trade would become less of a problem. Indeed as discussed above, there has been progress in this area, albeit the process is still on-going, especially in the sensitive food sector. In order to assess the situation on the ground and ascertain the extent of perceived progress, a survey of stakeholders from the five EAC

countries was conducted during March 2015. The survey was meant to assess the stakeholders' perception about the severity of different constraints and whether there was any perceptible change in recent years due to the implementation of EAC CU/CM Policies. The results of this survey are shown in Table 5.3.2.

Table 5.3.2 Intra-EAC trade constraints: stakeholders' perceptions

Constraint	Average score*/	Situation after CU/CMPs came into effect (% of responders)		
	EAC-5	Improving	Unchanged	Worsening
Limited supplies, quality, competition				
Lack of supplies for regional trade	3.0	63.6	31.8	4.5
Irregularity of regional supplies	3.0	52.4	38.1	9.5
Poor quality of regional supplies	2.9	66.7	27.8	5.6
Competition from non-EAC cheap commodities	3.5	23.8	38.1	38.1
Physical constraints				
Expensive transport	3.5	42.9	28.6	28.6
Lack of appropriate transport infrastructure (eg insufficient / low quality road network, unadapted vehicles (eg refrigeration))	3.3	50.0	45.5	4.5
Lack of appropriate storage facilities (eg borders, airports)	3.3	40.0	50.0	10.0
Low security level for persons and goods	1.8	70.0	30.0	0.0
Un-excusable time delays, corruption	2.9	73.7	10.5	15.8
Limited or lack of access to trade finance services	3.2	40.0	45.0	15.0
SPS/TBT				
Lack of common, equivalent or mutually recognized standards	2.6	63.2	26.3	10.5
Inadequate testing and (SPS/TBT) certification procedures; lack of mutual recognition of certification procedures	2.7	50.0	44.4	5.6
Lack of accredited testing laboratories in home country	2.5	50.0	40.9	9.1
Regional SPS/TBT standards too high/rigorous	2.2	64.7	29.4	5.9
Uncertainty due to unpredictable Non-tariff Barriers (NTBs)	3.2	52.9	29.4	17.6
Ad hoc charges - lack of official controls and enforcement	3.2	42.9	50.0	7.1
Other regulatory measures and policies				
Lack of harmonization of regulations applied to trucking vehicles	2.8	68.4	21.1	10.5
Too many road blocks and checkpoints	2.7	68.4	21.1	10.5
Excessive and/or expensive weighbridges	2.4	76.5	23.5	0.0
Unpredictable export restrictions of export country	2.6	58.8	29.4	11.8
Small margins due to government interventions	2.2	47.1	29.4	23.5
Border measures and customs procedures				
Complex clearance process at border	2.0	94.7	0.0	5.3
Lack of electronic/ computerized procedures	2.4	72.2	22.2	5.6
Inconsistent/ arbitrary behavior of customs officials, corruption	2.5	50.0	22.2	27.8
Ignorance of customs officials of CU rules and regulations	2.3	66.7	27.8	5.6
Ineffective enforcement of rules and regulations	2.7	55.6	27.8	16.7
Lack of human resources in the agencies/ organizations involved	2.4	70.6	23.5	5.9
Rules of Origin as a hassle	2.4	66.7	27.8	5.6
Overall for all constraints	**2.7**	**58.3**	**30.2**	**11.6**

*/ Average rank of severity of constraints (1=least constraining, 4=most constraining)

Source: Survey conducted by the study team in the EAC countries (March, 2015).

In a scale of severity of 1 to 4 (1 being the least severe and 4 being the most severe), the constraints identified in Table 5.3.2 scored on average 2.7, implying that they still remain serious impediments to

intra-regional trade. Among the constraints listed, the physical availability of tradable food supplies in the region, their regularity and quality were seen as highly binding (scores over 3). However, on the positive side, the respondents considered that the situation for availability and quality of food supplies (much less for regularity) is improving in recent years since the CU/CM came into effect. At the same time, competition from imported supplies from outside the EAC has been identified as a serious problem receiving an average score of 3.5 out of 4, the highest among all attributes in Table 5.3.2. What is also disconcerting is that in the view of the respondents, competition from non-EAC cheap food commodities is becoming a more serious problem in recent years (more than three-quarters of the respondents considered the situation unchanged or worsening).

Turning to what has been labelled as physical constraints in Table 5.3.2, most of the items under that category were also seen as serious constraints (scores 3 and above), with the most severe being expensive transport (score 3.5 out of 4). The high cost of transportation was assessed as a continuing problem in intra-regional trade, with less than half (43%) of the respondents considering that the situation is improving in recent years, while majority of the respondents felt that the problem is becoming more acute or little changed in recent years. Related transport infrastructure and *en route* storage facilities were also seen as continuing problems, with over half of the respondents considering that the situation is unchanged/worsening in recent years. Products identified as being affected by lack of such infrastructure include mainly perishable commodities, including meat and milk as well as fruits and vegetables. Related to this problem of inadequate infrastructure is the limited or lack of access to trade finance services which is also considered as a serious constraint (score 3.2) and well over half of the respondents felt that the situation remained unchanged or worsening during recent years. On a positive note, the situation with security issues for the persons involved in trade and for goods transported was seen as improving, as was the case with time delays and corruption, although some 16% of respondents considered the situation worsening for the latter.

The following set of constraints dealing with SPS/TBT issues is also rated as problematic for intra-regional trade (a score of over 2). Uncertainties due to unpredictable NTBs and ad hoc charges are rated as most severe (score over 3) and about half of the respondents considered that the situation either remained unchanged or worsened in recent years. Animal products and fruits and vegetables were considered as most susceptible to these constraints. Other issues on which respondents felt that improvements have been made, but also much remains to be done, include lack of mutual recognition of SPS/TBT certification procedures and lack of accredited testing laboratories. These were seen as affecting most products but dairy and milk were highlighted. One issue that was underlined in the responses was the challenge in the enforcement of the SPS protocol and EAC standards as well as the low awareness of border officials about these standards. Maize and milk were mentioned as two products for which respondents considered the EAC standards to be too rigorous.

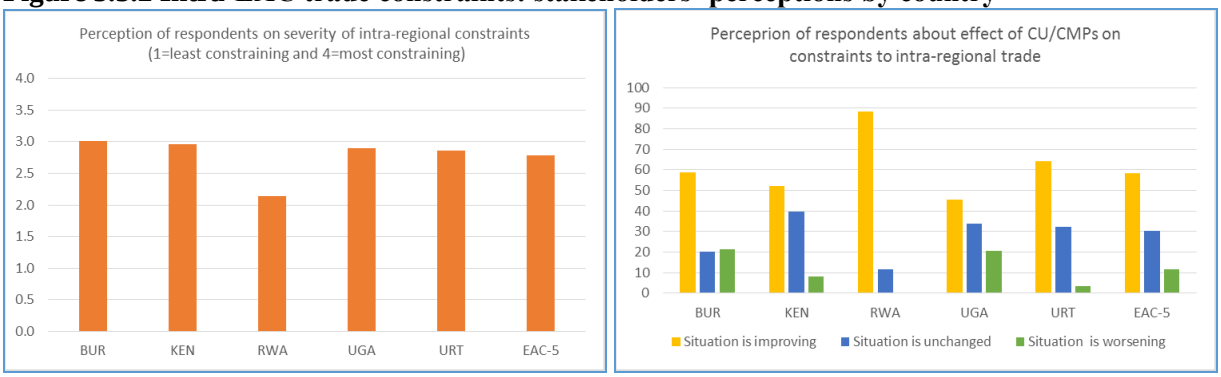
On issues related to other regulatory measures and government policies, while the present situation is still considered as a serious constraint to trade (ranking over 2) an overall improvement was seen in recent years. These included harmonization of regulations applied to trucking vehicles, less road blocks and checkpoints, as well as fewer and less expensive weighbridges. Unpredictable export restrictions of exporting countries, a common practice worldwide during the period of high food prices 2008-10, is given a relatively high severity score (2.6) and still considered as a problem by over 40% of the respondents. On the role of policy, respondents felt that the sector is adversely affected by small margins due to government intervention and some half of them considered that the situation remains unchanged or worsening.

Finally, coming to what is described as border measures and customs procedures in Table 5.3.2, there is some general optimism in the responses received that the situation is getting better overall. A major improvement is seen in the overwhelming 94.7% perception of the respondents as regards less complex

clearance processes at the borders. Progress is also seen as regards electronic/computerized procedures at the border where nearly two-fifths of the respondents saw the situation improving. On the other hand, inconsistent or arbitrary behaviour of customs officials and related corruption practices is seen as a continuing problem with half of the respondents considering the situation unchanged or deteriorating in recent years. Similarly, continuing problems are seen as regards ignorance of customs officials of CU rules as well as in effective enforcement of rules and regulations. Partly, this is attributed to a lack of human resources in the agencies/organizations involved, although over two-thirds of the respondents felt that the situation in this area is improving.

Clearly, the above responses were not uniform across countries and even within the same country among different types of stakeholders. Looking at the overall picture, the most optimistic views as regards intra-EAC constraints are attributed to respondents from Rwanda. The overall average rating by Rwandese respondents of the severity of the constraints identified was 2.1 out of 4, followed by Kenyan respondents who gave an average rating of 2.5 (Figure 5.3.2). The highest average severity score was given by Burundi (3.0) followed by Uganda and URT close behind (2.9). The same applies when it comes to the perceived changes in recent years, where Rwandese respondents considered the situation improving in nearly 90% of the identified constraints, with the remaining 10% characterized as unchanged and none as deteriorating. In contrast EAC-wide, in 58% of the constraints the situation was seen as improving, 30% unchanged and 12% as worsening.

Figure 5.3.2 Intra-EAC trade constraints: stakeholders' perceptions by country



Source: Survey conducted by the study team in the EAC countries (March, 2015).

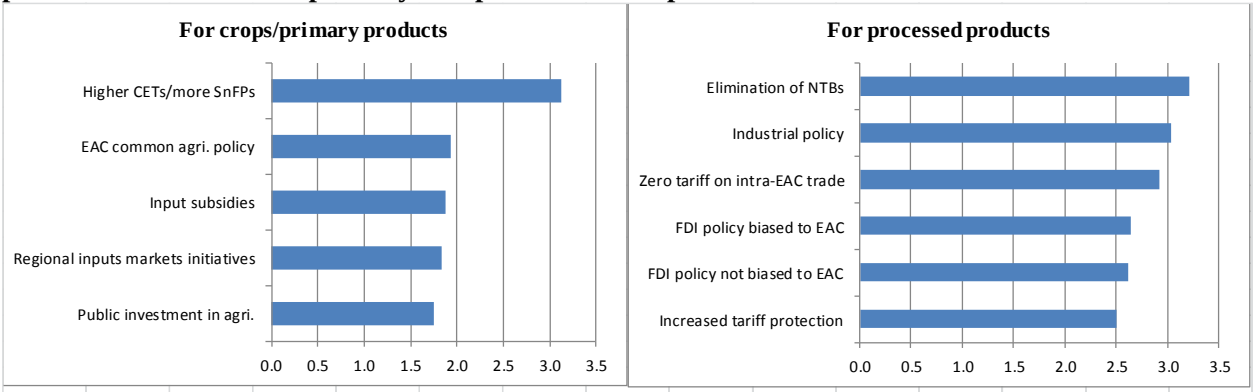
5.4 Boosting food production and intra-EAC trade – stakeholders' perceptions

The survey for this study also sought the views of stakeholders on crucial factors, both at the regional and national levels, for boosting productivity and regional trade. A number of such crucial factors were listed in the questionnaire with the option to add more and respondents requested to indicate the importance of each factor with scale of 1 to 4, with 4 being the most crucial and 1 being the least crucial. This question was asked twice, first for the field crops and primary products, and second for processed food products. The responses are summarized in Figure 5.4.1.

For field crops/primary products, *higher CETs through sensitive listing* was ranked as the most important factor with a score of 3.1 out of 4. The top ranking of this essentially protective measure appears somewhat surprising especially when contrasted with lower scores given to public investment in agriculture and input subsidies, two well recognized and popular programmes. But this ranking is consistent with the importance accorded by the respondent to the listing of sensitive food products and higher CETs in their responses to questions on these topics, presented in Section 5.2.3. In those responses, almost 100% of the respondents had indicated that the sensitive listing is essential. Another regional

policy, EAC common agriculture policy, was also rated high, with a third regional initiative – on inputs – ranked fourth. In addition to these five factors which were marked by almost all respondents, there were others that were identified selectively by some respondents. These were: promoting agro-processing; capacity building of farmers' organizations; mechanization; rural roads and other rural infrastructures; reducing fuel and transport costs; and market information system.

Figure 5.4.1 Respondents views on crucial factors at the regional and national levels for boosting production and trade of primary and processed food products



Note: The scores show the ranking of the crucial factors as indicated by respondents through scores - a score of 4 indicating the most important, 3 second most important and so on. Thus, higher the average score, the more important the factor. Also note that the questions or constraints listed in the questionnaire for stakeholder response are different for field crops/primary products and processed products.
Source: Based on stakeholder survey for this study.

For processed food products, the *elimination of the NTBs* was ranked top, with an average score of 3.2 out of 4, while increased tariff protection was ranked relatively lower but also high (at 2.5). Industrial Policy was considered crucial for production and trade of processed foods and ranked second. For Foreign Direct Investment (FDI), given its importance for agro-industry, respondents were requested to reflect, separately, on an FDI policy highly supportive of investors from within the EAC region (i.e. discriminatory) and (ii) on an FDI policy that also favours equally investors from outside. The response was somewhat surprising in that both factors were seen as being equally important. This is in contrast to the overall perception on tariff protection (sensitive products with higher CETs), which favoured discriminatory treatment for local goods and services, no such attitude was revealed in the case of the FDI.

Other factors identified by some as important in increasing productivity and production of processed food products included improvements in SPS-related issues (e.g. harmonization, certification etc.). One respondent identified several factors such as reduction in *ad hoc* measures influenced by politics, less corruption, rationalizing subsidy programmes, organizing regional value chain trade forums and associations and improving data collection.

To conclude this section, the main points include the following. First, on CETs of sensitive food products, the major divisive issue is the process of granting flexibility provisions (tariff stays and remissions). The main conclusion is that this flexibility should be contingent upon a rule-based system grounded on a regional, not national, trigger such as regional shortfalls and high market prices. This was also the view of the overwhelming majority of the stakeholders surveyed. Second, on NTBs, the progress of mitigation or removal of NTBs has been slow and frustrating to both policy makers and traders, especially regulatory measures that could be acted upon quickly. But there is a sense of optimism on the elimination of remaining NTBs because most of them have been identified and are transparent. The optimism also owes

to the new legislation on the elimination of the NTBs. Third, the analysis of food standards showed that there is a risk that unrealistically high technical standards for food products could limit formal intra-EAC trade and exclude smallholder farmers from benefits of trade. What seems to be happening for some staple food products is a double standard whereby formally traded foods are subject to strict EAC standards which, however, cannot be met by the bulk of producers (especially smallholders) thus driving trade to the informal market. Moreover, contrary to the primary objective of standard-setting in food products, food safety is seriously compromised by such strict standards.

