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# TRADE HUB AND AFRICAN PARTNERS NETWORK

## VALUE CHAIN ASSESSMENT REPORT: MAIZE VALUE CHAIN

Contact No.: AID-624-C-13-00002-00

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### **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government.

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# ACRONYMS

<b>AGRA</b>	Alliance for Green Revolution in Africa
<b>ANARICI</b>	Association Nationale des Riziculteurs de la Cote d'Ivoire
<b>APRAO</b>	Amélioration de la productivité du Riz en Afrique d l'Ouest
<b>ATP</b>	Agribusiness and Trade Promotion
<b>B2B</b>	Business to Business
<b>BOAD</b>	Banque Ouest Africaine de Développement
<b>CAADP</b>	Comprehensive African Agriculture Development Program
<b>CCRB</b>	Conseil de Concertation des Riziculteurs du Benin
<b>CET</b>	Common External Tariff
<b>CILSS</b>	Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
<b>CICB</b>	Comité Interprofessionnel des Céréales du Burkina Faso
<b>CIRB</b>	Comité Interprofessionnel de Riz du Burkina
<b>CORAF</b>	Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles
<b>CARD</b>	Coalition for Africa Rice Development
<b>CPC</b>	Coordination des Professionnels Céréaliers du Togo
<b>EBID</b>	ECOWAS Bank for Investment and Development
<b>ECOWAP</b>	ECOWAS Agricultural Policy
<b>ECOWAS</b>	Economic Community of West African States
<b>ETD</b>	Entreprise Territoire et Développement
<b>FAO</b>	Food and Agriculture Organization
<b>FUCOPRI</b>	Fédération des Coopératives des Producteurs de Riz
<b>GAPTO</b>	Ghana Agriculture Producers & Traders Organization
<b>IFDC</b>	International Center for Soil Fertility and Agricultural Development

<b>GRIB</b>	Ghana Rice Inter-professional Body
<b>JICA</b>	Japan Technical Cooperation
<b>LDC</b>	Louis Dreyfus Commodities
<b>MIR</b>	Marketing Inputs Regionally
<b>MIS</b>	Market Information System
<b>MoU</b>	Memorandum of Understanding
<b>MSME</b>	Micro, Small, and Medium Enterprise
<b>MT</b>	Metric Ton
<b>NAFASO</b>	Neema Agricole du Faso
<b>NGO</b>	Non-Governmental Organization
<b>PAU</b>	Politique Agricole de l'UEMOA
<b>PPAAO</b>	Projet de Productivité Agricole en Afrique de l'Ouest
<b>ROPFA</b>	Réseau des Organisations des Producteurs Agricole
<b>SWOT</b>	Strengths, weakness, Opportunities, and Treats
<b>UCOVISA</b>	Union des Coopératives du Vivrier des Savannes
<b>UGER-B</b>	Union des Groupements des Etuveuses de Riz de Bama
<b>UEMOA</b>	Union Economique et Monétaire Ouest Africaine
<b>USAID</b>	United States Agency for International Development
<b>USDA</b>	United States Department of Agriculture
<b>SRI</b>	System of Rice Intensification
<b>VAT</b>	Value-Added Tax
<b>WAAPP</b>	West Africa Agricultural Productivity Program
<b>WAGN</b>	West Africa Grain Network
<b>WECARD</b>	West and Central African Council for Agricultural Research and Development
<b>WFP</b>	World Food Program
<b>WRS</b>	Warehouse Receipt System

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# I. INTRODUCTION AND BACKGROUND

## I.1 MAIZE VALUE CHAIN

The purpose of this assessment of the maize value chain is to update value chain information, present current trends and challenges, and draw out new opportunities. After presenting an overview of the maize value chain and a brief SWOT analysis, the assessment provides the vision and the strategy to improve competitiveness, to increase regional trade, to increase investments in the sector, and to create new jobs are presented.

## I.2 VALUE CHAIN ASSESSMENT

Following the Selection Report, the Value Chain Assessment Reports are the second step in planning activities for the Trade Hub and African Partners Network.

The assessment phase took place during May 2014. Assessments were carried out for each value chain recommended by the Trade Hub.<sup>1</sup>

The Value Chain Selection Reports provide brief overviews of each value chain; the Assessment Reports offer deeper perspectives about the current status, structure, performance, and challenges of the value chain. They update previously available information where possible. Based on this information and analysis, they recommend a vision and upgrading strategy for each value chain, and outline possible support roles for the Trade Hub in helping value chain stakeholders achieve in line with this strategy.

As the first opportunity for the Trade Hub team to resume interacting with industry stakeholders and begin identifying lead firms and areas where the project can have a positive impact, the value chain selection and assessment process provides an initial basis for dialogue and brainstorming/planning with key sector and value chain stakeholders.

The phase, nonetheless, provides only a brief glimpse at each value chain and serves as a vehicle to commence discussion and sharing ideas with partners. The assessment is not a detailed value chain analysis.

## I.3 ABOUT THE TRADE HUB AND AFRICAN PARTNERS NETWORK

USAID/West Africa's strategic goal is to support the emergence of a politically stable and economically prosperous West Africa. The Trade Hub's goals are to promote increased regional trade in key agricultural commodities (a goal of Feed the Future, or FTF) and to reduce poverty through value-added exports (a goal of the Africa Competitiveness and Trade Expansion Initiative, known as ACTE).

The overall objective of the Trade Hub and African Partners Network is to increase Africa's share of world trade by increasing exports at a faster rate than the rate of growth in overall trade, and by improving West Africa's international private sector competitiveness in targeted value chains other than extractive industries.

The project will achieve two intermediate results: 1) improve the private sector capacity of the region's farmers and firms by addressing constraints to targeted value chains; and 2) improve the business enabling environment by addressing economy-wide constraints such as the transport and trade barriers that affect the efficiency of the region's ports, corridors, and borders.

At its heart, USAID/West Africa's Trade Hub and African Partners Network is a capacity building effort that will entail working with several key groups of African partners. The project's focus will be on developing associations and regional alliances that can act independently from donor support and take on a greater leadership role in promoting reforms, attracting buyers and investors, and adopting improved practices. The project will also work with individual companies that have a regional scope and could serve as lead firms in targeted value chains.

The Trade Hub will achieve its objectives by improving the private sector competitiveness of certain value chains. Based on the initial assessments made in USAID/West Africa's Feed the Future Multi-Year Strategic Plan, five value chains were pre-selected for the project: rice, maize, millet/sorghum, livestock (cattle), and livestock (sheep and goats). They were selected based on the following criteria: importance to intra-regional trade, high potential for value addition, production by a large number of stakeholders, and synergies with other supported value chains.

The Trade Hub team also examined the development potential of other value-added value chains and selected several for inclusion in the project's set of targeted value chains. This selection was based on six high level criteria:

- Potential to increase trade
- Potential to create jobs
- Potential to attract investments (including from the U.S.)
- Number of households participating
- Extent of geographic dispersal in West Africa
- Current level of exports to global markets

The assessment phase thus focuses on the following short list of value chains:

### FTF Regional Value Chains

- Maize
- Millet-Sorghum
- Rice
- Cattle
- Small ruminants

### Value-added Global Value Chains<sup>2</sup>

- Apparel
- Cashew
- Honey
- Mango (and possibly other cut fruits/vegetables)
- Sesame
- Shea

West Africa is on the verge of a transformative change—if it can create a new dynamic for intra-regional and export trade. At present, intra-regional trade is inefficient, characterized by unpredictable distortions and uncompetitive practices, and subject to overly restrictive regulatory regimes. West African exports have limited success in the global marketplace due to poor quality, inconsistent supply, and high delivery prices, which can be traced back to the absence of economies of scale, high transaction costs, and a poor enabling environment.

The Trade Hub and African Partners Network aims to promote broader, more sustainable growth by improving both private sector capacity and the policies, rules, and practices that govern regional and external trade. This will achieve sustainable and measurable increases in regional and international exports, jobs, and investment by strengthening vertical and horizontal integration within value chains, assisting representative associations to become more effective and inclusive, and improving the enabling environment for trade. The project will also mount a cross-cutting effort to increase the professionalism of all major participants by providing role-specific competency training, facilitating access to modern technologies, and improving market linkages.

The Trade Hub will:

- **Leverage and strengthen already-identified or new private sector and public sector partnerships for commercial and development activities.**
- **Target the highest-impact opportunities in the value chains and policy regimes, to alleviate specific constraints hindering private sector growth.** The cornerstone of our structured approach to value chain development is identifying, in collaboration with our for-profit value chain partners and our public and non-governmental organization (NGO) partners, where high-impact change can be achieved to maximize the return on project resources. Our trade and transport enabling environment staff will target specific policy and regulatory constraints which, once changed, will open up regional and external markets, reduce seasonal blockages, lower supply chain friction, and encourage trade-based investment and growth. They will work closely with stakeholders to advocate and enforce reforms.

