Overview of the Rice Value Chain in Burkina Faso, Ghana, Nigeria, and Tanzania

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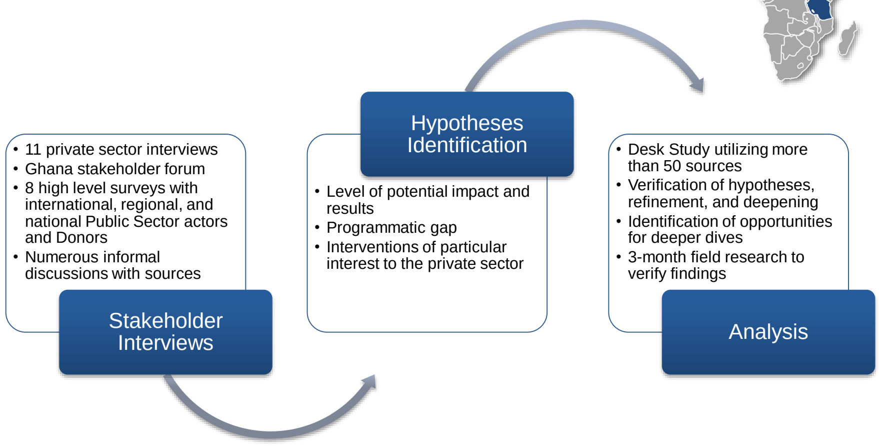
THE STUDY UTILIZED INITIAL INDUSTRY INTERVIEWS TO IDENTIFY HYPOTHESES FOR EXPERT ANALYSIS

Study Methodology



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HOW SIGNIFICANT IS THE OPPORTUNITY TO IMPROVE SMALLHOLDER LIVELIHOODS VIA RICE IMPORT SUBSTITUTION?

- Over the past decade, rice has become the fastest growing food commodity in SSA. Over the next 8 to 10 years, it is expected that steady growth will continue, notably in West African BMGF focus countries with large scale import markets: Ghana & Nigeria.
- Increasingly, African urban consumers are relying on rice for calorie intake. This makes rice a strategic crop from availability & price standpoints, given that a substantial part of African household income is spent for food.
- Rice production contributes to the food supply & livelihoods of an estimated 7 million African farmers. Smallholders chronically underachieve productivity despite more than 500 Government & Donor projects in BMGF countries focusing primarily on yield gains under social based development assistance approaches, in lieu of commercial agriculture approaches.
- Subsequently, there is a huge market not being exploited by African suppliers. Local farmers & processors capturing a portion of the $5B spent annually on imports should have a significant impact on livelihoods, providing the farmer is competitive.

Scenarios of annual smallholder rural economy increase from rice import substitution in 7 focus countries*

Million USD revenue from incremental increases in smallholder rice sales

Scenario	Low	Medium	High
Import Replacement:	10%	20%	30%

* Assumes import replacement of between 10 and 30% and smallholder produces 50% of that replacement volume; see Annex 2 in Appendix for further assumptions

Source: Africa Rice, Author's analysis of COMTRADE, USAD, FAOSTAT statistics

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WE SELECTED GHANA, NIGERIA, BURKINA FASO AND TANZANIA FOR A FULLER VALUE CHAIN ASSESSMENT

Criteria for selecting countries for fuller value chain assessments

- There is a significant urban consumer import substitution **market**
- There are **commercial farmers/processors and smallholder communities** (ideally linked with rice inter-professional organizations) willing and interested to work and innovate together
- There is existing **water management infrastructure** or systems apt for commercial rice farming (or investments in the short-term pipeline for such)
- There is existing **processing** capacity or investments in the short-term pipeline for such
- National **policy** is supportive of import substitution
- The country (at least rice growing area in the country) is **politically stable**

- Selected countries
  - Ghana
  - Nigeria
  - Burkina Faso
  - Tanzania
- Mali deselected at the last minute due to political instability

Source: BMGF analysis

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All four countries face very similar challenges all along the value chain, particularly in production practices, input supply and availability of finance

Challenges along the value chain shared by Nigeria, Ghana, Burkina Faso, Tanzania

Upstream R&D
- **Mechanization:** Low cost, small scale mechanisation suited to smallholder rice farming in Africa has not been developed

Input supply
- **Seed: Insufficient supply** of good quality seed
- **Fertilizer:** Fertilizer is not adapted to soil needs
- **Land: Unclear land tenure** discourages investment in land
- **Mechanization:** Spare parts and qualified workshops are not available

Production
- **Seed:** Farmers consistently use **recycled seeds** which give low yields
- **Agrochemicals: Inappropriate and insufficient** use of fertilizers, herbicides and pesticides
- **Agronomic practices:** Manual production practices and poor knowledge reduce yields and area planted
- **Farming as a business**: Farmers do not consider rice production as a business and do not invest in it