VI SYNTHESIS OF THE MAIN FINDINGS, CROSS-CUTTING ISSUES AND THE WAY FORWARD

The process of trade integration in the EAC that began in 2006 with the formation of a Customs Union (CU) was further deepened in 2010 with the Common Market (CM) protocol. This process continues as other supporting policies, legislations and institutions are put in place. For example, the *EAC Elimination of Non-Tariff Barriers Bill* was enacted only in March 2015 and similar other instruments and frameworks for regional cooperation are being formulated, e.g. on foreign and private investment, farm inputs and services, trade finance, etc. The collective impact of all these initiatives will be evident only gradually after some years. Yet, the overall impression of this study is that some of the effects are already observed and they are generally in the direction expected, e.g. increasing trends in intra-EAC trade, greater integration of food markets, increased crop productivity, etc. The stakeholder survey for this study also largely supports this observation.

This Chapter summarises key findings by way of synthesizing a number of cross-cutting topics based on the analyses already presented in the previous Chapters. It takes a forward-looking approach with suggestions for strengthening the impact of the CU/CM policies on regional trade and food security. Also addressed are assessments on some divisive issues and research questions that were identified in the study's ToR and inception report, as well as an important cross-cutting subject - the overall policy environment for strengthening agriculture and food markets, recognizing that neither regional trade nor food security would improve without attaining sustainable productivity gains in food production.

6.1 Increasing productivity to improve food security and respond to demographic challenges

Current level of regional average availability of food needs to be raised by about 20% to halve the incidence of food insecurity to 20%

The analysis of food security indicators in Chapter II showed that the main reason for the fairly high prevalence of food inadequacy in the region (averaging 40%) is low overall food supplies in relation to strong demographic trends. In 2012-14, the level of dietary energy supply (DES) adequacy at the EAC-5 level was just 101%, which is adequate only if available food is distributed perfectly equally to every person in the country. Cross-country analysis shows that the DES adequacy has to increase to about 120% for reducing the prevalence of food inadequacy to half of the current level.

Most of the additional food supply has to come from domestic production because it is simply unaffordable for the region to increase even more the already high share of foreign exchange spent on food imports. Besides, in economies where a large segment of the population is dependent on agriculture, food production is not just a matter of supply but also a source of income or entitlement. Therefore, substantially raising food and agricultural production is the only viable option as well as the best strategy to improve food security and reduce income poverty, as most analyses recommend. That requires a supportive policy environment for farmers, including small holders, and adequate level of government spending on essential public goods such as research and rural services.

6.2 Increasing considerably public spending to agriculture and addressing market inefficiencies

Overall trade and pricing policies are favourable for food production

A great deal of analysis has taken place to quantify policy distortions and incentives facing farmers. One main finding of the recent World Bank study covering the three largest EAC countries is that the heavy taxation of export crops that existed in the 1980s and even early 1990s has been largely eliminated by

2004, with few exceptions. On the other hand, the import-competing sector, which mainly consists of foods, has been enjoying modest positive protection. With undistorted exchange rates and little industrial protection, these are favourable policy environments for agricultural growth, especially the food sub-sector for which domestic demand is growing rapidly.

Both World Bank and FAO studies qualify the above finding by adding that the positive incentives due to trade and pricing policies are undermined at the farm level by inefficiencies along the supply chain as well as by the high cost of infrastructural services. Given its seriousness, this issue is highlighted below, following a review of government spending in agriculture.

The region needs to double the spending on agriculture as a share of the total government budget to reach the 10% CAADP target

Most governments in Africa committed to the 2003 Maputo Declaration to raise the share of agricultural spending to at least 10% of the total budget by 2015. This level of spending was considered essential by CAADP/NEPAD studies to attain the target growth rate of agriculture of 6% per annum. Thus, the Maputo target of 10% is taken seriously in Africa as one core indicator of commitment to agriculture and food security. The EAC Strategy for Food Security 2011-15 also calls upon the EAC members to reach the target. The CAADP process has also been instrumental in encouraging governments to undertake reviews of their agricultural investment portfolios so as to improve the quality of spending. This process has also led to the formulation of *National Agriculture Investment Plans* or NAIPs, which all five EAC members have formulated.

A recent review of the evolution of public spending in agriculture in Africa shows that the five EAC countries averaged about 5% of the total budget during 2003-10.[49] The spending ratios were found to be relatively low for Kenya and Uganda while agricultural budgets have increased impressively for Rwanda and Burundi. The review also shows that there have been clear increases in agricultural spending since 2008, with the result that spending ratios may be higher in most recent years. In view of very low levels of productivity and the rapidly growing food needs, EAC countries need to continue on this trend by increasing substantially spending to agriculture towards meeting the Maputo target and beyond.

Marketing inefficiencies have undermined positive incentives of trade and macro policies and so public spending in agriculture needs to be re-oriented to address these issues

Not only how much is spent in agriculture matters but also how it is spent. Both the World Bank and FAO studies on farm incentives concluded emphatically that the positive effects of tariff, pricing and subsidy policies on farm-level incentives were markedly undermined by inefficiencies in the marketing system as reflected in large divergences between the farm and market prices. Deficiencies identified in the structure and functioning of commodity value chains that need to be addressed included: poor market and road infrastructure, high processing costs (e.g. in sugar), weak bargaining position of farmers, information asymmetries leading to excessive than normal margins and concentration of profits in downstream segments (trading, wholesaling). These inefficiencies were also confirmed by this study, including serious problems at the post-production phase such as high post-harvest losses and reduced farm prices due to problems with storage, marketing, competition, etc.

[49] Measuring what exactly constitutes agricultural spending has been discussed extensively but remains unresolved. The estimates here are based on a "narrow" definition suggested by CAADP and exclude rural development programmes that indirectly assist agriculture. The MAFAP studies in Africa use a broader definition. A rough comparison shows that the agricultural spending ratio is about 9-10% under the broader and 4-5% under the narrower definition.

6.3 Strengthening integration by exploiting complementarities and comparative advantages

Important spatial and seasonal complementarities exist among EAC countries and these need to be further exploited by gathering systematically relevant local market information

Dissimilarities in both the demand and the supply of food staples among EAC countries, due to divergent predominant diets and important differences in agro-ecological conditions and resource endowments, result in substantial complementarities among EAC countries in terms of their surplus/deficit position in food staples. This mismatch between EAC countries is an important asset for regional food security. However, there is lack of adequate information on the size and timing of potential surpluses/deficits at the local level. More systematic and comprehensive gathering of spatial and seasonal data by national statistical agencies and early warning bodies at local market levels would be warranted.

Intra-EAC trade, especially imports, has grown decently in recent years and prospects appear good provided the many lingering trade barriers are addressed quickly and decisively

The EAC is sourcing relatively more of its agricultural and food imports from the region itself in recent years. Several food products show large increases in intra-EAC trade, which is an indication of revealed comparative advantage in regional trade. These are maize, dairy products, rice and sugar among SnPs and meat, vegetables, other dairy products and beans among non-SnPs.

Despite the impressive increases in absolute quantities, the *share* of intra-EAC trade of food products, at 8% in 2010-12, falls well short of the 30% target set by the *EAC Food Security Action Plan*. While the effects of the CU/CM process so far are in the expected direction, the increase in intra-EAC trade could have been much more convincing in the absence of various non-tariff barriers (NTBs). Both stakeholder surveys and interviews showed that NTBs continue to linger and constrain the growth of intra-EAC trade.

Informal cross-border trade (ICBT), especially with non-EAC countries, is large; how this may impact on intra-EAC trade and food security remain unclear

A large share of trade among EAC countries is informal cross-border trade (ICBT) and this is also increasingly the case with other neighbouring non-EAC countries. Uganda is the dominant source of ICBT in several food products. ICBT contributes significantly to food security and incomes of the poor although trading under formal channels brings its own advantages as well. The expectations from the implementation of CU/CM policies, notably the removal of the numerous NTBs, leading to gradual replacement of ICBT by formal trade, has yet to materialize; if anything, ICBT in staples is believed to have increased. One other reason for the informal trade could be unnecessarily high SPS standards for some food products.

6.4 Improving performance of EAC food markets by addressing seasonality and price instability

The EAC food markets suffer from relatively pronounced seasonality pointing to deficiencies in storage facility, credit and competition

Analysis of prices of maize, rice and dry beans shows large seasonal gaps in most markets of the region, with the problem particularly acute in the Kampala market for maize and dry beans. Moreover, not only are the gaps relatively large, improvements have been fairly limited, despite the expectation that integrated markets typically reduce seasonality gaps.

Pronounced seasonal price gaps indicate deficiencies in food supply chains, notably of storage, credit and market competition. This issue was pursued during interviews in country visits, confirming that the problem is most acute at the level of the farm and local markets. The overall perception is that public spending in these areas is grossly inadequate. National food agencies have an important role to play in supporting well-functioning of food markets at the local level. Uganda, where the seasonality issue is most pronounced, does not have a parastatal for procurement, but could address these issues through other ways such as by investing on storage facilities at the farm level and forming and strengthening small farmers' organizations and cooperatives.

The EAC needs a policy framework to respond to demand shocks emanating from non-EAC neighbouring countries with a view to stabilizing regional food markets

One of the conclusions from the price analysis was that demand shocks emanating from non-EAC neighbouring countries have often been a source of price shocks in EAC markets, especially for maize and dry beans. Why this is the case is obvious – there is a sizable ICBT between some EAC countries and South Sudan and the DRC, especially in maize and dry beans but also other food products.

The question is how could EAC respond to such shocks so as to stabilize market prices and supplies within the EAC? As the EAC does not have a policy to deal with shocks from exports, this issue would need to be addressed at the EAC level before unpredictable market activity harms the integration process. It is possible that such shocks might be mitigated to some extent through a judicious combination of export policy and intervention through procurement and market release of stocks by national food agencies. This possibility needs to be explored. The eventual solution may be found in the Tripartite FTA that also includes EAC's neighbouring trading partners.

6.5 Building on WFP procurement experience on linking smallholders with regional markets

The impact of Local and Regional Purchases (LRPs) of foodstuffs by WFP/other agencies on markets is generally small but depends on the volume procured

One question frequently asked is whether LRPs distort local markets to the detriment of smallholders, net food purchasing farmers and poor consumers. On the whole, studies consulted found none or modest relationship between LRPs and market impact (price level and volatility), acknowledging that the impact essentially depended on the size of LRPs relative to the size of the market. The duration of LRP campaigns was also a factor, i.e. repeated LRPs in a small area distorted markets. Perhaps expectedly, traders' surveys in some of the studies conveyed the impression of strong market impacts of LRPs, affecting their operations and profitability. Overall, the studies were generally appreciative of the efforts being made by WFP in using LRPs for market development through quality enhancement, competitiveness, and inducing farmers and traders to invest on quality enhancement. The WFP experience and the insights from assessments of LRPs undertaken provide important guidance to humanitarian agencies and national food agencies on how best to implement LRPs while avoiding negative effects.

The P4P programme provides innovative approaches to link smallholders to markets through LRPs

With the decline in overseas food aid, the attention of food aid donors and agencies shifted to using LRPs for market development. The Purchase for Progress (P4P) programme was launched as a pilot globally by WFP in 2008. What makes the P4P programme highly relevant to the theme of this study is its innovative approach to reach out to smallholders, especially by strengthening farmer's organizations, as well as its emphasis on building their capacity to deliver foods meeting quality standards and on supporting development of local food markets.

The Government of Rwanda adapted the P4P approach and its tools to implement its own programme, called common P4P (or CP4P), as the main framework for food procurement from farmers with the objective of linking small farmers to markets, with WFP playing the role of a large and reliable institutional buyer. Given the serious constraints to intra-regional trade due to deficiencies of local markets, especially those directly facing the smallholders, the Rwandan model, where institutional buyers work together following the same approach, may be an option. How this approach could be adapted to other EAC countries where the scales of operation are larger could be a component of the comprehensive study suggested below for clarifying the roles of NFAs in a CU/CM environment.

6.6 Addressing remaining constraints hindering intra-EAC trade and market integration

High expectations from the new legislation (2015) on the elimination of lingering NTBs

While several NTBs are of a physical nature requiring investment in infrastructure, many others are of regulatory nature and can be acted upon quickly. One source of frustration regionally has been the continued presence on the ground of various obstacles despite their removal at the policy level. Delays in reforming legislation, rules and procedures by individual EAC countries are one reason for the slow implementation of the core mandate of the CU/CM protocol which called for the elimination of NTBs on day one. Food products being more perishable suffer from these problems more than other products.

A reading of EAC's NTB reports gives a sense of optimism towards eliminating the remaining NTBs. The current mechanism of collating NTBs by National Monitoring Committees and resolving them subsequently through the Regional Forum on NTBs at the EAC Secretariat level is both sound and participatory as private sector representatives are also closely involved. The publication of the quarterly reports on *Status of Elimination of NTBs* has also been effective in galvanizing popular support for the removal of NTBs. Stakeholders were anxiously waiting for the coming into force of the bill on the elimination of NTBs which was finally enacted in March 2015. This legislation might finally resolve difficult cases including some that have been lingering for many years. It will also be useful for the EAC Secretariat to formulate an investment plan to systematically address those lingering physical constraints that can only be resolved through targeted investment.

There is a risk that unrealistically high technical standards for food products could limit formal intra-EAC trade and exclude smallholder farmers from benefits of trade

The EAC has made good progress on harmonization of standards and technical regulations. The process of setting regional standards is based on pre-existing national standards as well as applicable international norms, in particular the Codex Alimentarius Commission, adjusted to reflect the local context. This process entails a fine act of balancing different objectives, notably regulatory requirements such as food safety and practical considerations on the ground such as the state of the market. As standards play a crucial role in regional trade, the issue came up frequently during stakeholder consultations in the context of this study, as well as in the relevant literature. There a good basis to argue that some EAC standards (e.g. maize and dairy products) may have been set unnecessarily high.

In the case of maize, strict EAC standards hardly reflect current market realities whereby there is no reward for smallholder farmers to improve quality by investing in storage and drying facilities. Consequently, farmers chose to sell inferior quality maize to the large informal market, where no standards apply. High maize standards neither contribute to boosting formal intra-EAC trade nor safeguarding food safety, their *raison d'être*. Very similar observations have been made forcefully in the literature for dairy products.

The lesson is that harmonized high standards are of little value if they cannot be implemented and/or be enforced. Standard-setting, while satisfying the necessary food safety, should be based on the capacity of the majority of farmers to comply with them, as well as the capacity of inspection agencies to enforce them. An alternative to a strict harmonization of standards is the concept of equivalence entailing a recognition that each country's respective standards, despite being different, may achieve similar levels of protection.

6.7 Rationalizing CETs for sensitive food products and managing CET flexibilities

A rule-based system grounded on a regional trigger is desirable for managing tariff flexibility on sensitive food products

A planned review of the CETs for sensitive food products (SnPs) and related flexibility provisions is underway in 2015. A number of options have been floated including some suggested in the stakeholder survey for this study. These are removing from the list of SnPs those products such as wheat and sugar that have been subject to continuous tariff reductions, rendering the higher CET practically redundant. The review of the literature on this subject did not show any particular rationale for adding other foods to the sensitive list, although this view had some support in the stakeholder survey. There is also a perception that the benefits from the current flexibilities are absorbed by traders and processors rather than passing them to consumers, the main targeted beneficiaries.

One compromise that has wide support, including by the stakeholders interviewed in the context of this study, is to adopt a rule-based system for varying CETs based on regional (not national) shortfalls in production and/or changes in world market prices. The completion of the ongoing work on EAC regional food balance sheets, which will be updated on a monthly basis, should facilitate the adoption of this option.