The Trade Hub's higher level results targets are summarized in Table I below.

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<sup>2</sup> The home décor value and fashion chain was handled differently. A limited Trade Hub initiative is recommended for home décor and fashion. An assessment was not conducted for this value chain as it was no longer considered for a core Trade Hub focus.

**Table 1: Highest Outcome-Level Results**

Results	Through Year 3	Through Year 5
Increase in the value of global and regional transactions, on average, in targeted sectors of livestock, grains, and value-added products in West Africa	30%	50%
Creation of new jobs in Trade Hub-assisted West African firms	15,000	23,000
Facilitation of new investment in targeted sectors	\$62.5m	\$102.5m

Because different partners have different needs and levels of maturity, the project will tailor upgrading activities to each partner. We have recommended and will select value chains that offer opportunities to substantially contribute to achieving these objectives. We will choose value chains that can benefit from Trade Hub-supported activities such as:

- Improved buyer-seller intermediation
- Expanded use of grades and standards
- Increased access to and use of market information
- Increased access to and use of financial services
- More competitive transport and logistics enabling environment
- Reduced legal and regulatory barriers to trade

## 2. METHODOLOGY

Value chain assessment is the second of three phases that will lead to agreement on the Trade Hub’s target value chains:

1. Phase I: Select (recommend) value-added value chains
2. Phase II: Assess selected value chains
3. Phase III: Vet and obtain feedback, leading to confirmed selection

Eleven separate value chain reports present the findings of each value chain assessment.

As part of the research for the assessment reports, subject matter experts collected and updated data and trend information relevant to each of the value chains. The value chain assessments use a common set of criteria to describe the short-listed value chains and update information about them. In contrast to the selection process, which used subjective measures of only certain criteria based on expert opinion, the assessment utilizes the full set of criteria, quantifying them as much as possible. Based on this analysis, the report discusses strategic approaches that could be supported by the Trade Hub to achieve the “vision” the value chain.

The existing value chain studies and their conclusions were strongly considered in the assessment, and phone/internet discussions were held with knowledgeable stakeholders. (Given time constraints, we did not collect primary market data from the field, or hold extensive interviews with a full roster of key informants.)

During the assessment, the team also began to analyze and discuss with stakeholders the opportunities and challenges with each value chain and make initial proposals for an upgrading strategy. If the stakeholders and the Trade Hub are able to identify a clear path for upgrading the value chain, it is more likely that the value chain will be ultimately included in the Trade Hub’s set of focus value chains.

### 2.1 VALUE CHAIN ASSESSMENT PROCESS AND SUBSEQUENT STEPS

**Table 2: Steps in Value Chain Assessment and Final Selection**

Task	Method
Assess short-listed value chains	Assess the five preselected value chains and the other selected value chains against a full set of criteria through desk studies, review of existing value chains studies, and key informant interviews with partner network
Obtain USAID/West Africa’s feedback on Value Chain Selection Report	Review Value Chain Selection Report; meet with value chain Development Specialist and value chain team
Submit Value Chain Assessment Report	Assess all VCs, obtaining data and information through value chain studies, desk research, and key informant interviews; include discussion of potential value chain vision, upgrading strategy and Trade Hub intervention

Prepare facilitation guide for value chain stakeholder vetting	Based on the assessments, prepare summary presentation and process for vetting value chains
Vet value chain selection and assessment with stakeholders	Hold session within Project Partners Kick-off Workshop with Trade Hub stakeholders
Refine value chain selection and assessment, based on stakeholder feedback and suggestions	Continue interacting with key stakeholders and USAID as required

The final selection will only take place after the official Project Launch event, which will take place on or shortly after July 15, 2014. Immediately following the Launch the Project will engage individual value chain partners to discuss and vet the Assessments and come to a common vision of the value chain and how the Project will work with them. The final action plans for each value chain will be set after the engagement meetings, and will take into account the stakeholder feedback.

## 2.2 SOURCES OF INFORMATION

The maize value chain assessment team obtained data and information through:

- Desk research from value chain analyses, studies, reports and web-based material. (see Annex I),
- Meetings and interviews with some board members of the West Africa Grains Network (WAGN) in Accra during WAGN and Partners meeting,
- Meetings and interviews with stakeholders in Accra
- Phone calls, emails, Skype conversations and interviews with members of WAGN members in Benin, Burkina Faso, Ghana, Senegal, and Togo.

## 2.3 DATA LIMITATIONS

The maize sector has been much-studied, and therefore substantial information is available on the value chain's structure and operation. However, specific data related to product flows, contribution to GDP and economic growth in general at the regional level are fragmented or unavailable.

# 3. DESCRIPTION OF THE VALUE CHAIN

## 3.1 PRODUCTS INCLUDED IN THE VALUE CHAIN

Maize is consumed, bartered and sold both in rural areas and in urban zones. The region's maize value chain processing supports food preparation (e.g. flour, cereals, pasta, and couscous) and animal feed (fish, cattle/dairy, and poultry). The majority of West Africa's small-scale farmers produce maize as part of their regular cropping patterns. Of the three staple cereals produced in the region, maize has perhaps the most critical relationship with the livestock industry as a major source of feed for both cattle and small ruminants. This relationship with the livestock industry provides a key basis for adding value within regional trade.

Products included in the maize value chain are:

- White maize: is the largest type of maize produced in the world and in West Africa.
- Yellow maize: has become more popular for animal feed especially poultry. Originally cultivated in the US, its production in West Africa has grown in recent years. It is also used for semolina for human consumption.
- Green maize: is harvested in a "pasty" state i.e. before maturity, while still on the cobs. It is cooked in water or grilled. It is mostly consumed at the village level throughout the day. After harvest the green plants are very often used for animal feed.
- Value added products and by-products: Value-added products: it is used for poultry feed, especially pigs and poultry. In rural areas, the maize bran is a popular animal feed (poultry, pigs, livestock and small ruminants fattening).

In general maize is gaining an increasing importance as a key raw material largely used for production of animal feed. It is also a key crop in most of West African countries as a source of food security for the population, an additional income for farmers, and as a popular source of carbohydrates and edible oil. Nigeria is the 12th largest producer of maize in the world with a production of 9.5 million Mt recorded in 2012. It is the second largest African producer of maize. About 35% of the maize production goes for human consumption in the form of various food products. 30% goes as animal feed of which majority is poultry feed; 15% goes as raw materials for the confectionary industry, and another 15% goes to beverages industry.

**Maize for human consumption:** Maize grain is primarily an energy food, because of its high starch content. It is also fairly rich in oil, but has low levels of high-quality protein and minerals<sup>3</sup>. In West Africa, maize is consumed in a wide variety of ways: (i) as cobs, which are gathered before maturity and grilled, (ii) as a soup or type of pancake made from fine- or coarse grained flour obtained by pounding the dried grains, (iii) after fermenting the grain in water, as maize beer. The traditional maize dishes are mainly: flour for "banku", porridge or couscous.

**Maize for animal feed:** Yellow maize is preferred for egg production in the poultry industry. The feed prepared for poultry farmers contains, in addition to maize, a protein feed (e.g. soya bean oilcake), and

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<sup>3</sup> CTA: Maize, The tropical Agriculturalist, 1987