6.8 Clarifying EAC proposals on regional strategic food reserves

There is a need for clarifying how the proposals on strategic food reserves in the EAC Food Security Action Plan work in a CU/CM environment

The *EAC Food Security Action Plan* has some proposals aimed at a regional mechanism for the management of strategic food reserves (SFRs). The key proposals are establishing adequate physical and financial food facilities at national levels, and a regional approach or model for the management of the national SFRs with the help of tools such as regional food balance sheets and food information systems.

While the targets for national reserves are explicit (food reserves and contingency funds to cover at least six months of needs), the second set of proposals on regional approach is not clearly articulated. What is vague is the proposal for a "predictable regional model for management of regional strategic food reserve". It is not clear whether the proposal concerns the management of a regional SFR or national SFRs that are coordinated with some regional trigger. There is also a need to rationalize the proposed size of SFRs covering six months' needs, which appear rather excessive. The size of such reserves also depend on their objective, whether SFRs are for food emergencies only or for market interventions also. If the latter also, it is not clear if market interventions by national agencies will work in a CU/CM space. Uganda for one does not have a NFA or SFR nor is its policy to establish these agencies and intervene in the market.

More generally, current knowledge on the operation of food reserves is mainly limited to individual countries and to some regional free trade areas. Therefore, it is desirable that the EAC Secretariat undertakes a thorough study that will clarify these issues. The studies on the RESOGEST and PREPARE

initiatives in West Africa would be useful references. The study should also review the current mandates of national food agencies of EAC countries on farm price support and market intervention to understand if those mandates are still feasible or even desirable in a CU/CM environment. It should also analyse the implications of a member of the EAC, Uganda, not having a SFR.

VII CONCLUDING REMARKS

The *Treaty for the Establishment of the East African Community* states clearly that deeper regional integration is the pathway to attain food security in the region. Trade integration is expected to lead to efficient and sustainable national agricultural growth by rationalizing agricultural production along the principles of complementarity and specialization.

With less than five years of implementation of the CU/CM policies and with on-going processes of enactment of crucial legislations, launch of regional initiatives such as on irrigation and fertilizers, and other instruments still in progress of being implemented, it would be premature to quantify fully the effects and impacts of this process. Yet, the analyses in this study show that changes in several areas are moving in the direction expected. For example, intra-EAC trade in food products has increased markedly, albeit still at a fairly low level, and there are some indications that food markets are more integrated.

The study confirmed that two major constraints to increased production and regional trade are NTBs and marketing inefficiencies. Despite the fact that much progress has been made at the policy level in removing NTBs and related physical and regulatory constraints to trade, the situation on the ground has been improving only slowly as enforcement of agreed policies has been difficult. Market inefficiencies at the farm and local/regional levels are manifested in the form of high post-harvest losses, quality deterioration, low farm to market price ratios, sharp seasonal changes in prices, etc., all of which reduce the tradability of foodstuffs keeping farm incomes low, thus undermining incentives to improve productivity. These constraints need to be responded quickly and substantively.

Removal of trade barriers and market inefficiencies are necessary but not sufficient conditions. They facilitate trade but, to sustain that, productivity has to increase. Trade opportunities do raise productivity to some extent but quantum and sustained gains have to come from investment in research and improvements in rural infrastructures. These are mostly public goods and so require government spending. Currently, average public spending in agriculture in the EAC region relative to total budgets is about half of the Maputo/CAADP target of 10%. Government spending has to be raised sharply for sustaining trade integration and for responding to the serious food security challenges that the region faces now and in the future.

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Annex 1.2 Survey Questionnaire: EAC Regional Food Security and Common Market Policies

1. Constraints to intra-regional trade

***[Note**: Intra-regional trade is affected by a number of constraints, both physical (e.g. transport services and costs, road networks, logistic constraints, etc) and non-physical (e.g. tariffs, border procedures, NTBs etc). What are prominent constraints to intra-EAC trade (moving agricultural and food supplies across the EAC region)? Has the situation improved in recent years due to the implementation of EAC Customs Union/ Common Market Policies (CU/CMPs)?]*

1.1. The table below lists several such constraints. In column 2, please rank the level of severity for the listed constraints from 1 to 4 (with 1 being the least constraining, 4 being the most constraining). Column 3 please indicate the food products most affected by this constraint. Finally in Column 4, indicate your perception of the improvement in this constraint in recent years after the CU/CMP came into effect: I = situation improving, S = situation unchanged, and W = situation worsening.

Constraint	Level of severity (1= least severe, 4=most severe)	Most affected food products	Situation Post-CU/CM: Improving (I), Same (S) or Worsening (W) ?
Limited supplies, quality, competition			
Lack of supplies for regional trade			
Irregularity of regional supplies			
Poor quality (specify) of regional supplies			
Competition from non-EAC cheap commodities			
Physical constraints			
Expensive transport			
Lack of appropriate transport infrastructure (eg insufficient / low quality road network, unadapted vehicles (eg refrigeration))			
Lack of appropriate storage facilities (eg borders, airports)			
Low security level for persons and goods			
Un-excusable time delays, corruption			
Limited or lack of access to trade finance services			
SPS/TBT			
Lack of common, equivalent or mutually recognized standards			
Inadequate testing and (SPS/TBT) certification procedures; lack of mutual recognition of certification procedures			
Lack of accredited testing laboratories in home country			

Regional SPS/TBT standards too high/rigorous			
Uncertainty due to unpredictable Non-tariff Barriers (NTBs)			
Ad hoc charges - lack of official controls and enforcement			
Other regulatory, policy			
Lack of harmonization of regulations applied to trucking vehicles			
Too many road blocks and checkpoints			
Excessive and/or expensive weighbridges			
Unpredictable export restrictions of export country			
Small margins due to government interventions			
Border, Customs			
Complex clearance process at border			
Lack of electronic/ computerized procedures			
Inconsistent/ arbitrary behaviour of customs officials, corruption			
Ignorance of customs officials of CU rules and regulations			
Ineffective enforcement of rules and regulations			
Lack of human resources in the agencies/ organizations involved			
Rules of Origin as a hassle			
Any other? **Please specify**			

1.2. Are NTBs/charges applied to imports from EAC countries less [ ], equally [ ] or more [ ] constraining than on imports from non-EAC countries?

1.3. With CU/CMPs, has connectivity (road blocks, checkpoints, transport quality, trade facilitation) improved?
Not much changed [ ]; Some improvement [ ]; Marked improvement [ ]

2. Impact of CU/CMPs on staple food trade/markets

2.1. Is the CU/CMPs, notably the Common External Tariff (CET) and intra-EAC free trade, having a positive impact on staple food trade/markets in the region?

*[**Note**: indicators to be considered for impact on regional markets: (a) price level (in terms of import or export parity price, i.e. given the world market price plus import tariff, or/and price level in another EAC country exporting the most to this country), (b) price stability (more stable food prices beyond normal seasonal variability), (c) integration or co-movement in EAC markets (convergence of prices across*

countries), and (d) better access of small farmers to markets than before due to improved regional demand.

For each food product and for each of the four indicators, mark 1, 2, 3 or 4 (1= situation has much improved; 2= situation has slightly improved; 3= no change noted; and 4= situation has/is worsened/ing)

	(a)	(b)	(c)	(d)
Food Product	**Price level**	**Price stability**	**Integration Co-movement of prices**	**Access to market for small farmers**
Maize				
Rice				
Sorghum				
Beans				
Matoke				
Bananas				
Fruit				
Live animals				
Red meat				
Poultry				
Dairy products				
Sugar				
Veg oils				

2.2. Given the above responses, what specific policies do you think have been/could be useful for improving regional market outcomes in staple food products?

i) …….
ii) …….
iii) …….

3. Cross-border Informal Trade (CBIT) in EAC

[***Note***: *This refers to trade across the border that is not officially recorded. Typically, this includes both i) trade in small amounts by border dwellers and small farmers that are allowed, or ignored by customs authorities, but not officially recorded; and ii) smuggling that is not allowed (and not recorded*].

3.1. What percentage of total trade is likely to be accounted by CBIT?

Food Product	**% CBIT**	**Comments**
Maize		
Rice		
Sorghum		
Beans		
Matoke		

Bananas		
Fruit		
Live animals		
Red meat		
Poultry		
Dairy products		
Sugar		
Veg oils		

3.2. What factors could explain the large-scale CBIT in various food products?

i) …….
ii) …….
iii) …….

3.3. How do you assess the impact of CBIT?

[***Note**: CBIT does not have uniform impact on all stakeholders. It may be relatively more beneficial to some groups than others. There may also be commodity/product dimension, e.g. maize versus poultry]*

Impact on whom?	**Positively or Negatively (P or N?)**	**Why? For which products?**
Small farmers		
Large farmers		
Consumers		
Small industry/processors		
Large industry/processors		
Intra-EAC traders (Formal, Informal)		
Government		
Others?		

3.4. One of the expectations from the implementation of CU/CMPs is that the CBIT should shrink and merge to formal trade. Did you see this happening in most recent years?

- CBIT is shrinking as CU/CMPs are deepening [ ]
- No impact is felt as yet [ ]

4. Common External Tariff on Sensitive food Products

*[**Note**: Established sensitive food products in the CET list include maize and wheat and their flours, rice, sugar/jiggery, and several dairy products (e.g. cream, powder)].*

4.1. What is your general view on the rationale for higher CET rates for these selected food products (the *Sensitive list*)
- Sensitive list is essential [ ]; Why? …….
- Sensitive list is not essential [ ]; Why? …….

4.2. If essential, do you think there should have been more food products in the list? If so, what food products should be added? …….

4.3. Or, should the list be shortened? If so, what food products may be deleted from the list? …….

4.4. Is your view on the list and CET level of sensitive products based on the interests of your own country only or reflects also broader regional (EAC) concerns? Own country [ ]; Broader [ ]

4.5. The CET rates on sensitive products are frequently reduced for a certain period (with import quotas in some cases) upon requests from EAC Members. What is your view on this policy of suspension of CETs? Two variants of reduction – CET stay and CET remissions, as follows::

(a) The case of CET stay (reduction for consumers' interest)
- policy is desirable [ ]; Why? ……..
- policy is not desirable [ ]; Why? ……..

(b) The case of remissions (as raw materials for processing)
- policy is desirable [ ]; Why? ……..
- policy is not desirable [ ]; Why? ……..

4.6. Are you aware of specific cases of suspension of CETs?
- if yes, which products? ……..
- was the application justifiable or not justifiable in your view (explain)? ……..

4.7. How can the suspensions be made less *ad hoc* or discretionary than now, and more rule-based? For example, a suspension could be linked explicitly to the forecast of production shortfalls at the *regional* level and/or international prices, and be applicable consistently across all countries? Would you favor a rules-based application:
- based on forecast of regional (NOT national) production shortfall? Yes [ ], No [ ]
- based on international prices (tariff to vary)? Yes [ ], No [ ]
- based on both ? Yes [ ], No [ ]
- any other suggestion for other rules? …….

5. Tripartite FTA (EAC, COMESA, SADC)

*[**Note**: EAC Members are also members of other RECs, namely SADC, COMESA, ECCAS. Multiple memberships create difficulties for trade. Negotiations are underway for a large Tripartite FTA consisting of EAC, COMESA and SADC]*

5.1. What is your overall perception about the Tripartite FTA?
- Positive/desirable [ ]; Why? …….

- Negative/undesirable [ ]; Why? ……

5.2. In your view, would the Tripartite FTA offer more opportunities for EAC producers and traders? Yes [ ]; No [ ]

5.3. From the standpoint of EAC regional integration of food markets and food security, should the Tripartite FTA be postponed for 10-12 years until EAC food markets are integrated?
Yes [ ]; No [ ]

6. Procurement of food by Humanitarian agencies and impact on markets/regional trade

*[**Note**: Humanitarian Agencies (HAs) procure substantial amounts of food staples. Others who procure are national food agencies for stock replenishment, and traders for local and regional trade. There could be competitive effects, which may benefit farmers, but also there could be adverse food security effects to local communities where such purchases take place].*

Nature of procurement by Humanitarian Agencies (HAs)

6.1. Have there been extensive food purchases by HAs in your Region? Yes [ ]; No [ ].
- Region: …….
- Agencies purchasing: …….
- Product/s being purchased: …….

6.2. If yes, in your view, are HAs purchases made in an *ad hoc* manner as per the agencies' own requirements, or are made in a regular and predictable manner?
- *ad hoc* and not easily predictable manner [ ], in terms of volume [ ] or timing [ ], or both [ ]
- not *ad hoc* but predictable in terms of volume [ ] and timing [ ]

6.3. Are HAs purchases displacing purchases by national food agencies and/or regular traders or are they over and above such purchases?
- Displace [ ]; displace only occasionally [ ], No, this has not been an issue so far [ ]

6.4. If the answer is yes in 6.3 above, what is the reason for such displacement? Why do farmers prefer to sell to HAs?
- Higher price offered by HAs? [ ] or/and prompt payment [ ], or/and other reasons specify…….

6.5. Do HAs reduce purchased quantities in years of high prices or do they purchase even more to assist those whose food access is constrained by high market prices?
- Yes, they procure less during high price years/seasons [ ]
- In high-price periods, the agencies need more food for distribution, and so they tend to procure even more than in other years [ ]
- No, procurement does not seem to vary with high or low market prices [ ]

Impact on farmers/local prices

6.6. Do you feel that because of the above incentives, farmers tend to over-sell, i.e. sell more than what they would ordinarily sell, possibly to the detriment of their own needs later in the season?
- Believe that this is happening [ ]; No, this has not been an issue so far [ ]
- Why? Any reason for not causing that negative impact? …….

6.7. If farmers over-sell, does that strengthen local prices beyond the purchasing power of net food buyer households?
   - Unlikely that there has been such impact on prices [ ]; Yes, local market prices have been boosted and net buyers face difficulties [ ]

Impact of food aid/distribution

6.8. In communities where HAs distribute regionally-procured food commodities, are you aware of any cases of undesirability of such commodities by the beneficiaries?
   - No, not really [ ]; Yes [ ]. If yes, please provide some examples ……

6.9. Are you aware of cases where local food prices have been excessively depressed due to food aid distributions?
   - No, not aware of such cases [ ];
   - Yes, have noticed such cases [ ]
   - If Yes, please provide some examples (where, when, product, etc) …….

7. Constraints to increasing production and marketed surplus and CU/CMP initiatives for increased productivity and production

*[**Note**: The question asked is first what are the main factors limiting food production growth and marketed surplus and second whether the CU/CMP initiatives, aimed at the creation of a conducive environment for freer trade, also contribute to increased food production, i.e. strengthen supply response? An increased production of field crops only through the expansion of the cultivated area cannot be the solution; there has to be a productivity boost. Likewise, investment and modern technology is essential for processed foods (agro-industry). What other policies/initiatives, as complementary to trade policies, are needed to boost production via productivity growth?*]

7.1. Constraints to increasing production/productivity faced by small farmers (list products affected, if any)

Constraints	Products affected
Small holding - land limitation	
Access to inputs for production	
Cost of inputs in relation to the expected price of produce	
Production infrastructure at farm evel (machinery, etc)	
Post-harvest infrastructure at farm (storage, refrigeration, etc)	
Lack of access to regular market to sell produce	
Low or uncertain price of produce	
Unfavourable terms offered by Middlemen	
Competition with imported cheaper Commodities	
Lack of market information beyond local level	
Limited or lack of access to finance Services	

Other technical constraints (please specify)	
Absence of processing industry?	

7.2. What would be the most crucial factors at the regional and national levels to boost productivity and production of field crops? Use scale of 1 (the least crucial) to 4 (the most crucial).

1. Increase public investment in research, technology and irrigation [ ]
2. Promote free regional markets, led by private sector, for farming inputs like fertilizers and seeds and extension/advisory services [ ]
3. Subsidize inputs (fertilizer, water, seeds) at the EAC level [ ]
4. Adopt a common agricultural policy for EAC such as the Common Agricultural Policy in the European Union [ ]
5. Maintain high food prices through border protection (CET), including by expanding the list of sensitive products [ ]
6. Other measure …….. [ ]
7. Other measure …….. [ ]

7.2. What would be the most crucial factors to boost productivity and production of processed foods): (e.g. meat/dairy products, canned fruits/vegetables)? Use scale of 1 (the most crucial) to 4 (the least crucial).

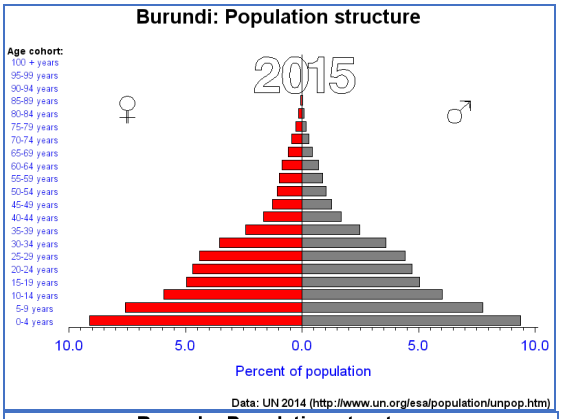
1. Zero tariff on intra-EAC trade [ ]
2. Elimination of NTBs [ ]
3. Increase tariff protection from outside EAC [ ]
4. National industrial policy [ ]
5. Highly supportive FDI policy for businesses within EAC [ ]
6. Highly supportive FDI policy for businesses outside EAC [ ]
7. Other measure …….. [ ]
8. Other measure …….. [ ]

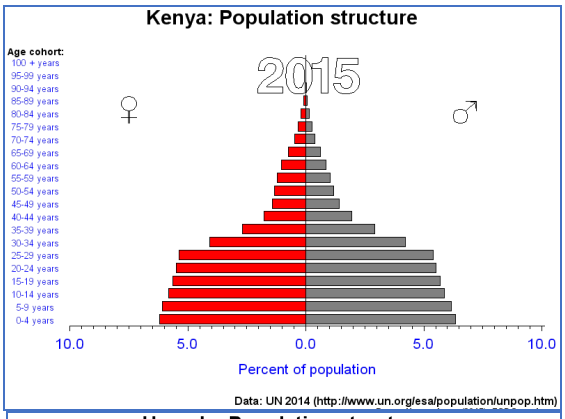
Annex 3.1 Fertility rates in EAC countries, past and projected

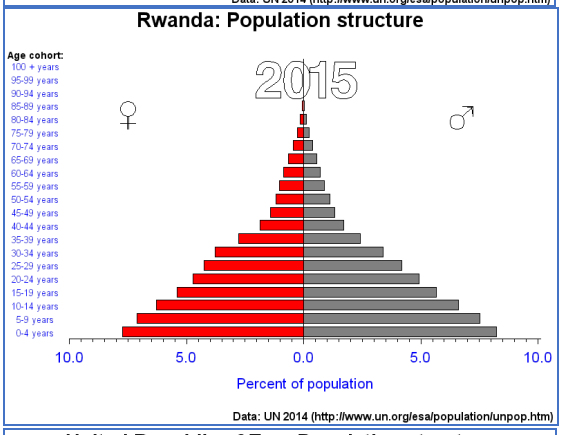
Country	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050
	Total fertility (children per woman)							
Burundi	6.08	5.64	5.22	4.82	4.46	4.12	3.83	3.57
Kenya	4.41	4.08	3.79	3.54	3.32	3.13	2.96	2.82
Rwanda	4.56	4.09	3.71	3.40	3.14	2.91	2.72	2.55
Uganda	5.91	5.44	4.98	4.55	4.16	3.81	3.51	3.24
URT	5.24	4.91	4.59	4.29	4.02	3.77	3.54	3.34
World average	2.83	2.67	2.54	2.43	2.34	2.25	2.19	2.13
	Number of countries with lesser fertility than the EAC countries (out of a total of 201 countries)							
Burundi	196	195	195	195	195	195	195	195
Kenya	164	166	167	168	170	170	169	169
Rwanda	167	167	166	165	165	161	161	157
Uganda	193	192	192	192	192	191	190	188
URT	186	186	186	187	187	189	191	192

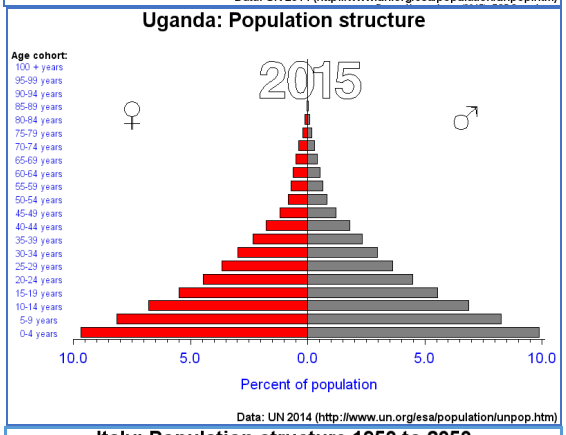
Source: Calculated by the authors based on UN DESA Population Statistics

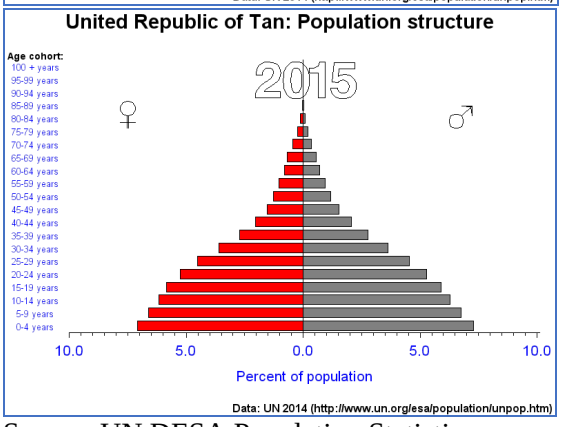
Annex 3.2 EAC population structure compared to that of a developed country

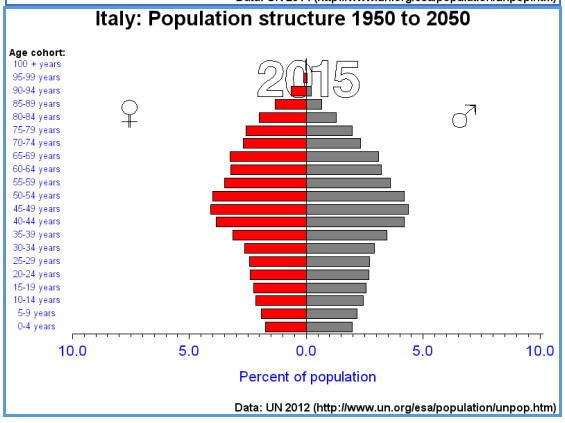










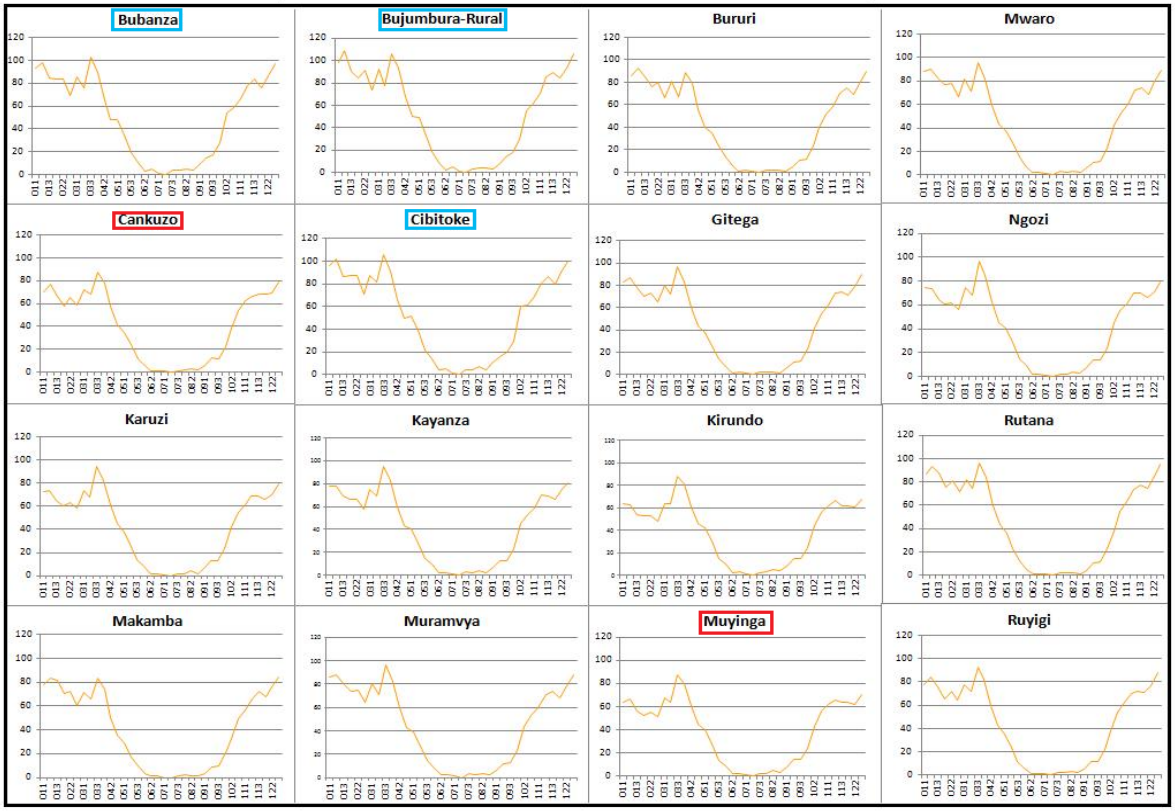


Source: UN DESA Population Statistics

Annex 3.3 Climatic differences and seasonal & spatial production of main EAC food staples

BURUNDI

Burundi: estimated rainfall (mm), long term average (1996-14), January dekad 1-December dekad 3



Source: Authors based FAO/GIEWS data

Burundi: food crop output by commodity group and season (average 2009-13)

Commodity Groups	Season A (MT)	Season B (MT)	Season C (MT)	**Total (MT)**	Share A	Share B	Share C
Cereals	95056	170368	22546	**287970**	33%	59%	8%
Sorghum	2011	56820	3974.6	**62806**	3%	90%	6%
Maize	90601	30902	16385	**137888**	66%	22%	12%
Wheat	201	6569	767	**7537**	3%	87%	10%
Rice	2104	68311	1374.4	**71790**	3%	95%	2%
Eleusine	138	7765	45	**7949**	2%	98%	1%
Pulses	47911	164074	22900	**234885**	20%	70%	10%
Beans	38961	146517	21423	**206901**	19%	71%	10%
Banana (plantain)	263065	311884	286726	**861675**	31%	36%	33%
Starchy roots	376073	662269	396000	**1434343**	26%	46%	28%
Total	**782105**	**1308595**	**728173**	**2818873**	**28%**	**46%**	**26%**

Source: Calculated by the authors based on data from the Institut de Statistiques et d'etudes Economiques du Burundi

Burundi: maize, rice and beans output by province (average 2009-13)

Maize			Rice			Beans		
Province	Production (MT)	Share of national production	Province	Production (MT)	Share of national production	Province	Production (MT)	Share of national production
Bururi	18329	13.3%	Bubanza	29605	41.2%	Kirundo	37921	18.3%
Gitega	15161	11.0%	Bujumbura	12479	17.4%	Ngozi	26669	12.9%
Ngozi	13614	9.9%	Cibitoke	4111	5.7%	Gitega	23413	11.3%
Kirundo	10108	7.3%	Ngozi	3722	5.2%	Muyinga	22106	10.7%
Kayanza	9992	7.2%	Karusi	3652	5.1%	Kayanza	19121	9.2%
Muyinga	9744	7.1%	Makamba	3611	5.0%	Karusi	15845	7.6%
Makamba	9177	6.7%	Bururi	3340	4.7%	Muramvya	11201	5.4%
Cibitoke	7242	5.3%	Ruyigi	2212	3.1%	Ruyigi	8829	4.3%
Mwaro	6925	5.0%	Kirundo	2007	2.8%	Bururi	6872	3.3%
Muramvya	6905	5.0%	Cankuzo	1790	2.5%	Makamba	6404	3.1%
Karusi	6574	4.8%	Gitega	1692	2.4%	Mwaro	6145	3.0%
Ruyigi	6149	4.5%	Muyinga	1536	2.1%	Rutana	5297	2.6%
Rutana	5560	4.0%	Rutana	1349	1.9%	Cibitoke	4742	2.3%
Bubanza	5307	3.8%	Kayanza	675	0.9%	Cankuzo	4653	2.2%
Bujumbura	3972	2.9%	Mwaro	11	0.0%	Bubanza	4072	2.0%
Cankuzo	3129	2.3%	Muramvya	0	0.0%	Bujumbura	3933	1.9%
Total	**137889**	**100%**	**Total**	**71791**	**100%**	**Total**	**207222**	**100%**

Source: Calculated by the authors based on data from the Institut de Statistiques et d'etudes Economiques du Burundi

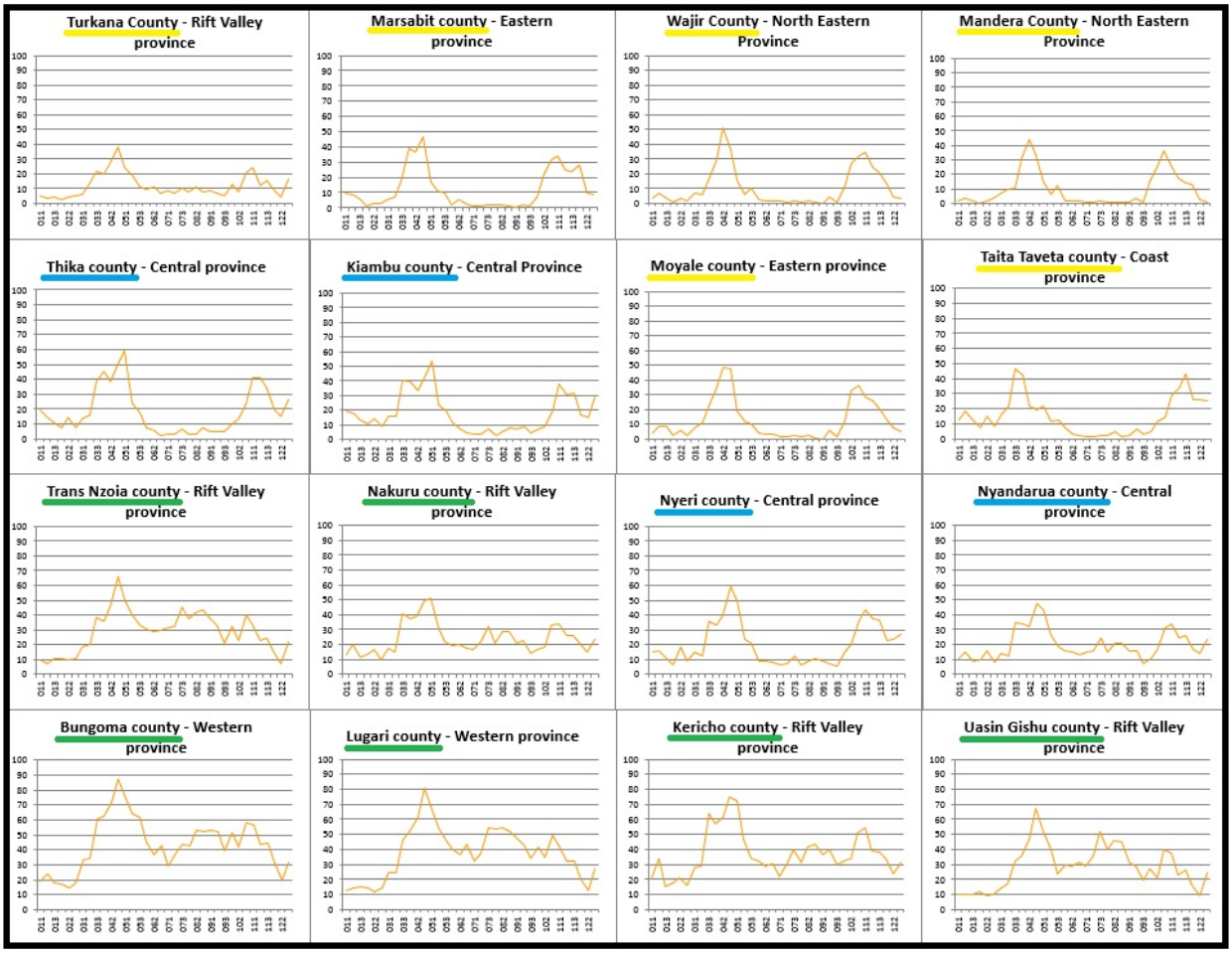
Burundi: relative dietary energy supply of main food commodities (average 2005-07)