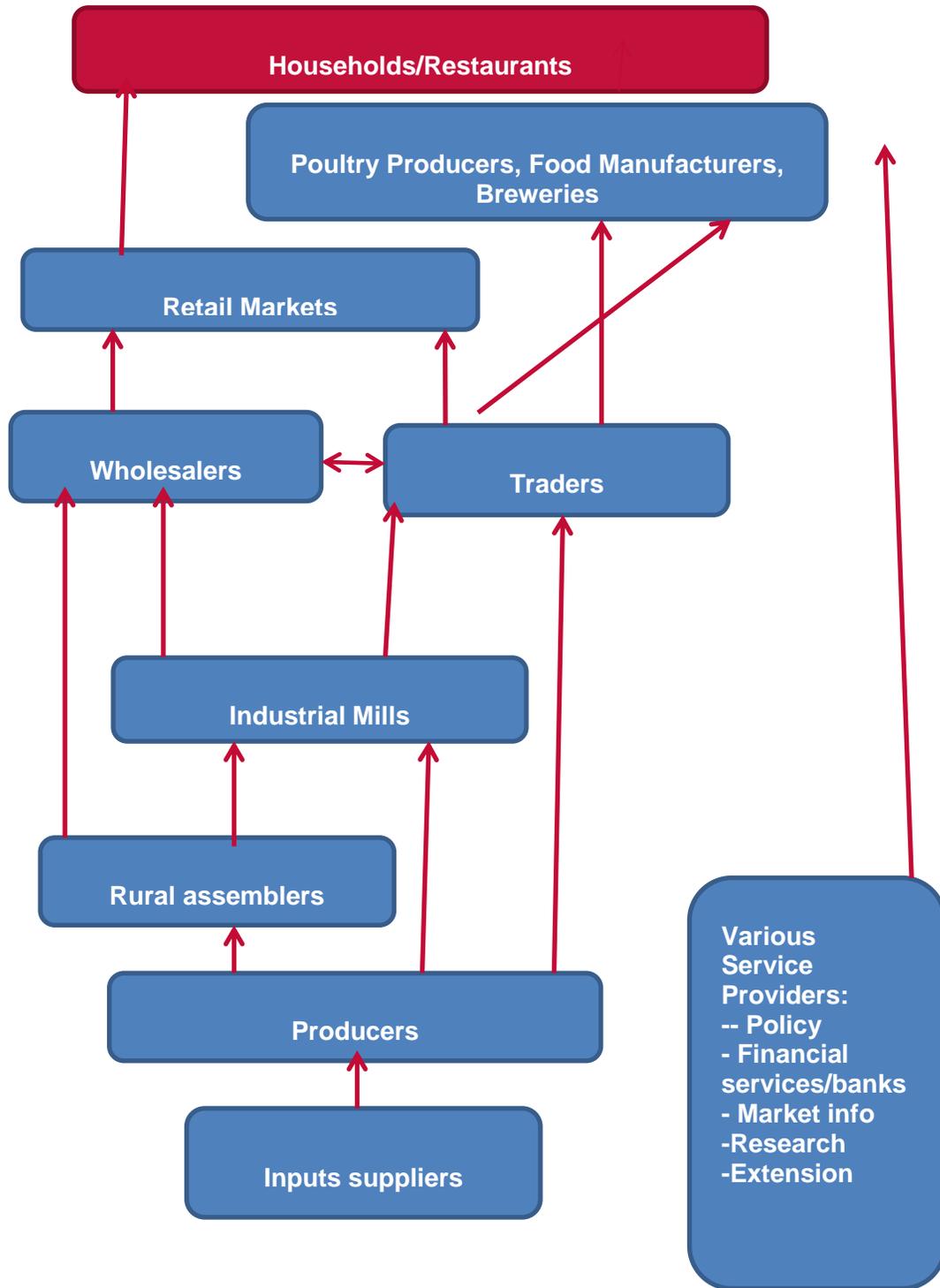
occasionally fats and a mineral and vitamin supplement, varying according to the type of enterprise (table fowl or laying hens) and the age of the birds. Maize is also being used increasingly for pig feed. This is in the form of grain which is either coarsely ground with the essential cake and mineral supplements, or as silage. It can be given in the form of whole cobs, consumed after being dried. Maize has become one of the basic feeds for ruminants.

**Industrial use of maize:** Maize has increasingly been used as an industrial raw material, from which many products are manufactured. It is used in several ways: (i) the grain, after being ground up relatively finely, is used to make cornflakes, meals and flours, (ii) the oil extracted from the maize provides a widely used high-quality table oil, (iii) the starch is used in many preparations in the brewing and jam-making industries, (iv) maize is also be distilled to produce alcohol.

### 3.2 VALUE CHAIN MAP

The maize value chain in West Africa is shown in simple form as follows.

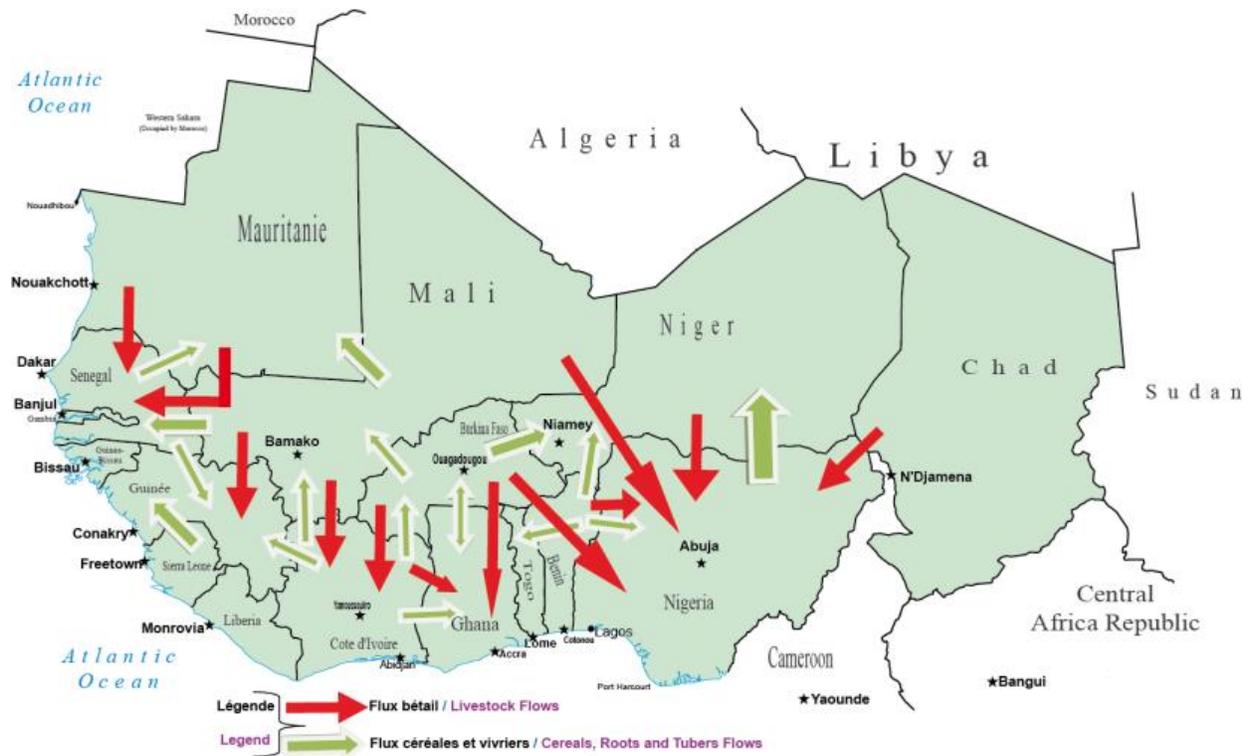
Figure 1: Map of maize value chain in West Africa (2013)



### 3.3 PRODUCT FLOW MAP

The following flow map shows the main flows of maize and other cereals in the West Africa region.

**Figure 2: Map of Flows for Maize and Other Cereals, West Africa**



Source: Annual Report CILSS 2013

Prominent maize trade and transport corridors include:

- Ghana-Burkina Faso (Techiman-Leo-Ouagadougou), along which maize travels in both directions according to the period of the year.
- Côte d'Ivoire-Mali (Bouaké-Bamako)
- Niger-Niger-Nigeria (Zinder/Maradi- Kano)
- Burkina Faso-Burkina Faso-Abidjan (Ouagadougou-Bobo Dioulasso-Abidjan)
- Mali-Burkina Faso (Bamako-Ouagadougou)
- Burkina Faso-Niger (Ouagadougou-Niamey).

## 3.4 MAIZE DATA AND INFORMATION

### 3.4.1 THE MAIZE VALUE CHAIN SITUATION IN 2013

The maize value chain structure is characterized as follows:

#### **Inputs supply**

West African farmers do not use or have access to maize yield-enhancing agro-inputs such as fertilizer, improved seeds, labor, and crop protection products. This is due to: (i) lack of funds to purchase inputs on time, (ii) high cost of inputs, (iii) irregular supply of fertilizers and the distance to supply points from the farm gate level, (iv) lack of understanding of the necessity to use improved seeds (certified), (v) existence of counterfeit products, and (vi) lack of knowledge on how to use products. Some traders and processors enter into contracts with farmers for fertilizer credit, which they pay for at harvest with maize.

In some countries, governments manage the inputs supply chain, offering subsidies to incentivize production increases in the interest of improving food security. Other countries employ a more private-sector driven model, in which agro dealers and their agents are actively involved in inputs supply, and they provide these items at non-subsidized costs. However, these agro dealers are frequently unable to satisfy demand; they lack the working capital to maintain their stock when needed.

Availability constraints and improper use of agro-inputs reduces yields—and this is compounded by applications below recommended rates, inappropriate timing of applications, and the use of formulations neither appropriate nor recommended for maize (fertilizers used are often those intended for cotton).

The use of certified seeds in West Africa is very low (about 35%). For the most part, farmers rely on saved seed or seed sourced through informal networks. These sources tend to be inconsistent in terms of quality and vulnerable to pests and diseases. Although less expensive, these seeds lead to lower productivity on otherwise valuable land. The fertilizers and chemical inputs are also wasted on this seed.

#### **Production**

More than 85% of maize production is by small scale producers, farmers who operate on farms sizes are smaller than 3 hectares (ha). Farmers who cultivate more than 3 ha are considered to be commercial maize farmers. Maize farmers in West Africa use a low-input, low-output maize production system, characterized by limited access to agricultural credit, limited and/or inefficient use of fertilizers, high-yielding maize varieties or improved seed, and sub-optimal pest and disease control measures. Farm yields are typically in the range of 1 to 2 MT per ha. By way of contrast, better performing countries and higher performing maize producers in the region yield 2.5-4.5 MT/ha (Southern Africa) and 4-6 MT/ha in Northern Africa. Top global maize producers can achieve yields of 12 MT/ha.