Commodity	Sweet Potatoes	Beans	Bananas	Cassava	Maize	Rice	Peas
Share of Dietary Energy supply	17%	16%	14%	13%	13%	3%	3%

Source: Calculated by the authors based on FAOSTAT data

KENYA

Kenya: estimated rainfall (mm), long term average (1996-14), January dekad 1-December dekad 3 (selected counties)



Source: Authors based FAO/GIEWS data

Kenya: maize output of the "long rains" season by province (average 2001-08)

Province	Rift Valley	Western	Nyanza	Eastern	Central	Coast	North Eastern	Nairobi	**Total**
Production (MT)	1278154	440056	308273	96244	87748	38326	826	722	**2250348**
Share of national production	57%	20%	14%	4%	4%	2%	0%	0%	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

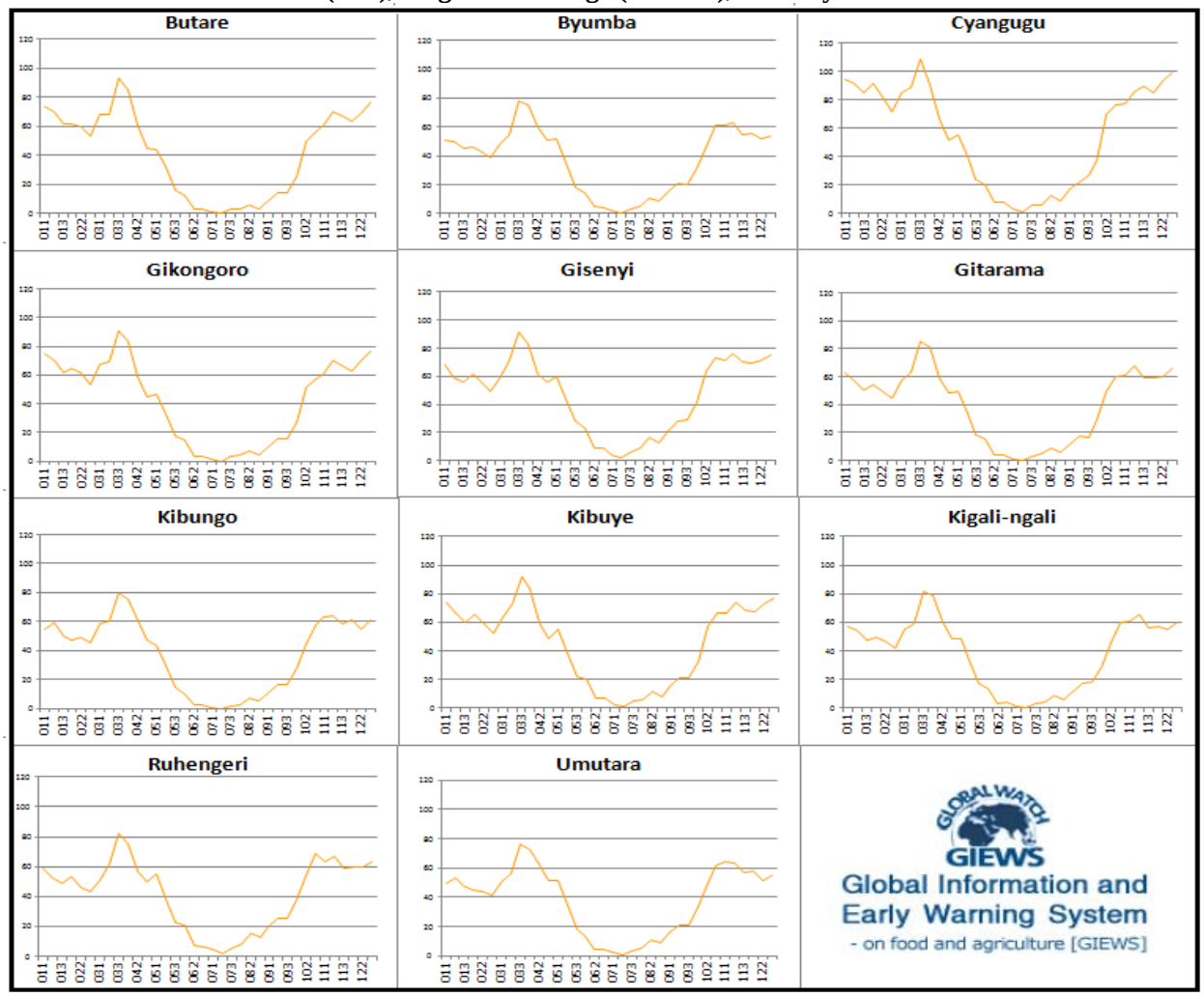
Kenya: characteristics of main food commodities in the local diet (average 2007-11)

Commodity Groups	Food supply quantity (kg/capita/year)	Daily caloric intake (kcal/capita/day)	Protein supply quantity (g/capita/day)
	Absolute value	Share of grand total	Share of grand total
Maize	78	35%	35%
Potatoes	54	5%	4%
Bananas	31	3%	2%
Wheat	28	11%	12%
Sweet potatoes	20	3%	2%
Cassava	15	2%	1%
Beans	10	5%	12%
Rice	8	4%	3%
Grand total	**421**	**1965**	**51**
Of which above commodities	244	1317	36

Source: Calculated by the authors based on FAOSTAT data

RWANDA

Rwanda: estimated rainfall (mm), long term average (1996-14), January dekad 1-December dekad 3



Source: Calculated and designed by the authors based FAO/GIEWS data

Rwanda: food crop output (MT) by commodity group and season (2009-13 average

Commodity Groups	Season A and C	Season B	**Total**	Share A and C	Share B
Cereals	459728	404510	**864238**	53%	47%
Sorghum	11190	148548	**159738**	7%	93%
Maize	393132	152218	**545350**	72%	28%
Wheat	20354	56911	**77265**	26%	74%
Rice	35053	46834	**81886**	43%	57%
Pulses	232422	183106	**415528**	56%	44%
Beans	216893	165978	**382871**	57%	43%
Groundnuts	6485	7347	**13832**	47%	53%
Banana (plantain)	1554211	1555375	**3109585**	50%	50%
Starchy roots	2868615	3003435	**5872050**	49%	51%
Vegetables	247273	265558	**512831**	48%	52%
Fruits	174929	319117	**494046**	35%	65%
Total	**5543663**	**5738447**	**11282110**	**49%**	**51%**

Source: Calculated by the authors based on data from the Ministry of Agriculture and Animal Resources

Rwanda: maize output by province (average 2009-13)

Region	Area (ha)	Production (MT)	Yield (MT/ha)	Share of national production
Kirehe	15508	38074	2.46	8.04%
Nyagatare	14524	34645	2.39	7.32%
Nyabihu	12996	33244	2.56	7.02%
Rubavu	12543	31434	2.51	6.64%
Gatsibo	10700	27638	2.58	5.84%
Rusizi	10524	26546	2.52	5.61%
Burera	9375	25667	2.74	5.42%
Gakenke	12166	25433	2.09	5.37%
Musanze	8735	23583	2.70	4.98%
Ngororero	7779	18519	2.38	3.91%
Gicumbi	6662	15733	2.36	3.32%
Rutsiro	10020	15356	1.53	3.24%
Nyamasheke	6292	15006	2.38	3.17%
Ngoma	6725	14987	2.23	3.16%
Bugesera	7656	14578	1.90	3.08%
Rwamagana	5728	12144	2.12	2.56%
Karongi	6663	12053	1.81	2.55%
Kamonyi	4827	11095	2.30	2.34%
Rulindo	4641	9619	2.07	2.03%
Ruhango	4651	9470	2.04	2.00%
Nyamagabe	4444	8513	1.92	1.80%
Huye	4474	8317	1.86	1.76%
Kayonza	4424	8202	1.85	1.73%
Nyanza	4130	7426	1.80	1.57%
Muhanga	3497	7159	2.05	1.51%
Nyaruguru	3850	6986	1.81	1.48%
Gisagara	3900	6649	1.70	1.40%
Kigali	2821	5465	1.94	1.15%
Rwanda	**210256**	**473542**	**2.25**	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture and Animal Resources

Rwanda: beans output by province (average 2009-13)

Region	Area (ha)	Production (MT)	Yield (MT/ha)	Share of national production
Rubavu	15772	25619	1.62	6.82%
Gicumbi	20121	22648	1.13	6.03%
Ngororero	16878	21077	1.25	5.61%
Nyabihu	14706	19602	1.33	5.22%
Gakenke	19856	19481	0.98	5.18%
Burera	17307	19132	1.11	5.09%
Rusizi	17251	17389	1.01	4.63%
Nyamasheke	15089	17257	1.14	4.59%
Rulindo	16767	16424	0.98	4.37%
Rutsiro	13537	15449	1.14	4.11%
Musanze	12655	14856	1.17	3.95%
Muhanga	13730	14604	1.06	3.89%
Karongi	15272	13024	0.85	3.47%
Ngoma	15276	11963	0.78	3.18%
Gatsibo	13806	11852	0.86	3.15%
Kirehe	16048	11353	0.71	3.02%
Nyagatare	14300	11236	0.79	2.99%
Ruhango	12794	10504	0.82	2.80%
Nyamagabe	12763	9827	0.77	2.61%
Kayonza	13439	9288	0.69	2.47%
Bugesera	12751	9209	0.72	2.45%
Kamonyi	12960	9175	0.71	2.44%
Gisagara	13565	8550	0.63	2.28%
Huye	12233	8249	0.67	2.20%
Rwamagana	10972	7827	0.71	2.08%
Nyanza	10313	7672	0.74	2.04%
Nyaruguru	9371	6654	0.71	1.77%
Kigali	6562	5875	0.90	1.56%
Rwanda	**396091**	**375797**	**0.95**	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture and Animal Resources

Rwanda: rice output by province (average 2009-13)

Region	Area (ha)	Production (MT)	Yield (MT/ha)	Share of national production
Rusizi	3428	21567	6.29	24.71%
Gisagara	2735	12100	4.42	13.86%
Nyagatare	1222	6517	5.33	7.47%
Kirehe	1273	6285	4.94	7.20%
Gatsibo	1233	6257	5.07	7.17%
Ngoma	1259	5493	4.36	6.29%
Huye	1125	5468	4.86	6.26%
Bugesera	828	4697	5.67	5.38%
Rwamagana	798	3741	4.69	4.29%
Ruhango	600	3340	5.57	3.83%
Nyanza	689	3187	4.62	3.65%
Kamonyi	534	2920	5.47	3.35%
Nyamasheke	479	2040	4.26	2.34%
Kigali	325	1455	4.48	1.67%
Muhanga	213	1143	5.36	1.31%
Kayonza	155	724	4.66	0.83%
Ngororero	70	329	4.67	0.38%
Gakenke	3	9	3.00	0.01%
Rulindo	1	1	1.95	0%
Nyaruguru	6	0	0	0%
Nyamagabe	11	0	0	0%
Karongi	0	0	0	0%
Nyabihu	135	0	0	0%
Rubavu	8	0	0	0%
Rutsiro	0	0	0	0%
Musanze	0	0	0	0%
Burera	0	0	0	0%
Gicumbi	0	0	0	0%
Rwanda	**17129**	**87274**	**5.10**	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture and Animal Resources

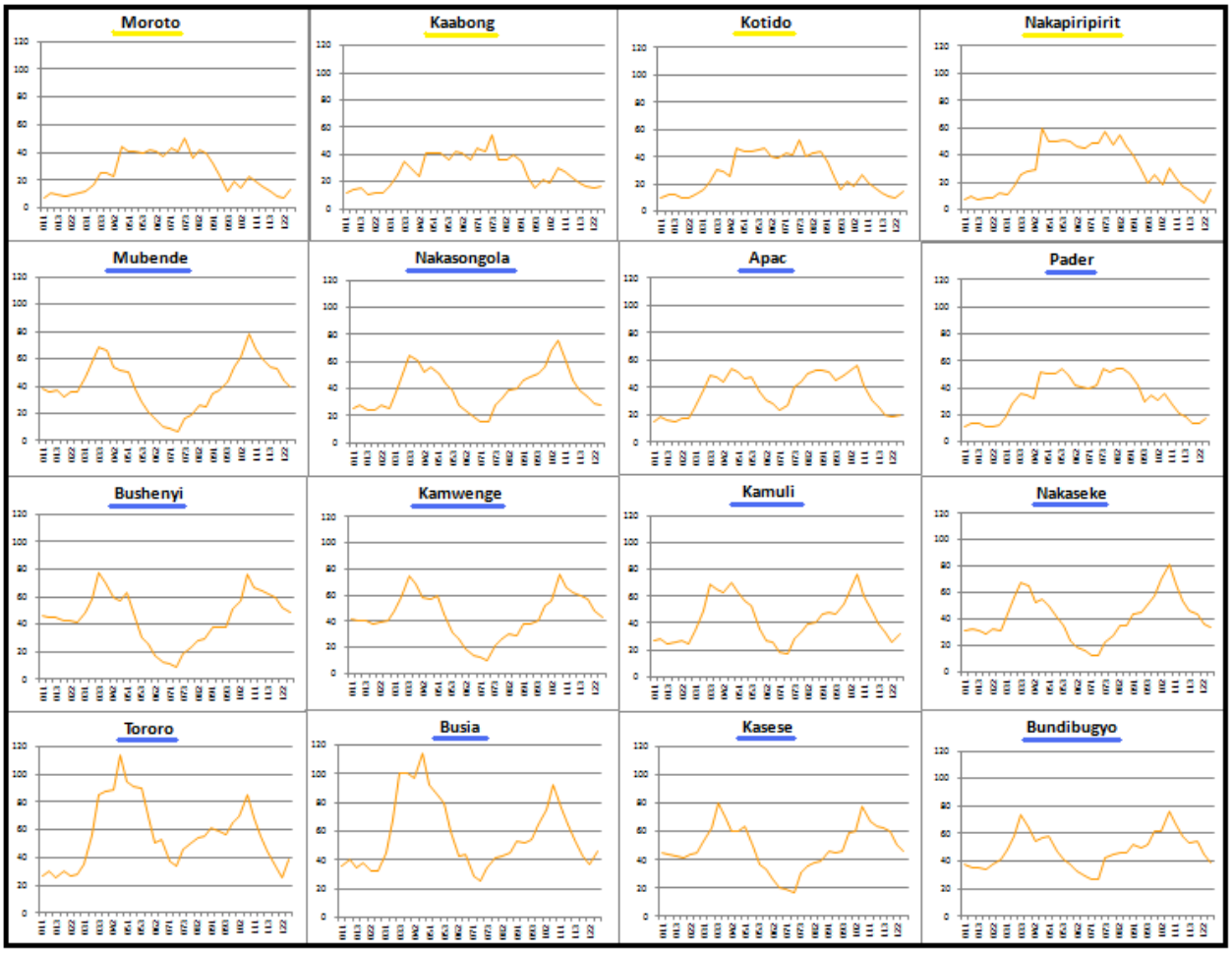
Rwanda: characteristics of main food commodities in the local diet (average 2007-11)