Most farmers plant maize as part of a mixed farming system, intercropping and rotating maize with other crops such as cotton. The majority of farmers sell soon after the harvest, when maize prices are the lowest. Maize storage systems are often traditional; there is limited aeration and farmers often do not follow technical recommendations for fumigation.

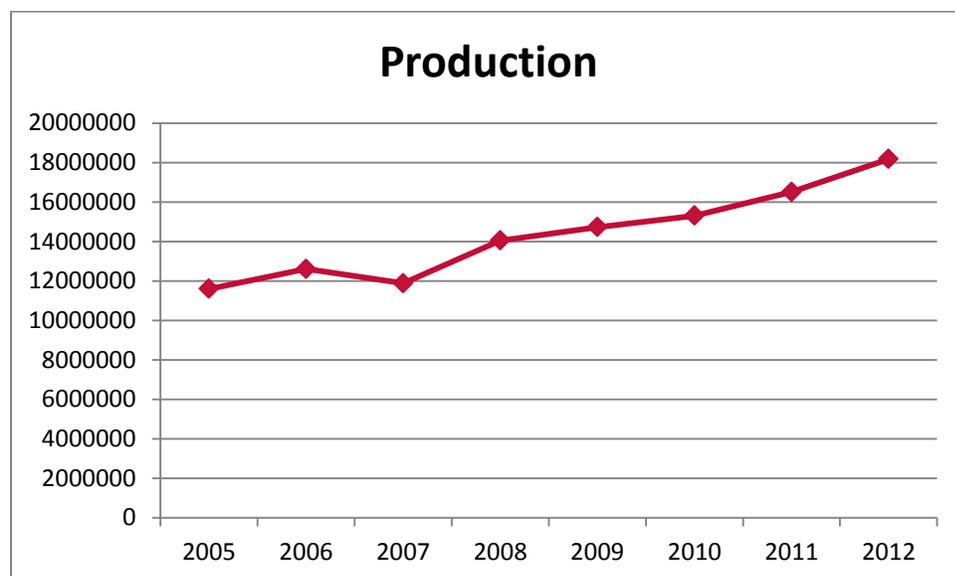
Data on maize production in the region and in East Africa for the last eight years is shown in the table below. West Africa production is presented on the graph below this table. Data on production by country is presented in Annex 4.

**Table 3: Maize production in West Africa 2005-2012**

	2005	2006	2007	2008	2009	2010	2011	2012
<b>West Africa</b>	11,602,625	1,2603,671	11,879,750	14,048,699	14,728,992	15,310,591	16,509,621	18,176,792
<b>East Africa</b>	15,978,594	19,656,374	19,086,311	20,755,879	20,771,762	26,183,167	27,974,883	27,500,543

Source: FAOSTAT

**Figure 3: Maize production in West Africa 2005-2012**

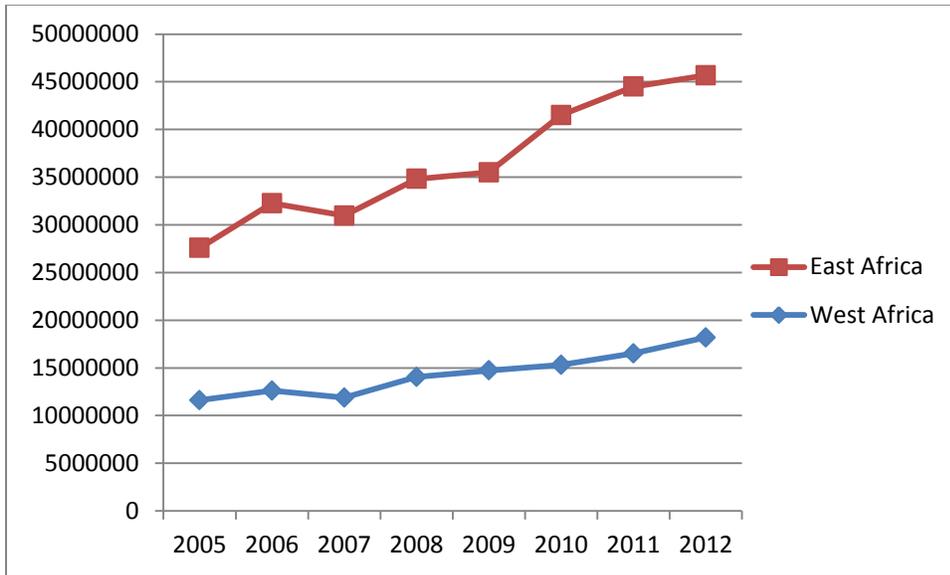


Source: FAOSTAT

During the period 2005 through 2012, maize production increased in general. However, 2007 included a lower harvest, a year of food shortage, resulted in riots resulting from the high prices of staple foods. From 2007 through 2012, production increased consistently.

Total maize production in West Africa compared to East Africa production is as shown by the graph below.

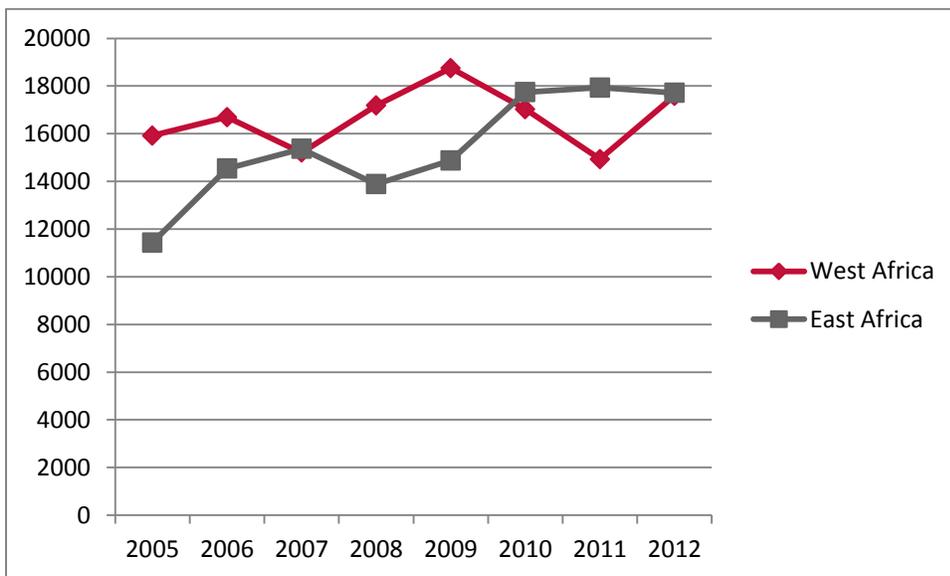
**Figure 4: Total Maize Production in West Africa Compared to East Africa**



Source: FAOSTAT

The graph above indicates that East Africa produce more maize than West Africa. That high performance is due especially to more cultivated land. Indeed, the graph below demonstrates that from 2005 to 2009, yields in Eastern Africa were higher than those of Western Africa. From 2010 to 2012, trends have changed, and yields in West Africa improved considerably as reflected below.

**Figure 5: Comparison of yields West Africa East Africa (MT/HA)**



Source: Data from FAOSTAT

## Trade

A large number of small scale traders collect and trade maize, although only a small percentage (15%) of production is traded across borders.

## Processing

Local industries that use maize as a critical input include beer, pasta, couscous, and fish, cattle/dairy and poultry production. These are expanding in the region. Maize consumption at the household level is also increasing. There are a number of important maize processors in the region: Premium Foods (Ghana), Nestle (Côte d'Ivoire), Data Foods (Nigeria), breweries (in every country), and many small scale processing firms.

## 3.5 MAIN ACTORS IN THE VALUE CHAIN

### 3.5.1 DESCRIPTION OF THE VALUE CHAIN ACTORS

#### 3.5.1.1 Lead Firms

Some of the main processors are indicated below:

**Table 4: Examples of lead firms in West Africa<sup>4</sup>**

Company	Type of product	Country
<b>IPRAVI / IVOGRAIN</b>	Poultry feed	Côte d'Ivoire
<b>Nestle</b>	Human foods	Côte d'Ivoire
<b>Premium Foods</b>	General food stuffs (flour, grits, baby foods, etc.)	Ghana
<b>MELS</b>	General food stuffs (flour, grits, baby foods, etc.)	Burkina Faso
<b>Data Foods</b>	General food stuffs (flour, grits, baby foods, etc.)	Nigeria
<b>Seed firms</b>	Certified seeds	Every country
<b>NAFASO</b>	Maize and maize seed production, including basic seed (outgrower model)	Burkina Faso
<b>Breweries</b>	Beers and soft drinks	Every country

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<sup>4</sup> List is not exhaustive

### 3.5.1.2 *Micro, Small and Medium Enterprises (MSMEs)*

While there are some major, large actors in the maize value chain among the lead firms, most actors are micro, small, and medium in size.

### 3.5.1.3 *Other Actors and Stakeholders*

Other actors and stakeholders involved in the maize value chain:

1. **Input suppliers:** This includes two main categories of agro dealers: (i) seeds, (ii) fertilizers and chemicals.
2. **Traders:** Farmers' organizations, commercial producers, professional traders for imports and exports. There are multiple levels of traders: the farm based collectors with limited assets and no warehouse, the aggregators, and the wholesale traders.
3. **Services providers:** Represented by banks, financial institutions, policy makers, market information, research, and extension services.
4. **End market:** Consumers, super markets, school canteens, military institutions, hospitals, and mines.

The West African Grain Network (WAGN) is expected to become a key player in the maize value chain. WAGN is a newly-established regional association for the cereals sector, composed of national associations of cereals including maize. WAGN's mission is: *"To facilitate the creation of a favorable environment for free trade of cereals in West Africa and promote structured trade of cereals for optimum benefits for the actors of the sector."* WAGN's general objective is to promote intraregional trade and enhance competitiveness of the grains value chains in order to create wealth, ensure food security, and foster economic growth in the West Africa region. Specific objectives are to:

1. Structure the cereals trade in West Africa (on the basis of market principles, to encourage increased volumes and value addition of traded products, and increased investments in the grains sector)
2. Facilitate access by small and large producers, traders and processors to national and regional markets
3. Improve the availability of cereals of good quality and adequate quantity at the correct times, and at more stable prices
4. Influence policies and reforms at national and regional levels so that a favorable environment is created for the cereal trade in the sub regional trade.

WAGN's mandate is to support the growth of grain value chains, starting initially with rice, maize, millet and sorghum, and to be the representative of the grains value chains network in the West Africa region. The association expects to play a major role to support the growth of intra-regional trade and ensure good governance and management of the grains sector.

## 3.5.2 **RELATIONSHIPS BETWEEN KEY ACTORS**

The maize value chain operates with clearly established, vertically connected channels that includes farmers, aggregators or local buying agents, wholesale dealers, suppliers, urban grain markets,

processors and retail, and a wholesale end market. Technical assistance is provided by numerous partners and stakeholders from the public sector, private organizations, and donor supported projects.

The relationships amongst value chain actors are, however, not strong and mostly informal. Deals and transactions typically take place on a trust or confidence basis. In some countries, inputs are subsidized by the government and are distributed on a credit basis. In others, inputs are privately marketed and sold. The public sector is the main provider of research and development and production of basic seed. Basic seed is sold to companies, who multiply and certify the seed, then market it to the farmers.

Inputs suppliers make up a large proportion of suppliers of agro inputs. These agro inputs include fertilizers, agro chemicals, seeds, and suppliers of bags and service providers who lease out equipment like tractors. At the beginning of each production season, there is an evaluation of the global inputs needs. Needs are forwarded to government officials to finalize procurement needs for the upcoming season. In some countries, the farmers' national organization will contribute to this process. After receiving the inputs, they are distributed to farmers groups who then support individual producers. Some farmers own their tractors, but the majority of them hire tractors from public sector or from private companies. There are also farmer cooperatives and private organizations that hire tractors for farmers.

### **3.5.3 OPPORTUNITIES AND ISSUES**

#### **Opportunities**

- Maize is a staple food in most West Africa countries. Due to population increases, demand of maize will continue to grow, and therefore a continued and potentially larger market does exist.
- There are big markets within the region for maize-based animal feeds (IVOGRAIN/SIPRA for instance). Currently, animal food processors often buy from outside the region, because they do not find local maize in required quality and quantity.
- Lots of trade opportunities with WFP and breweries were lost because of lack of supply. Buyers import from Argentina, Brazil, and the United States.
- Post-harvest losses are very high. To address this issue, farmers can adopt improved practices for harvest and post-harvest, especially improved storage facilities.

#### **Issues**

- The ECOWAS regulation on free trade exists, but it remain to be enforced to increase trade across borders. Greater liberalization of cross-border trade will provide opportunities for increased regional marketing and trade.
- The proper use of seeds, fertilizers, and the adoption of good practices are key responses to increase productivity and must be better integrated into national agricultural development policy throughout the region.

# 4. DISCUSSION OF VALUE CHAIN ASSESSMENT CRITERIA

## 4.1 MARKET INFORMATION

As one of the most-consumed staple crops in the region, maize is sold both in rural areas and in urban zones. Households, restaurants, schools, hospitals, and armies, micro foods processors are the main buyers at domestic consumption.

Sellers are farmers and their organizations (farmer associations, cooperatives, lead firms with their out-growers). The market channel includes also traders and intermediaries. Some commercial agro firms trade also their production to local buyers. Seed firms and seed producers sell certified seeds to maize growers as well as their organizations.

The aggregators are the closest marketing link to producers/farmers. They are also known as village collectors, local buying agents or assemblers. Generally, they collect small quantities of maize from farmers and clean it if necessary, and re-bag it. They have limited storage facilities and resell non-processed maize to wholesale or semi wholesale dealers in the local market, or directly to buying agents or suppliers of large processors in urban cereal markets. The average prices ranges from 20 000 FCFA to 30 000FCFA/100 KG bag, which represents a margin of 10-12 %. The aggregators sell mostly to the wholesale dealers of suppliers or to the larger traders at the urban cereals markets. They also supply to local millers and retail traders in limited quantities on demand.

The non-processed maize market channels from Farmer to Processor comprise a well-established chain. The farmer sells to the local buying agents, who will sell to a wholesale dealer. From wholesale dealer, the commodity is sold to a supplier and supplied to industrial processors. Some quantity goes for cross border trade through traders visiting the market regularly.

No accurate or systematically collected comprehensive data is available to describe the flows of maize along specific corridors within the region. Under ATP, CILSS began to conduct limited corridor-based surveys. Stakeholders recognize that it is important to continue and to expand such data collection and to make it available to all actors. The information collected, even on a limited basis, demonstrated the value of this information. CILSS work confirmed that there are substantial regional flows of maize.

Most maize traders now own and use mobile phones as a major tool to obtain market information (price, availability of maize, type of maize: white or yellow, buyers in the market, and key sellers). But access to market information needs to be improved. Every market day or every week, enumerators generally posted in market place note prices (details and whole sales), type of maize (white, yellow), marketable stocks and send it to their patron whether by phone call or by SMS. There are very few written contracts for maize sales in the region. Maize is traded throughout the region with limited or no marketing regulations.

## 4.2 CONTRIBUTION TO ECONOMIC GROWTH

### 4.2.1 POTENTIAL TO INCREASE TRADE

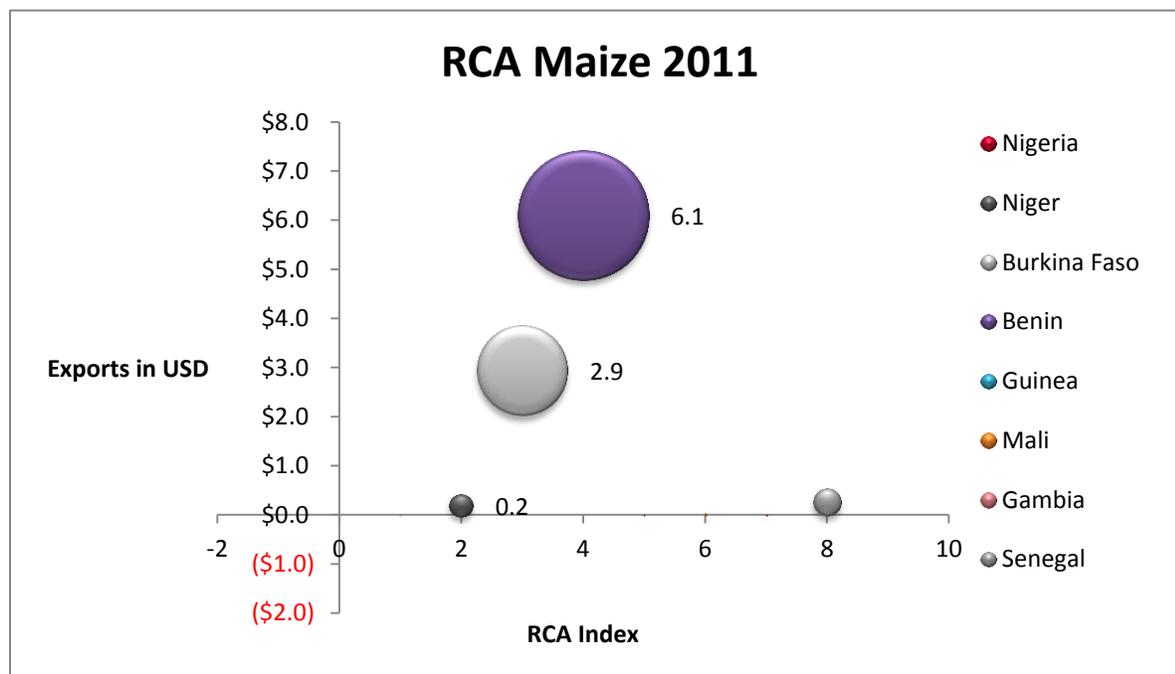
Maize's contribution to regional economic growth accounts for about 24% of agricultural GDP and 12% to total GDP at the regional level. Maize also contributes to the development of other value chains such as poultry, animal fattening. Maize constitutes 60% of the content of poultry feed. Development of the poultry industry is directly linked to the availability of maize at affordable prices. Maize and its by-products are used in livestock fattening, especially during the Tabaski period (A Muslim holiday 10 days after the end of Ramadan) to increase the weight of the sheep.