Commodity Groups	Food supply quantity (kg/capita/year)	Daily caloric intake intake (kcal/capita/day)	Protein supply quantity (gm/capita/day)
	Absolute value	Share of grand total	Share of grand total
Plantains	132	16%	6%
Potatoes	99	9%	8%
Cassava	89	12%	3%
Sweet potatoes	74	10%	5%
Beans	28	12%	34%
Maize	14	6%	6%
Wheat	10	4%	5%
Sorghum	12	5%	6%
Rice	7	3%	3%
Grand total	**628**	**2051**	**50**
Of which above commodities	465	1589	38

Source: Calculated by the authors based on FAOSTAT data

UGANDA

Uganda: estimated rainfall (mm), long term average (1996-2014), January dekad 1-December dekad 3 (selected districts)



Source: Authors based FAO/GIEWS data

Uganda: food crop output by commodity group and season

Commodity Groups	Second season 2008 (MT)	First season 2009 (MT)	**Total** (MT)	Share second season 2008	Share first season 2009
Cereals	1680832	1524582	**3205414**	52%	48%
Maize	1164324	1197632	**2361956**	49%	51%
Sorghum	217465	158330	**375795**	58%	42%
Millet	163058	113870	**276928**	59%	41%
Rice	135985	54750	**190735**	71%	29%
Pulses	581894	409846	**991740**	59%	41%
Beans	545787	383490	**929277**	59%	41%
Groundnuts	154652	90032	**244684**	63%	37%
Banana (plantain)	2132393	1885593	**4017986**	53%	47%
Starchy roots	2889304	1978212	**4867516**	59%	41%
Total	**9119907**	**7412847**	**16532754**	**55%**	**45%**

Source: Calculated by the authors based on data from the Uganda Bureau of Statistics

Uganda: maize output (Metric Tons, Second season 2008, First season 2009) by region

Region	Area (ha)	Share of area	Production (MT)	Share of production	Yield (MT/ha)	Marketable surplus (MT)	Share of marketable surplus
Central	189135	19%	449859	19%	2.4	287325	25%
Eastern	388762	38%	1108554	47%	2.9	483680	43%
Northern	247780	24%	305798	13%	1.2	100119	9%
Western	188583	19%	497745	21%	2.6	261550	23%
Total	**1014260**	**100%**	**2361956**	**100%**	**2.3**	**1132675**	**100%**

Source: Calculated by the authors based on data from the Uganda Bureau of Statistics.

Uganda: rice output (Metric Tons, Second season 2008, First season 2009) by region

Region	Area (ha)	Share of area	Production (MT)	Share of production	Yield (MT/ha)	Marketable surplus (MT)	Share of marketable surplus
Central	2637	4%	2173	1%	0.8	1541	1%
Eastern	36033	48%	128195	67%	3.6	83269	72%
Northern	25912	35%	43719	23%	1.7	18788	16%
Western	10504	14%	16649	9%	1.6	12350	11%
Total	**75086**	**100%**	**190736**	**100%**	**2.5**	**115947**	**100%**

Source: Calculated by the authors based on data from the Uganda Bureau of Statistics.

Uganda: beans output (Metric Tons, Second season 2008, First season 2009) by region

Region	Area (ha)	Share of area	Production (MT)	Share of production	Yield (MT/ha)	Marketable surplus (MT)	Share of marketable surplus
Central	120798	20%	167276	18%	1.38	102549	28%
Eastern	108107	18%	98834	11%	0.91	28784	8%
Northern	146702	24%	251221	27%	1.71	64705	18%
Western	241915	39%	411945	44%	1.70	155624	43%
Total	**617521**	**100%**	**929278**	**100%**	**1.50**	**362688**	**100%**

Source: Calculated by the authors based on data from the Uganda Bureau of Statistics.

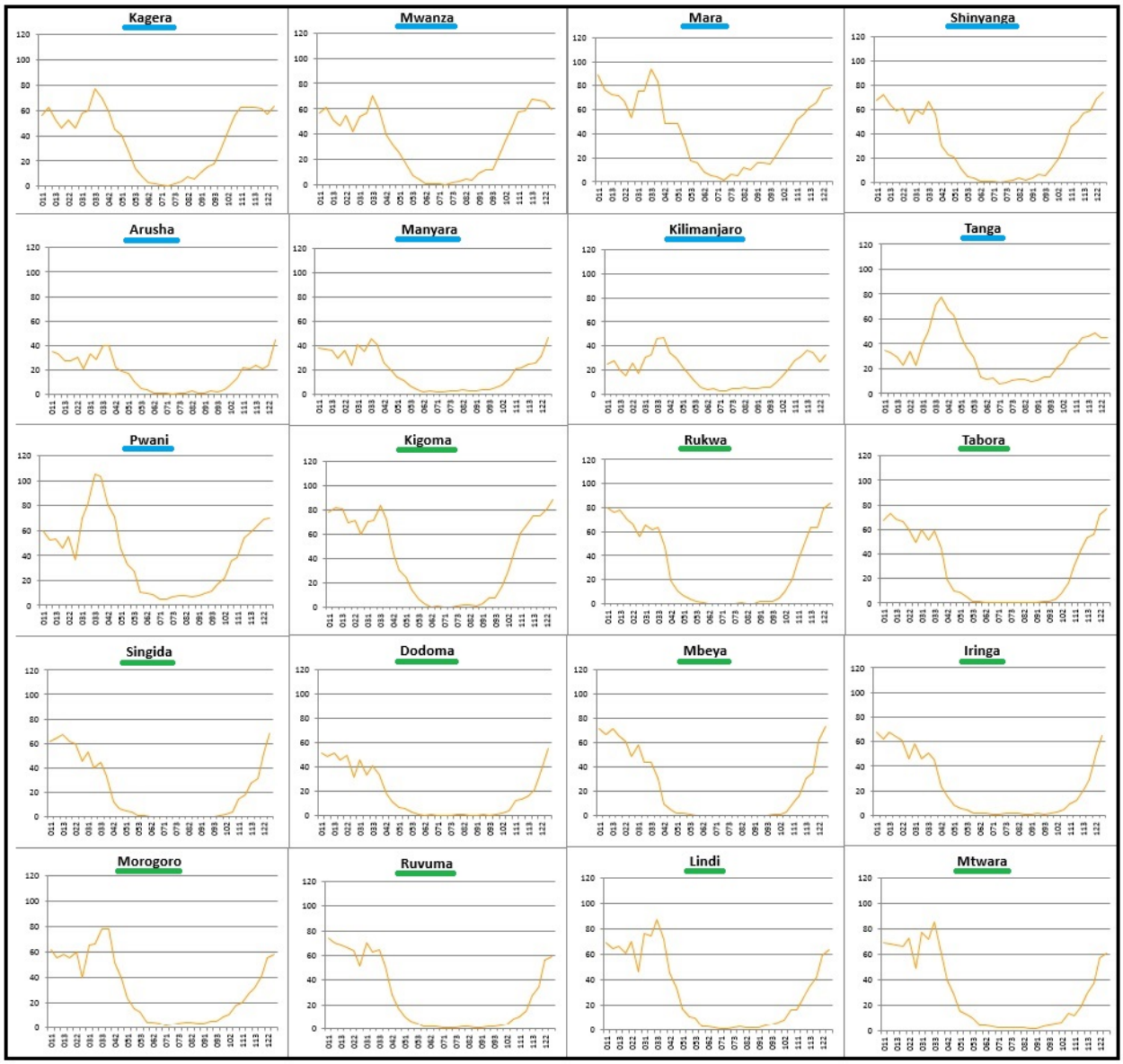
Uganda: characteristics of main food commodities in the local diet (average 2007-2011)

Commodity Groups	Food supply quantity (kg/capita/year)	Daily caloric intake (kcal/capita/day)	Protein supply quantity (g/capita/day)
	Absolute value	Percentage of grand total	Percentage of grand total
Plantains	137	15%	6%
Cassava	93	13%	5%
Sweet potatoes	70	8%	5%
Maize	36	14%	15%
Potatoes	14	1%	1%
Wheat	11	4%	5%
Beans	11	5%	14%
Rice	5	2%	2%
Grand total	**608**	**2203**	**47**
Of which above commodities	377	1356	72

Source: Calculated by the authors based on FAOSTAT data

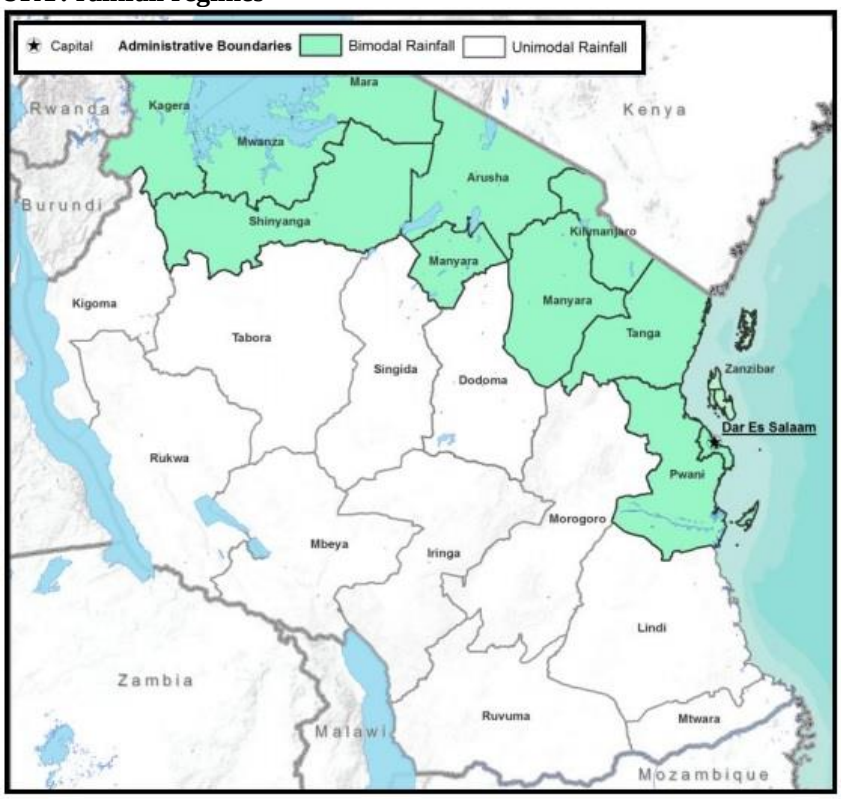
URT

URT: estimated rainfall (mm), long term average (1996-14), January dekad 1-December dekad 3



Source: Authors based FAO/GIEWS data

URT: rainfall regimes



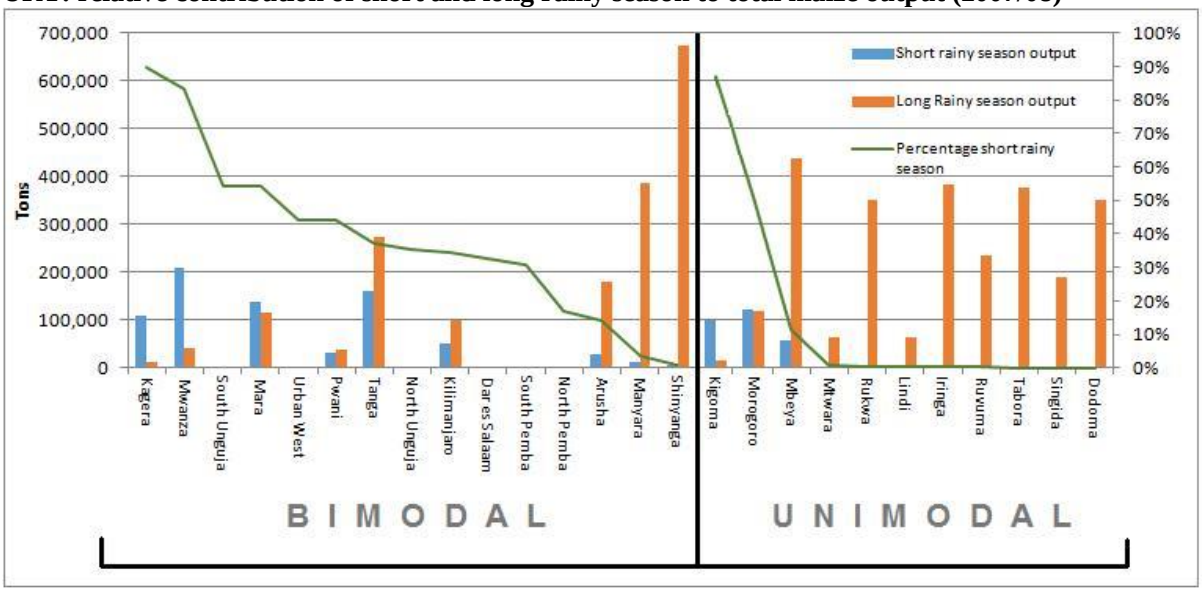
Source: WFP

URT: maize output by province and rainy season (2007/08)

	Region	Short rainy season output (MT)	Long rainy season output (MT)	**Total (MT)**	Share short rainy season	Share long rainy season	Share of national production
Bimodal	Kagera	108,856	12,292	**121,148**	90%	10%	2%
	Mwanza	208,491	41,536	**250,027**	83%	17%	5%
	South Unguja	628	525	**1,153**	54%	46%	0%
	Mara	139,568	116,984	**256,552**	54%	46%	5%
	Urban West	409	516	**925**	44%	56%	0%
	Pwani	30,980	39,285	**70,265**	44%	56%	1%
	Tanga	161,850	272,896	**434,746**	37%	63%	8%
	North Unguja	762	1,401	**2,163**	35%	65%	0%
	Kilimanjaro	51,920	98,219	**150,139**	35%	65%	3%
	Dar es Salaam	1,319	2,732	**4,051**	33%	67%	0%
	South Pemba	109	246	**355**	31%	69%	0%
	North Pemba	136	669	**805**	17%	83%	0%
	Arusha	29,656	180,022	**209,678**	14%	86%	4%
	Manyara	13,815	387,573	**401,388**	3%	97%	7%
	Shinyanga	6,940	671,806	**678,746**	1%	99%	12%
	Total bimodal	**755,439**	**1,826,702**	**2,582,141**	**29%**	**71%**	**47%**
Unimodal	Kigoma	98,382	14,669	**113,051**	87%	13%	2%
	Morogoro	121,209	117,226	**238,435**	51%	49%	4%
	Mbeya	56,543	438,266	**494,809**	11%	89%	9%
	Mtwara	458	63,012	**63,470**	1%	99%	1%
	Rukwa	1,724	349,289	**351,013**	0%	100%	6%
	Lindi	226	62,345	**62,571**	0%	100%	1%
	Iringa	1,238	383,035	**384,273**	0%	100%	7%
	Ruvuma	554	236,048	**236,602**	0%	100%	4%
	Tabora	205	376,136	**376,341**	0%	100%	7%
	Singida	0	190,491	**190,491**	0%	100%	3%
	Dodoma	0	350,979	**350,979**	0%	100%	6%
	Total unimodal	**280,539**	**2,581,496**	**2,862,035**	**10%**	**90%**	**53%**
Total URT		**1,035,978**	**4,408,198**	**5,444,176**	**19%**	**81%**	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

URT: relative contribution of short and long rainy season to total maize output (2007/08)



Source: Calculated and designed by the authors based on data from the Ministry of Agriculture

URT: rice output by province and rainy season (2007/08)

	Region	Short rainy season output (MT)	Long rainy season output (MT)	**Total (MT)**	Share short rainy season	Share long rainy season	Share of national production
Bimodal	Shinyanga	6,276	251,668	**257,944**	2%	98%	18%
	Kagera	18,351	12,454	**30,805**	60%	40%	2%
	Mwanza	109,158	69,284	**178,442**	61%	39%	12%
	Mara	3,674	5,944	**9,618**	38%	62%	1%
	Manyara	677	7,683	**8,360**	8%	92%	1%
	Arusha	572	1,699	**2,271**	25%	75%	0%
	North Unguja	1,813	3,986	**5,799**	31%	69%	0%
	South Unguja	1,358	1342	**2,700**	50%	50%	0%
	Urban West	491	2234	**2,725**	0%	0%	0%
	North Pemba	269	9703	**9,972**	3%	97%	1%
	South Pemba	101	10968	**11,069**	0%	0%	1%
	Kilimanjaro	7,175	1,655	**8,830**	81%	19%	1%
	Tanga	2,498	10,824	**13,322**	19%	81%	1%
	Pwani	13,957	19,249	**33,206**	42%	58%	2%
	Dar es Salaam	41	3,287	**3,328**	0%	0%	0%
	Total bimodal	**166,411**	**411,980**	**578,391**	**29%**	**71%**	**40%**
Unimodal	Lindi	273	16,541	**16,814**	2%	98%	1%
	Mtwara	43	22,377	**22,420**	0%	100%	2%
	Ruvuma	97	55,577	**55,674**	0%	100%	4%
	Iringa	222	17,488	**17,710**	1%	99%	1%
	Mbeya	561	163,504	**164,065**	0%	100%	11%
	Singida	0	15,051	**15,051**	0%	100%	1%
	Tabora	0	131,507	**131,507**	0%	100%	9%
	Rukwa	564	126,679	**127,243**	0%	100%	9%
	Kigoma	5,916	455	**6,371**	93%	7%	0%
	Morogoro	160,938	133,777	**294,715**	55%	45%	21%
	Dodoma	0	1,983	**1,983**	0%	100%	0%
	Total unimodal	**168,614**	**684,939**	**853,553**	**20%**	**80%**	**60%**
Total URT		**335,025**	**1,096,919**	**1,431,944**	**23%**	**77%**	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

URT: beans output by province and rainy season (2007/08)

	Region	Short rainy season output (MT)	Long rainy season output (MT)	**Total (MT)**	Share short rainy season	Share long rainy season	Share of national production
Bimodal	Shinyanga	746	16,620	**17,367**	4%	96%	3%
	Kagera	79,739	27,724	**107,463**	74%	26%	19%
	Mwanza	16,568	613	**17,181**	96%	4%	3%
	Mara	11,433	8,728	**20,160**	57%	43%	4%
	Manyara	3,000	41,351	**44,350**	7%	93%	8%
	Arusha	12,592	39,069	**51,661**	24%	76%	9%
	North Unguja	7	14	**21**	33%	67%	0%
	South Unguja	1	0	**1**	100%	0%	0%
	Urban West	0	0	**0**	0%	0%	0%
	North Pemba	2	0	**2**	100%	0%	0%
	South Pemba	0	0	**0**	0%	0%	0%
	Kilimanjaro	9,580	14,573	**24,153**	40%	60%	4%
	Tanga	20,490	46,657	**67,147**	31%	69%	12%
	Pwani	318	95	**412**	77%	23%	0%
	Dar es Salaam	0	0	**0**	0%	0%	0%
	Total bimodal	**154,474**	**195,444**	**349,918**	**44%**	**56%**	**61%**
Unimodal	Lindi	0	401	**401**	0%	100%	0%
	Mtwara	0	681	**681**	0%	100%	0%
	Ruvuma	0	26,502	**26,502**	0%	100%	5%
	Iringa	105	37,413	**37,519**	0%	100%	7%
	Mbeya	2,745	55,535	**58,280**	5%	95%	10%
	Singida	0	8,965	**8,965**	0%	100%	2%
	Tabora	0	5,923	**5,923**	0%	100%	1%
	Rukwa	599	27,063	**27,662**	2%	98%	5%
	Kigoma	25,644	13,034	**38,678**	66%	34%	7%
	Morogoro	4,360	5,048	**9,408**	46%	54%	2%
	Dodoma	0	6,831	**6,831**	0%	100%	1%
	Total unimodal	**33,454**	**187,397**	**220,851**	**15%**	**85%**	**39%**
Total URT		**187,928**	**382,841**	**570,769**	**33%**	**67%**	**100%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

URT: maize output by region (average 2009-12)

Region	Area (ha)	Production (MT)	Yield (tons/ha)	Share of national production
Mbeya	327,929	575,631	1.76	13.2%
Iringa	344,990	458,912	1.33	10.5%
Rukwa	197,696	400,796	2.03	9.2%
Shinyanga	361,983	361,599	1.00	8.3%
Kigoma	192,816	293,794	1.52	6.7%
Ruvuma	138,272	278,754	2.02	6.4%
Morogoro	215,859	269,889	1.25	6.2%
Tabora	212,546	228,676	1.08	5.2%
Mwanza	159,057	212,100	1.33	4.8%
Kagera	125,235	208,993	1.67	4.8%
Tanga	164,514	208,228	1.27	4.8%
Maniara	196,332	193,466	0.99	4.4%
Kilimanjaro	91,101	148,674	1.63	3.4%
Mara	65,581	121,724	1.86	2.8%
Arusha	103,241	110,591	1.07	2.5%
Singida	110,272	75,017	0.68	1.7%
Dodoma	119,878	63,824	0.53	1.5%
Pwani	72,331	57,574	0.80	1.3%
Mtwara	79,971	53,778	0.67	1.2%
Lindi	72,386	52,430	0.72	1.2%
Dar es Salaam	2,486	1,739	0.70	0.0%
Total	**3,354,477**	**4,376,189**	**1.30**	**100.0%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

URT: rice output by region (average 2009-12)

Region	Area (ha)	Production (MT)	Yield (tons/ha)	Share of national production
Morogoro	132,462	286,904	2.17	14.3%
Shinyanga	144,502	221,209	1.53	11.0%
Mwanza	93,075	202,280	2.17	10.1%
Mbeya	67,343	201,139	2.99	10.0%
Rukwa	63,192	180,663	2.86	9.0%
Tabora	78,626	147,614	1.88	7.3%
Pwani	97,258	147,295	1.51	7.3%
Arusha	54,831	128,691	2.35	6.4%
Ruvuma	51,050	101,549	1.99	5.1%
Kigoma	41,037	95,454	2.33	4.8%
Kilimanjaro	13,156	78,092	5.94	3.9%
Mtwara	31,681	52,895	1.67	2.6%
Tanga	20,179	36,592	1.81	1.8%
Iringa	12,444	30,414	2.44	1.5%
Lindi	18,117	28,329	1.56	1.4%
Mara	12,585	16,320	1.30	0.8%
Maniara	4,795	15,443	3.22	0.8%
Kagera	7,156	15,378	2.15	0.8%
Dodoma	15,271	14,709	0.96	0.7%
Singida	4,433	4,525	1.02	0.2%
Dar es Salaam	1,959	2,950	1.51	0.1%
Total	**965,152**	**2,008,446**	**2.08**	**100.00%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

URT: beans output by region (average 2009-12)

Region	Area (ha)	Production (MT)	Yield (tons/ha)	Share of national production
Kagera	135,754	115,491	0.85	13.1%
Kigoma	130,554	99,818	0.76	11.4%
Mbeya	105,440	89,869	0.85	10.2%
Tanga	89,350	85,011	0.95	9.7%
Rukwa	76,325	75,827	0.99	8.6%
Maniara	89,250	71,750	0.80	8.2%
Shinyanga	52,052	55,478	1.07	6.3%
Iringa	60,956	55,263	0.91	6.3%
Kilimanjaro	43,614	41,008	0.94	4.7%
Singida	49,513	29,289	0.59	3.3%
Mwanza	27,625	27,928	1.01	3.2%
Ruvuma	26,248	27,471	1.05	3.1%
Morogoro	29,525	26,103	0.88	3.0%
Arusha	32,878	24,788	0.75	2.8%
Mara	29,525	24,519	0.83	2.8%
Tabora	21,802	17,799	0.82	2.0%
Dodoma	19,188	11,357	0.59	1.3%
Mtwara	412	348	0.84	0.0%
Dar es Salaam	0	0	0.00	0.0%
Lindi	0	0	0.00	0.0%
Pwani	0	0	0.00	0.0%
Total	**1,020,011**	**879,115**	**0.86**	**100.00%**

Source: Calculated by the authors based on data from the Ministry of Agriculture

URT: characteristics of main food commodities in the local diet (average 2007-11)

Commodity Groups	Food supply quantity (kg/capita/year)	Daily caloric intake (kcal/capita/day)	Protein supply quantity (gm/capita/day)
	Absolute value	Percentage of grand total	Percentage of grand total
Cassava	97	9%	4%
Maize	59	25%	24%
Bananas	46	4%	2%
Sweet potatoes	36	5%	3%
Rice	20	10%	7%
Wheat	15	5%	7%
Potatoes	15	1%	1%
Beans	14	6%	17%
Plantains	11	1%	0
Sorghum	8	3%	4%
Grand total	**492**	**2076**	**51**
Of which above commodities	320	1426	36

Source: Calculated by the authors based on FAOSTAT data.

Annex 4.1 National Strategic Grain Reserves[50]

Kenya

Kenya's Strategic Grain Reserve (SGR), established in 2002, and operated by the National Cereals and Produce Board (NCPB), has the mandate to "cushion farmers from the effect of over-supply in periods of good weather and to provide a first line of defence for coping with food deficits".

One important parameter of an SGR is the size of the mandated reserve against which actual reserves in various periods are assessed. Kenya's SGR is mandated to have a physical stock of grains of 4 million bags of 90 kg (or a total of 360,000 MT) and a cash equivalent of similar volume, thus in total equivalent to 720,000 MT of grains. During the food price crisis of 2008, the GoK allocated more funds to the reserve so as to raise the SGR from 4 to 8 million bags (1.5 to 3 months of the national requirement), but this could not be implemented. During 2009/10–2011/12, the SGR had 3 million bags which further fell to only 2.1 million bags during 2012/13. The current plan is to: i) transform the SGR into a Strategic Food Reserve (SFR) by including other foodstuffs also (e.g. rice, pulses, powdered milk, canned beef, dried fish); and ii) maintain and substantially increase the reserve in the form of physical stock and cash.

A second issue, often divisive, is the impact of the SGR on market prices, both at the farmer and consumer ends. There are different views on the impact of the NCPB operations on market prices. The NCPB maintains that it has only a small impact on prices as its purchases are small, about 2-3% of total production of maize (albeit up to 7-8% in some years). The FAO MAFAP study also found only "limited" impact on domestic maize prices due to the small-scale operations of the NCPB relative to the size of the market. On the other hand, some studies (e.g. by the World Bank, MSU) have remarked that the NCPB interventions have kept maize prices higher than otherwise, e.g. by 20% during 1995-2004, with no contribution to price stability. The study by Jayne et al. (2008) indicated that the NCPB can have a significant impact on market prices. The interventions in the maize market are also considered to be anti-poor in the sense that while the higher market prices hurt poor consumers, procurement mostly comes from medium- and large-scale farmers in high-potential areas, with only 10% farmers accounting for 83% of the marketed surplus and only 2% of the smallholders selling maize to the NCPB. The Gross et al. (2009) study for FAO concluded that the NCPB price announcements and sales were a major source of market uncertainty, and have prevented millers in particular from taking forward positions.

Two suggestions made in the study by ACCORD (2014) are to separate the NCPB's food reserve function from its commercial activities, making it possible to distinguish between reserve stocks policies, commercial stocks and famine relief stocks, and to consider lowering maize procurement prices so as limit procurement to smallholder farmers who face even lower prices in the market.

Missing in all these discussions is the regional dimension – how the NCPB's operations and Kenya's SGR are going to be affected by the EAC common market environment. The EAC food markets will be increasingly integrated which means that it will be difficult to influence prices, both at the farm and consumer levels, independent of the prices in the region. Moreover, the CU/CM policy permits traders and agencies to procure grains anywhere within the EAC although it is unlikely that national agencies will have a reason to do that. Also missing in the discussions is the question of how the national SGRs will be affected if the EAC proposal to implement regionally coordinated national SGRs is implemented.

[50] This review does not cover Burundi for lack of sufficient information on food reserves.

Rwanda

Growth of maize production in Rwanda has been impressive, with output more than trebling between 2008 and 2012. Beans production has also increased markedly. The credit for these successes is given to CIP I. The CIP II rightly acknowledged that to sustain these achievements, more attention needs to be paid to developing markets for the surpluses being produced, especially for smallholders who are the main producers. Thus, there is now a programme for maize with the following key elements: farm support price, collective marketing through cooperatives, rule-based pricing and procurement guidelines, and procurement linked to National Strategic Grain Reserve (NSGR). Beans are excluded from the price support mechanism presumably because, unlike maize, Rwanda is considered to have a cost advantage in beans production in the region and so competitive without government support. In April 2010, the GoR issued a directive requiring government procurement institutions to purchase at least 40% of their grain requirements from smallholder farmers through registered cooperatives.

Given its similar goals, the GoR also decided to adapt for its new programme the modalities of the WFP P4P, which is called Common P4P or CP4P (discussed earlier in Section 4.3.2). The CP4P recognized that over-dependency on WFP or institutional buyers as the market outlets is not healthy for long-run market development. Accordingly, while encouraging procurement from small farmers, the CP4P programme has also set a limit for procuring no more than 50% of the marketable surplus of smallholders so that they use their strengthened position (due to the guaranteed 50% sales to the agencies) to seek private market outlets.

Thus, an emerging trend in Rwanda is that institutional buyers (government agencies, WFP) are becoming increasingly important outlets for smallholder suppliers of maize and beans, especially those who are organized in cooperatives. Agencies seek to buy as much as possible from cooperatives and only deficits are sourced from local traders.