Lead processing companies, such as IPRAVI/IVOGRAIN and SIPRA of Côte d'Ivoire, AFEEX of Senegal, and Nestle buy much of their maize from outside the region. Breweries also purchase quantities from outside the region, importing maize from Argentina, Brazil, and elsewhere. Their import needs are substantial and require good quality, respecting grades, norms and standards. Such quantities are not readily available from within the West Africa region—in particular, not at comparable cost, of proper quality, with regular and predictable supply.

Presented in Annex 3 is a Revealed Comparative Advantage analysis for the maize sector in West Africa. This is based on data from 2011. The RCA index ranges from 0 to infinity with 1 as the break-even point. That is, a RCA value of less than 1 means that the product does not have export comparative advantage, while a value above 1 indicates that the product has a “revealed” comparative advantage.

The graph below presents this information for the region.

**Figure 6: Revealed Comparative Advantage: Maize**



Only two countries, Burkina Faso and Benin, show a revealed comparative advantage in the sample for maize exports. Burkina Faso, with the formula has an RCA of 2.9. Meanwhile, Benin leads the sample with an RCA of 6.1.

#### **4.2.2 POTENTIAL TO CREATE JOBS**

The maize value chain has great potential to create permanent and seasonal jobs. However, jobs created currently in maize processing firms are limited. Investment needs are enormous at all levels, especially when it comes to agribusiness and commercial agriculture, processing and marketing. This type of investment will create more jobs along the value chain.

#### **4.2.3 POTENTIAL TO ATTRACT INVESTMENTS**

A growing maize sector, with greater productivity and better-structured trading relationships, offers enormous opportunity for private investment. Investment in specialized services could become attractive. For example, supplying breweries constitutes a huge potential to invest in the maize value chain; at present, breweries buy maize grits from outside region.

The potential of the maize value chain to attract investments is influenced by the follow factors: (i) an enabling environment that is conducive to increased investment, (ii) productive facilities such as irrigated areas, small dams for water control management, (iii) upgrading on each link of the value chain especially on production and processing level, (iv) structuring the market, with possibility of establishment of contract-farming, development of out-growers channels and pre-financing of inputs by traders or processors.

#### **4.2.4 POTENTIAL TO GENERATE VALUE ADDITION**

Policies, strategies and initiatives can be coordinated:

- A place in regional policies (including the Politique Agricole de l'UEMOA (PAU) and ECOWAS Agricultural Program (ECOWAP)
- The strategies used by the NGO, agencies, and other TFP
- Strong involvement of regional actors
- Coordination of all of these actions should be improved.

#### **4.2.5 POTENTIAL TO GENERATE MARKET-BASED IMPROVEMENTS IN PRODUCTION YIELDS**

With technical training, use of good practices applying fertilizers, seeds, and technical itineraries, yields can be increased substantially, to at least 2-3 MT /ha. The using of machinery can improve the yield. The adoption of norms and standards and the dissemination of a warehouse receipt system will provide further incentives to develop more market-based improvements in production yields.

### **4.3 IMPACT ON FOOD SECURITY**

All West Africa countries produce maize. However, the importance of the crop varies from one country to another. Maize has a great potential for economic growth, income generation, and a real potential source of jobs creation. More than 200 million farm households make their living from maize.

ECOWAP's document emphasizes maize as one of the core strategic commodity in the sub-region for

food security. (Cf. PAU). Moreover, several coastal countries strive to improve the food security by selecting maize as a key staple crop for self-sufficiency and to export surplus production. Many countries have developed and adopted maize development strategies to enhance food security.

The yield of maize production is low (1 to 2 MT/ha) because of lack of knowledge and training, and limited use of good practices. Increased use of quality seeds (certified seeds) and appropriate adequate fertilizers at required dosage would increase yield. Commercial farmers are better positioned to take advantage of this and are more skilled and trained to better manage their farms.

Basic maize processing in the region is local, small-scale, and performed with small equipment. Consequently, the products are not of high quality. Therefore, investment in new equipment will generate value added to the products as well as new jobs.

## **4.4 SOCIAL IMPACT**

Women participate fully in the maize value chain operations at every level: production, processing and trading. They are present in processing and trading more than men. However women do not have access to lands and to finance. Traditional land inheritance policies and practices, in which men inherit land from the father, exclude women. Some countries (e.g. Senegal and Mali) have elaborated national laws to support women's access to land; however, full acceptance of these laws has not yet taken place.

Supporting marginal women producers offers a branding and marketing angle for companies that are aiming at premium markets. A company could improve its ethical credentials and the sourcing priorities of its products in line with gender sensitivity by including women. This could also positively impact on consumer purchasing decisions.

Recent experience suggests that women smallholders pay greater attention to crop quality and deliver better-quality products than male farmers. Ensuring that women as well as men receive technical training can be a key strategy to improve productivity, because women typically do a substantial proportion, often the majority, of the work on smallholder export farms in Africa.

## **4.5 COMPETITIVENESS**

The West African maize value chain compares poorly to international goods performers in terms of important measures of competitiveness, such as quality, productivity, percentage of production reaching market, prices, and delivery conditions. The ability of the upgraded value chain to respond reliably to market requirements with competitive quality and cost implies: (i) restructuring value chain relationships, information, and incentives; (ii) the use of best practices at every level of the value chain, especially at the production level, and (iii) access to inputs, to finance, and to the market in a positive enabling commercial environment.

West Africa possesses important comparative advantages, in terms of large areas of available land and major water resources. The region has a large market with 300 million inhabitants for whom maize is an important staple. The existence of wholesale markets such as Dawonoo Market (Nigeria), Marché de Gros de Bouake (Côte d'Ivoire) and Techiman (Ghana) are experiences to strengthen marketing chains in those countries. They provide a model that could be replicated in other parts of the region.

The value chain will benefit from national and regional apex organizations, such as WAGN and Réseau des Organisations des Producteurs Agricole (ROPPA), which are committed to advocating for and

working with regional institutions (UEMOA and ECOWAS) to create a positive enabling environment for regional trade. Several constraints and comparative weaknesses inhibit improved competitiveness of the value chain: (i) high cost of agricultural inputs or difficult to access to inputs, (ii) limited access to credit (iii) limited market information, (iv) inadequate market infrastructure (warehousing, docks, and phyto-sanitary facilities), and (v) lack of norms and standards and/or weak harmonization in the region.

## **4.6 FACTORS THAT WOULD SUPPORT UPGRADING**

### **4.6.1 CHAMPIONS FOR CHANGE**

The maize value chain will benefit from champions—individuals, companies and other organizations— that seek to expand and improve the value chain’s competitiveness. Several key national organizations have participated in the creation of WAGN, which has the opportunity to emerge as a champion for other maize value chain stakeholders. Several national associations are also very active in promoting an improved value chains – for example, FIPRO (Benin), CPC (Togo) and Union des Coopératives du Vivrier des Savannes (UCOVISA) in Côte d’Ivoire.

The development of warehouse receipt system (WRS) is a key strategy to structure and build competitiveness within the value chain, upgrade the quality of marketed maize, facilitate access to finance, improve prices, and reduce post-harvest losses. Firms like Premium Foods (Ghana) and organizations such as the Ghana Grains Council are strongly promoting this approach. Promoting warehouse receipts is also a key element of WAGN’s core strategy.

No doubt, the lead firms are willing to serve or engage the needs of the value chain’s production and market system. Several firms are investing in and developing out-grower arrangements (e.g. NAFASO), while others are involved in contract farming (e.g. members of the Ghana Grains Council).

### **4.6.2 ACCESS TO FINANCE**

Access to finance is a problem for most upstream actors in the value chain. Currently the maize value chain is not attractive to the financial sector, because it is not well structured, lacks defined business models, and has limited commercial scale often without enforceable contracts. Finance institutions are more comfortable to fund value-added downstream activities. The introduction of agricultural insurance could be very crucial to attract banks to fund the sector.

### **4.6.3 SYNERGIES WITH EXISTING PROGRAMS**

Collaboration will be especially important with other USAID FtF programs in the region (such as the Mali Cereals Value Chain program), the International Center for Soil Fertility and Agricultural Development (IFDC) maize program, and ECOWAS PAU.

### **4.6.4 POLICY ENVIRONMENT**

The policy environment can be improved.

d by dealing with unexpected obstacles like the seasonal ban for cereals exports in certain countries, which results border closings. Regional institutions are striving to create an enabling environment for agricultural products trade, by addressing these types of constraints.

There have been successes in the recent past. One example is the UEMOA's Common External Tariff (CET), which is based on a version of the Harmonized Commodity description and coding within the union. The CET was adopted in 2007. As an expansion of this initiative, UEMOA and ECOWAS validated the CET in 2012, and it was adopted in 2013. This policy instrument can serve to combat dumping in the region and encourage increased trade without unequal costs being applied in different member countries.

There are three important regulatory and legal challenges that the value chain must meet in order to achieve an improved level of competitiveness and to ensure full compliance with agreed ECOWAS regulations:

- (i) Certificates of Origin document a commodity's country of origin and help customs officials determine the applicable tariffs. As part of its effort to promote free trade and make food more readily available to all citizens, ECOWAS has eliminated tariffs on food and, in 2003, eliminated all requirements for certificates of origin on food products.
- (ii) Countries routinely issue sanitary and phytosanitary (SPS) certificates to show animals and plants have been inspected and are free of diseases that could affect public health. To facilitate regional trade, ECOWAS countries have signed bilateral technical agreements establishing recognition of mutual equivalence of SPS certificates, which means each country agrees to accept the certificates issued by its neighbors. Thus, SPS certificates issued by the country of origin are officially valid throughout the region.
- (iii) In principle, ECOWAS countries have agreed to exempt basic staple foods from Value-Added Tax (VAT) on intra-regional trade through the Additional Act on VAT in 2009, which exempts all agricultural and livestock staple foods and inputs from VAT. However, the Act has not come into effect, as the countries have not yet agreed on the annex with the specific list of products to be included. The UEMOA countries have had a common VAT policy since 1998, with most countries applying an 18% rate (Niger at 19 percent), exempting most basic staple foods (but notably not live animals). UEMOA's "common policy" permits countries to apply VAT on agricultural products if the national government chooses, although the tax has to be applied uniformly on all commercial products, whether imported or domestically traded.

## **4.7 CLIMATE RESILIENCE AND ENVIRONMENTAL SUSTAINABILITY**

Few environmental issues are raised by the maize sector. Maize is produced in the coastal countries which are subject less to natural calamities.

When the actors become aware of USAID regulations on negative environmental impacts, they have complied readily (e.g. choice of agro-chemicals).

## **4.8 OTHER HURDLES TO SUCCESS**

Input supply is critical for growth of the maize value chain. Constraints include:

- High costs of inputs, mainly agrochemicals and mechanization of crop production
- Availability of quality inputs
- Limited access to finance
- Inadequacies of advisory and extension services.

## **SWOT Analysis**

### **Strengths**

- Maize is a strategic commodity for food security at the regional level (ECOWAP and PAU)
- The region still has huge fertile lands to cultivate for more production
- Maize has a great potential for economic growth and income generation, and it is an important potential source of employment for West Africa.

### **Weakness**

- High cost of agricultural inputs or difficult to access inputs
- Inadequate market infrastructure (warehousing, docks, and phyto-sanitary facilities)
- Limited access to credit (farmers, storage, traders, and millers)
- Lack of norms and standards and harmonization in the region and consequently, weak quality of grains. Farmers and buyers make no differentiation on the basis of grade.
- Limited market information, regional market information systems (MIS) are not operational except Réseau des Systèmes d'Information des Marchés Agricoles en Afrique de l'Ouest (RESIMAO) which publishes market information after three month on prices, products, and market trends.

### **Opportunities**

- Maize is a staple food for most West Africa countries, especially in rural contexts, where it is highly consumed
- There is large market for maize, both for human consumption and for animal feed
- Numerous trade opportunities, including The World Food Program(WFP) and breweries in all the countries of the region
- The ECOWAS regulation on free trade exists, but it remains to be enforced to increase trade across border.

### **Threats**

- Seasonal ban of grain exports
- Tariff and non-tariff barriers
- Road and cross-border harassments

# 5. VISION AND UPGRADING STRATEGY

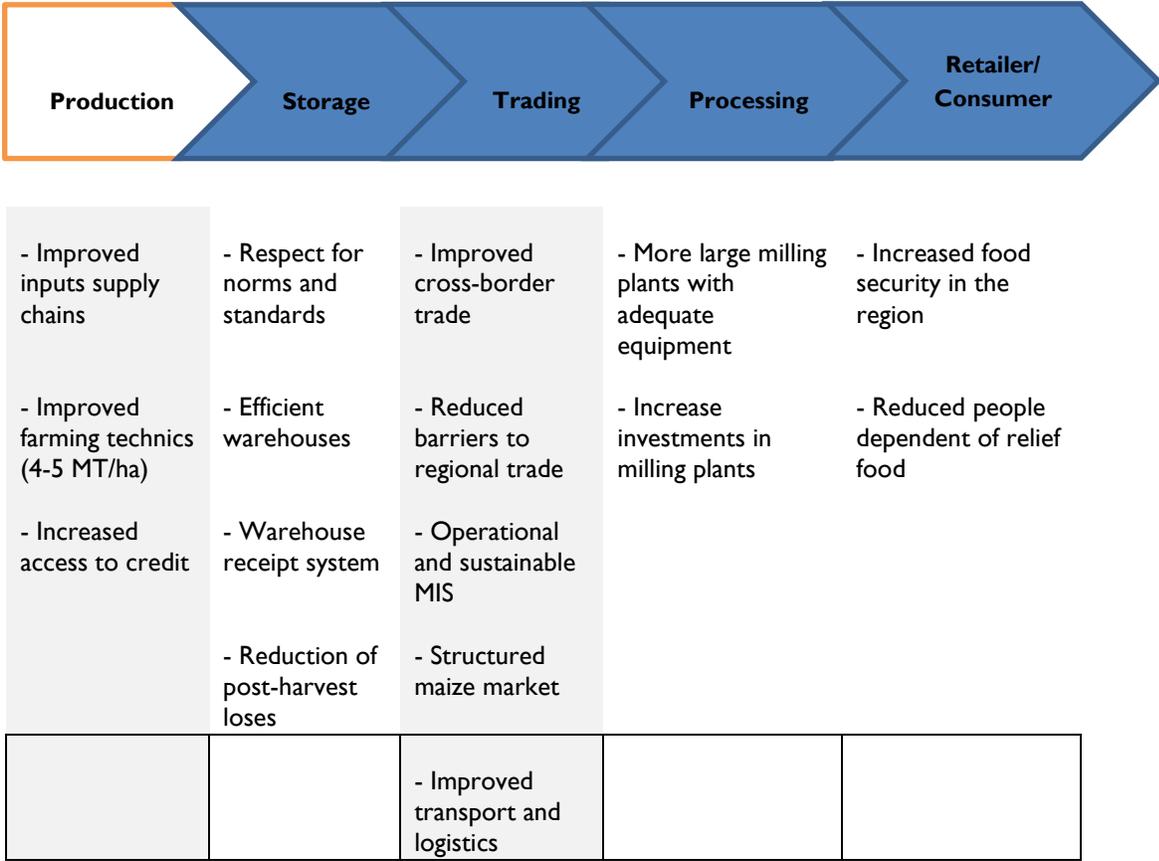
## 5.1 VISION

The vision for the maize value chain includes upgrading the marketing system to better address documented constraints. The vision of the sector is clearly reflected within WAGN’s strategic plan and vision.

## 5.2 UPGRADING STRATEGY

The figure below is a schematic summary of the “Vision 2019” for the West Africa maize value chain, which presents significant opportunities for improving efficiency and effectiveness.

**Figure 7: Vision of Maize Value Chain for West Africa**



## 5.3 ROLE OF THE TRADE HUB

Specific areas for Trade Hub activities include:

- Support regional stakeholders to increase access to inputs, fertilizers and improved/certified seeds and development of post-harvest infrastructure.
- Identification of capacity building needs of actors.
- Dissemination of appropriate technologies in processing industries.
- Support contracts between processors and producers.
- Support training of stakeholders to respect norms and standards.
- Contribute to create an enabling environment to increase regional trade; (i) promote an operational information system in favor of maize value actor, (ii) support the establishment of commercial infrastructure in major production areas and lead markets, (iii) promote warehouse receipt system, contract farming, (iv) facilitate access to finance and promote investments in order to create jobs.

These include the different activities and actions required to make improvements throughout the value chain: improved seeds to producers, better storage techniques (both on and off the farm), more value-added processing, and added efficiencies in wholesaling and retailing all the way to the consumer. The Trade Hub's role towards the development of a high value, high volume of maize value chain will be principally that of facilitator for stakeholders with the intention of creating a sustainable stakeholder/private sector-driven agro-business and trade environment.