It is also recognized in policy and programme documents that the operations of institutional buyers could distort grain markets. To safeguard against that, the MINAGRI will certify annually if any of these activities did or did not result in a *substantial* disincentive or interference with domestic production or marketing activities. If that is established, the NSGR Steering Committee will undertake a full review of the operations and procedures and amend them to mitigate this impact. One recent FAO study (Kelly and Mbizule 2014) notes with some concern that the prices offered by institutional buyers were higher on average by 30% than the spot market price at the time of sale by farmers. There is a provision that the regional export and import parity prices need to be taken into account while setting the price floor.

As regards the size of the SGR, a manual has been prepared that prescribes that the NSGR shall hold sufficient stock to cover the emergency needs of 10% of the population for a period of three months, the needs being a minimum ration of cereals (maize) and legumes and pulses at the rate of 2 kg per household per day of cereals and 0.75 kg of legumes and pulses.

Uganda

Uganda differs from many other countries in that it not only does not have a national food reserve scheme but also explicitly rejects the idea of holding food reserves. In Uganda's Plan for the Modernisation of Agriculture (PMA), the following is stated: "The government recognises that publicly held food reserves are very expensive under the best of conditions and require careful management to minimize losses due to spoilage. Such schemes have had limited success in other countries but have certainly exerted substantial demands upon public funds. Therefore, government will not adopt any policy to accumulate such stocks unless and until careful studies in Uganda have determined their efficacy." Consistent with this policy,

Uganda's CAADP Investment Plan (Agriculture Sector Development Strategy and Investment Plan) makes no mention of food reserves.

One question often asked in some regional studies on this subject is whether Uganda should also establish food reserves. The FAO study by Gross et al. (2009) remarks that Uganda needs a food reserve agency for national food security as well as to protect farmers and consumers from the extremes of food price volatility. One reason why Uganda might not have felt the need for a food agency for grain procurement from farmers and for protecting farm price could be that WFP was performing that role effectively for many years, as discussed in Section IV in this study. Studies have found that WFP purchases were effective in raising and holding maize (e.g. World Bank 2009). If that is the case, Uganda might now feel the need for such an agency because the size of WFP procurement has been drastically reduced since around 2011. In addition, the EAC proposal on food reserves also calls upon member countries to hold food reserves, as discussed earlier.

URT

The SGR in the URT was established in 1976 and became the National Food Reserve Agency (NFRA) in 2008. Managed by the Ministry of Agriculture (MoAFCC), its two mandates are: i) to guarantee national food security by procuring, storing and releasing food stocks efficiently and effectively; and ii) to stabilizing prices by purchasing food staples in surplus areas and selling at subsidised prices in deficit regions. The mandated size of the SGR is 150,000 MT (3 months of consumption). NFRA sells to the government but during times of food shortages some of its stock could be sold to private traders at subsidized prices so that traders pass on the lower price to consumers.

NFRA's food operations are considered to be fairly small relative to the total market size. Although NFRA's total storage capacity is about 240,000 MT, the average stockholding during 2009-12 was 137,000 MT but a much higher 219,896 MT in 2013/14. The FAO MAFAP (2013) study also found that government interventions have not had any impact on prices at the national level due to the small scale of the operations relative to the size of the national grain markets, but it observed that procurement had localized market effects because the fixed floor prices have been around 10% higher than market prices.

The *Kilimo Kwanza* programme, despite being championed by the private sector, called for scaling up the level of intervention in food markets through measures such as providing more funds to raise the procurement and storage capacity of NFRA, more active regulation of the food prices, and partnering with the private sector in procurement and stocking. It also called for maintaining stocks enough for six months of consumption. Again, missing in these proposals is the regional dimension – how the proposals to deepen trade integration can be made effective in a CU/CM environment, as well as in the context of the Tripartite FTA.

Annex 5.1 Results of the Granger causality tests on food prices

The *Granger causality test* is a statistical method that identifies causality between two variables based on prediction. Such a test between, say, wheat maize prices informs if past prices of wheat predict maize prices in addition to the prediction by the past prices of maize itself. If such a relationship exists, confirmed by statistical tests, the wheat price is said to "Granger cause" maize price. The technique is based on bivariate linear autoregressive model of two variables as follows.

Suppose the question asked is whether maize prices in Kampala Granger cause maize prices in Nairobi? The autoregressive model, assuming that three lags are appropriate for the estimation, is:

$$P_{Nairobi} = a + a1\ P_{Nairobi}\ (lag1) + a2\ P_{Nairobi}\ (lag2) + a3\ P_{Nairobi}\ (lag3) + b1\ P_{Kampala}\ (lag1) + b2\ P_{Kampala}\ (lag\ 2) + b3\ P_{Kampala}\ (lag\ 3)$$

The null test is that all the coefficients of the Kampala prices are jointly zero, i.e. b1 = b2 = b3 = 0. If the null is rejected, based on a F test at the 1% or 5% (or 10%) level of significance, it is said that Kampala prices Granger cause the Nairobi prices. By reversing the two variables, it can be tested if Nairobi prices Granger cause Kampala prices. Granger causality tests are extensively used for analyzing price relationships across two or more markets.

The following tables report the results of this test for maize, rice and dry beans.

Maize markets

Markets	Test statistics	Causality	Reverse causality?
Kampala-Nairobi	F=4.85, prob = 0.001	Kampala causes Nairobi	Yes
Kampala-Dar' Salaam	F=0.95, prob = 0.420	Kampala does **not** cause Dar'Slm	Yes
Kampala-Kigali	F=9.47, prob = 0.000	Kampala causes Kigali	No
Kampala-Bujumbura	F=0.75, prob = 0.527	Kampala does **not** cause B'jmbra	No
Nairobi-Dar' Salaam	F =1.74, prob =0.163	Nairobi does **not** cause Dar'Salm	No
Nairobi-Kigali	F=6.39, prob = 0.001	Nairobi causes Kigali	Yes
Nairobi- Bujumbura	F=1.97, prob = 0.124	Nairobi does **not** cause B'jmbra	No
Dar-Kigali	F=0.57, prob = 0.634	Dar'Salm does **not** cause Kigali	No
Dar-Bujumbura	F=0.81, prob = 0.491	Dar'Salm does **not** cause B'jmbra	No
Kigali-Bujumbura	F=1.73, prob = 0.166	Kigali does **not** cause B'jmbra	No

Rice markets

Markets	Test statistics	Causality	Reverse causality?
ThaiA1-Dar es Salaam	F=3.49, prob = 0.019	ThaiA1 causes Dar es Salaam	No
ThaiA1- Kampala	F=3.31, prob = 0.025	ThaiA1 causes Kampala	No
ThaiA1-Kigali	F=4.55, prob = 0.005	ThaiA1 causes Kigali	No
ThaiA1- Bujumbura	F=5.38, prob = 0.002	ThaiA1 causes Bujumbura	No
Dar-Kampala	F=2.81, prob = 0.044	Kampala causes Dar es Salaam	No
Dar-Kigali	F=5.21, prob = 0.002	Kigali causes Dar es Salaam	No

Dar-Bujumbura	F=5.10, prob = 0.003	Bujumbura causes Dar'Salaam	No
Kampala-Kigali	F=3.82, prob = 0.013	Kampala causes Kigali	No
Kampala-Bujumbura	F =1.28, prob = 0.288	Kampala does **not** cause B'jmbra	No
Kigali-Bujumbura	F=2.23, prob = 0.091	Kigali (weakly) causes B'jmbra	No

Dry beans markets

Markets	**Test statistics**	**Causality**	**Reverse causality?**
Kampala- Nairobi	F=2.75, prob = 0.050	Kampala causes Nairobi	No
Kampala- Dar' Salaam	F=0.65, prob = 0.584	Kampala does **not** cause Dar'Slm	Yes
Kampala- Kigali	F=5.38, prob = 0.002	Kampala causes Kigali	No
Kampala-Bujumbura	F=1.39, prob = 0.255	Kampala does **not** cause B'jmbr	No
Nairobi- Dar' Salaam	F=0.81, prob = 0.490	Nairobi does **not** cause Dar'Slm	Yes
Nairobi-Kigali	F=0.91, prob = 0.441	Nairobi does **not** cause Kigali	Yes
Nairobi-Bujumbura	F=1.97, prob = 0.124	Nairobi does **not** cause B'jmbr	No
Kigali- Dar' Salaam	F=2.91, prob = 0.038	Kigali causes Dar'Slm	No
Kigali- Bujumbura	F =5.24, prob = 0.002	Kigali causes B'jmbr	No
Dar'Salm - Bujumbura	F=2.09, prob = 0.107	Dar'Salm does **not** cause B'jmbr	No

Annex 5.2 EAC Regional Policy Frameworks for Trade and Food Security

a) The EAC Treaty

At the apex and the most important policy document of the EAC is the *Treaty for the Establishment of the East African Community*[51], which was signed on 30 November 1999 and entered into force on 7 July 2000 following its ratification by the three original Partner States (Kenya, Uganda and Tanzania). Burundi Rwanda acceded to this EAC Treaty on 18 June 2007 and became full members of the Community with effect from 1 July 2007. The Treaty has 153 Articles under 29 Chapters and covers a wide range of areas.

The objectives of the Community are articulated in Chapter 2, Article 5 as follows: to develop policies and programmes aimed at widening and deepening co-operation among the Partner States in political, economic, social and cultural fields, research and technology, defence, security and legal and judicial affairs, for their mutual benefit. It is also said in the subsequent paragraph that the integration process should lead to accelerated, harmonious and balanced development and sustained expansion of economic activities, the benefit of which shall be equitably shared.

Chapter 18 of the Treaty is on ***Agriculture and Food Security*** and has six Articles, 105 to 110 covering areas as follows: 105 – Scope of Co-operation; 106 - Seed Multiplication and Distribution; 107 - Livestock Multiplication and Distribution; 108 - Plant and Animal Diseases Control; 109 - Irrigation and Water Catchment Management; and 110 – Food Security.

On scope of cooperation (Article 105), it is said that "the overall objectives of co-operation in the agricultural sector are the achievement of food security and rational agricultural production within the Community. To this end, the Partner States undertake to adopt a scheme for the rationalisation of agricultural production with a view to promoting complementarity and specialisation in and the sustainability of national agricultural programmes in order to ensure:

(a) a common agricultural policy;
(b) food sufficiency within the Community;
(c) an increase in the production of crops, livestock, fisheries and forest products for domestic consumption, exports within and outside the Community and as inputs to agro-based industries within the Community; and
(d) post-harvest preservation and conservation and improved food processing."

Paragraph 2 of Article 105 identifies areas for co-operation. Nine are listed which include: harmonisation of national agricultural policies, food security measures, agro-meteorology and related early warning systems, training, research and extension, SPS measures, marketing of food and co-ordination of the export and import, joint actions on drought and desertification and other areas as the Council may determine.

As a comment, note in the chapeau of paragraph 1, which, besides mentioning food security as a goal on its own, uses words such as rational, rationalization, complementarity and specialization in the context of agricultural production. These are the words from trade literature, and so the intention seems to explicitly promote the exploitation of the power of trade - namely complementarity and specialization – to rationalize agricultural production within the Community. Besides stressing on increased production for domestic and external trade (point c) and post-harvest conservation/processing (point d), the article also calls for a common agricultural policy and regional food sufficiency.

[51] http://www.eac.int/treaty/index.php?option=com_content&view=category&id=55&Itemid=182

Trade is addressed in the Treaty under Chapter 11, titled, *Co-operation in Trade Liberalisation and Development*. Its five Articles, 74 to 78, are respectively on: East African Trade Regime; Establishment of a CU; Establishment of a CM; measures to address imbalances among Members (while applying the above instruments); and Safeguard clause.

Article 74 states that the Members shall develop and adopt an East African Trade Regime and co-operate in trade liberalisation and development in accordance therewith. Article 75 states that the details of the CU (e.g. instruments) shall be contained in a Protocol. In paragraph 1, 13 such instruments are listed which include application of the principle of asymmetry, elimination of internal tariffs and other charges of equivalent effect, elimination of NTBs, establishment of a CET, rules of origin, trade remedy measures, customs co-operation, competition, duty drawback, refund and remission of duties and taxes, re-exportation, and simplification and harmonisation of trade documentation and procedures. In Paragraph 6 of this Article, Members agree to remove all existing NTBs on internal trade, While in paragraph 7, they will refrain from enacting legislation or applying administrative measures which discriminate against the same or like products from EAC.

Article 76 establishes the CM with free movement of labour, goods, services, capital, and the right of establishment, subject to a Protocol on CM that will be concluded.

b) EAC Strategy for Food Security[52]

The Strategy was adopted in February 2010 by the East African Legislative Assembly. It has 17 recommendations (or interventions, as some have written) divided in three broad priority areas, several of which follow from the EAC Treaty itself: i) enhancing free movement of food in the region (8 recommendations); ii) increasing production by enhancing productivity (8 recommendations); and iii) improving and accelerating the implementation of policies, strategies and programmes (1 recommendation). The following are selected highlights of the recommendations.

- The CMP to give priority to trade in food products
- NTBs hindering trade in foods to be eliminated
- No export bans on food products intended for consumption within the region
- A balanced development of transport infrastructures - e.g. highways as well as rural feeder roads
- Emergency food aid to aim at long term development of food supply systems through regional procurement and accompanied by investment measures.
- Harmonisation and regionalization of SPS standards, certification, labelling etc
- Allocation of 10 percent budget for agriculture (as per the Maputo Declaration), *but* focus this allocation on strategic investments.

c) EAC Food Security Action Plan 2010 – 2015[53]

The Action Plan was formulated as the initial step of implementing the agriculture and food security provisions of the EAC Treaty (i.e. Chapter 18) and will guide coordination and implementation of joint programmes and projects emanating from this plan.
The Action Plan is a 55 page document with 31 pages of tables detailing action plans, including cost estimate and time frame. In the tables, there are a total of 25 action plans under five priority areas for the

[52] http://www.eala.org/index.php?option=com_content&view=article&id=106:eac-heads-of-states-to-meet-in-arusha&catid=1:latest&Itemid=83

[53] EAC Secretariat, Arusha, May 2010 http://www.esaff.org/images/east_africa_food_security_action_plan_2010-2015.pdf

EAC Food Security Action Plan, which are the four dimensions of food security (availability, access, stability and nutrition) with the provision of an enabling policy, legal and institutional framework being the fifth area. The total cost of the 25 plans is $43.11 billion. Before presenting the action plans, the document lists the eight contexts for the Action Plan, which are: i) the EAC CMP; ii) need for a regional standards for food safety; iii) critical rural infrastructures; iv) development of agro-industries for value-addition processing; v) insurance instruments; vi) food access and utilization; vii) production and productivity of food in the region; and viii) gender dimensions.

Notable among the many targets set in the action plans, two in particular are worth noting in the context of trade and food security. One is the target set (under action plan 4.2, availability, objective 3 – effectively sourcing food from surplus to deficit areas within the region) for the share of intra-regional trade in food products to 30% by 2015 (from the stated baseline level of 10%, presumably for 2010). The second point to be noted is on food reserves. Under action plan 4.4, stability of supplies (objective 8 - capacity for emergency preparedness), two targets are set – one, for Member states to have food and feed reserves of at least for 6 months by 2015 (baseline or current level, at least 3 months); and two, EAC member states to establish a contingency fund for 6 months of food reserve by 2015. Note that these are, as stated, not regional reserves or funds but reserves kept by each member. If both food and fund contingencies are maintained for 6 months of consumption, the total would amount to consumption for one whole year – something that does not make sense and need to be re-confirmed from authorities.