## 5.4 RISKS AND MITIGATIONS

Risks are focused on the continuation of barriers to trade at the regional level:

- Seasonal ban of grain export
- Tariff and non-tariff barriers
- Road and cross-border harassment

To mitigate these risks, the Trade Hub can take a number of approaches:

- Support stakeholders for advocacy on national and regional level
- Partner with UEMOA and ECOWAS to harmonize taxes and tariffs in the region
- Support stakeholder regional actors to clearly communicate the negative impact of regional policies or non-implementation of approved policies to policy institutions.

## 6. ADDITIONAL INFORMATION NEEDED

In the future, the project should closely work with stakeholders to get recent data on trade flows, production, and participants. Working with bilateral missions will be required in each country in order to coordinate and harmonize activities.

# ANNEX I: BIBLIOGRAPHY

CILSS. November 2013. Flux transfrontaliers des produits agricoles et d'élevage de l'Afrique de l'Ouest

CTA. 2013. Système de commerce structuré de céréales en Afrique

SSG Advisors. April 2014. Alliance for a Seed Industry in West Africa

Daria Gage et al. January 2012. The market for maize, rice, sorghum, and warehousing in Northern Ghana

World Bank. January 2013. Growing Africa, Unlocking the Potential of Agribusiness

World Bank. October 2013. Trade in Africa: Food staples

Webber, Martin and Labaste, Patrick. 2010. Competitiveness in Africa's Agriculture: A Guide to Value Chain Concepts and Applications

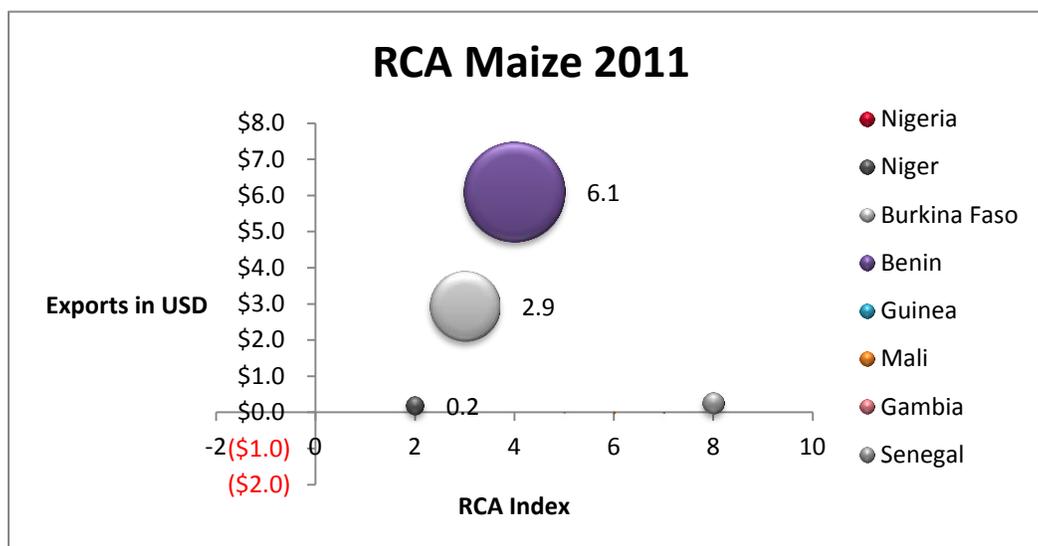
USAID/ATP-EATP. May 2013. Final report of ATP and EATP

# ANNEX 2: PERSONS AND ORGANIZATIONS INTERVIEWED

1. **Sanou Soumaila**, Chairman of WAGN, and president of CIC-B Burkina Faso, a farmer
2. **Tom Gambrah**, Vice President WAGN, Chairman of GGC-Ghana, and owners cereals processing firm
3. **Lionel Guezodje**, General Secretary of WAGN, Chairman of FUPRO-Benin
4. **Aissatou Deme**, Treasure of WAGN, Owner of a processing firm
5. **Velegda Maimounata**, Cereal whole seller in Ouagadougou

# ANNEX 3: REVEALED COMPARATIVE ADVANTAGE

The Revealed Comparative Advantage (RCA) for Maize and its supporting data is shown below:



Export data from 2011 except: Gambia and Benin (2010), Guinea (2005), and Mali (2012)

	A	B	C	D	E	K	M	N	O	P
1	Product	Nigeria	Niger	Burkina Faso	Benin	Guinea	Mali	Gambia	Senegal	World
2	Maize	\$115,193	\$394,346	\$4,231,125	\$9,699,530	\$2,096	\$4,180	\$318	\$2,120,066	\$33,727,471,000
3	Country Total Exports	220,998,000,000	1,098,000,000	768,000,000	\$848,000,000	1,256,000,000	1,139,000,000	\$133,000,000	\$4,251,000,000	
4	World Total Exports	17,999,547,615,000								
5										
6	RCA Maize	\$0.0	\$0.2	\$2.9	\$6.1	\$0.0	\$0.0	\$0.0	\$0.3	

Commodity export data is from UN Comtrade, country totals are from WTO.org, and world exports from FAO STAT 2011

## Explanation of Revealed Comparative Advantage

The idea to determine a country's 'strong' sectors by analyzing the actual export flows was pioneered by Liesner (1958).

The procedure was refined and popularized by Bela Balassa (1965, 1989) it is popularly known as the Balassa Index. Alternatively, as the actual export flows 'reveal' the country's strong sectors it is also known as Revealed Comparative Advantage.

Balassa defined the export performance of a specific product/industry from a country – as measured by revealed comparative advantage index – as the relative share of the country's export of the product in

the world export of the same product, divided by the overall share of the country in world exports. More specifically, the revealed comparative advantage index of product j exported from country i (RCA<sub>ji</sub>) can be expressed as follows:

$$RCA_{ji} = (X_{ji}/X_{jw}) / (X_i/X_w), \text{ where:}$$

$X_{ji}$  = exports of product j from country i  $X_{jw}$  = world exports of the product j  $X_i$  = exports of country i  $X_w$  = world exports

The RCA index ranges from 0 to infinity with 1 as the break-even point. That is, a RCA value of less than 1 means that the product does not have export comparative advantage, while a value above 1 indicates that the product has a “revealed” comparative advantage.

For the case of live maize:

Export data ( $X_{ji}$ ) for each country are shown in the row 2 under their respective country names; so the formula can be written as X (maize, Nigeria); X (maize, Burkino Faso), etc.

$X_{jw}$  or X (maize, World ) is in the cell P2 = \$33.7Bil (rounded)

$X_i$ , exports of the countries, are shown in row 3

$X_w$ , world total exports, in cell B4 = \$18Trillion

Only two countries, Burkina Faso and Benin, show a revealed comparative advantage in the sample for maize exports. Burkina Faso, with the formula  $(B2/P2)/(B3/B4)$ , has an RCA of 2.9. Meanwhile, Benin leads the sample with an RCA of 6.1.

These calculations are limited to some degree by the availability of export data.

# ANNEX 4: OTHER DATA

## Maize production per country (in Mt)

	2005	2006	2007	2008	2009	2010	2011	2012	
<b>Benin</b>	864698	671949	753121	1084467	1074701	1012630	1165957	1174563	
<b>Burkina Faso</b>	799052	866664	553874	1013634	894558	1133452	1076753	1556316	
<b>Cabo Verde</b>	3648	4116	3068	11584	7383	7047	5569	6000	*
<b>Côte d'Ivoire</b>	640213	638753	531940	630188	637372	641610	621790	654738	
<b>Gambia</b>	29002	27750	31408	44894	54625	66000	23613	30106	
<b>Ghana</b>	1171000	1189000	1219600	1470080	1619590	1871695	1683984	1949897	
<b>Guinea</b>	502051	546765	595460	522695	565667	580100	Im 611000	* 641000	*
<b>Guinea-Bissau</b>	39835	41827	13907	16690	16600	F 12312	* 8000	* 10000	*
<b>Liberia</b>									
<b>Mali</b>	634464	706737	689918	695073	1476993	1403576	1298234	1713729	
<b>Mauritania</b>	12234	17285	16966	15461	11830	19910	11609	19000	*
<b>Niger</b>	951	19085	19324	7968	1389	9381	6366	18955	
<b>Nigeria</b>	5957000	7100000	6724000	7525000	7358260	7676850	9180270	9410000	*
<b>Saint Helena, Ascension and Tristan da Cunha</b>									
<b>Senegal</b>	399958	181585	158266	397326	328644	186511	124092	240878	
<b>Sierra Leone</b>	39051	48813	22848	23533	29641	51388	41553	59000	*
<b>Togo</b>	509468	543342	546050	590106	651739	638129	650831	692610	

\* = Unofficial figure | [ ] = Official data | F = FAO estimate | Im = FAO data based on imputation methodology