Processing
- **Manual post-harvest practices** reduce yield, lead to broken rice and increase foreign matter
- **Small village mills** are typically rundown, outdated and managed by unqualified operators

Trading / retailing
- **Farmgate price**: farmers are often forced to sell paddy at low farmgate price due to lack of market access

Consumers
- **Consumer segmentation:** There is insufficient knowledge of consumer preferences
- **Market information:** Price and demand information is not transmitted effectively along the value chain

Enabling Environment and Infrastructure

Infrastructure
- **Irrigation:** Infrastructure is limited, under utilized and poorly managed
- **Road:** Poor roads, particularly at the last mile, hamper market access
- **Storage:** Warehouse capacity is insufficient and rarely used

Finance environment
- **Financial institutions:**
  - Lack of agriculture financial services due to longer repayment times, higher default rates (due to side selling),
  - When available, interest rates are very high (up to 100%)
- No insurance products available

Industry bodies
- **Industry bodies:** Lack of effective industry associations, means there is no collective industry voice for rice

Policy & business environment
- **Extension services:** Insufficient numbers and existing officers are not always trained in the latest knowledge

Source: BMGF Rice Value Chain Analysis

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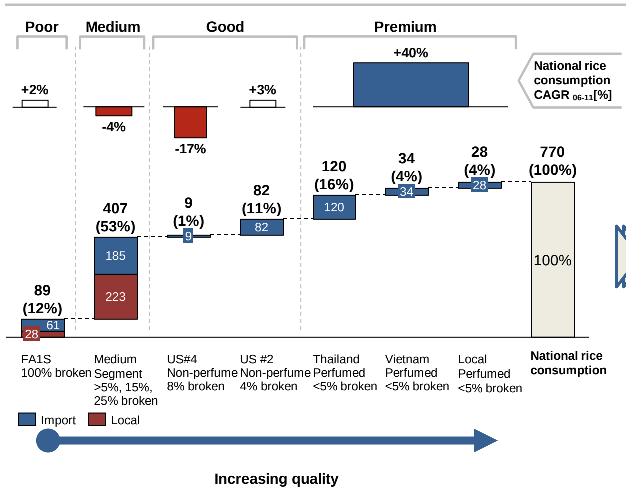
THE GHANAIAN RICE MARKET IS INCREASINGLY DRIVEN BY PREMIUM RICE WHICH IS GROWING AT 40% P.A., WHILE THE MEDIUM SEGMENT IS SHRINKING AT -4% P.A.

National rice consumption in Ghana[1)2)3)] ['000 MT (%), 2011]



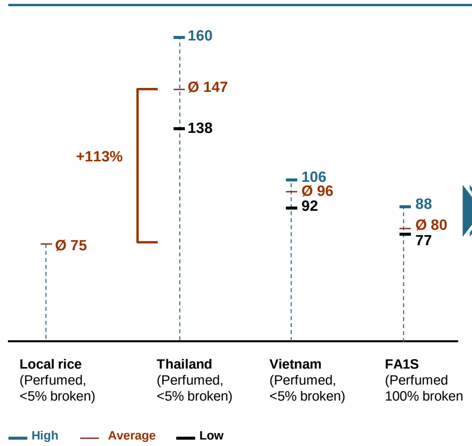
- Urban market consumers prefer imported rice due to perception of higher quality
  - It is cleaner (no stones)
  - Perfumed and low % broken
  - Appearance (e.g., even color)
- Local rice must meet these characteristics in order to compete with imports
- Perfumed rice in particular is increasingly popular and now accounts for 81% of overall rice imports
- 48% of imported rice consumption is <5% broken
- 31% of imported rice consumption is perfumed and <5% broken

1) Based on OLAM sales estimates; 2) Local production of milled rice was 278 MT in 2011 (assumes 40% paddy loss from processing); 3) Assumes 80% of local milled rice is in the Medium segment range, 10% Premium and 10% Poor

Source: OLAM, Interviews

Consumers are willing to pay a price premium of 113% for imported Thai rice over premium local rice

Market price of high quality milled rice in Ghana, 2012 [GH₵/50 kg bag]



- **Perceived quality** is a major factor in consumer purchasing decisions and is the main reason why consumers prefer imported rice
- The **reputation of local rice is associated with poor quality** and it is priced at the level of 100% broken rice
- **Urban markets (such as Accra and Kumasi) consume 75% of total rice in Ghana** (both local and import rice) yet they **only consume ~20% of local rice**
- **Local rice is rarely found in supermarket chains**, whose shelves are dominated by imported rice varieties
- There is a need to improve local rice quality in Ghana to compete with imports and to **launch a marketing campaign** to advocate for consumption the higher quality local rice[1)]
- Some importers, including Finatrade, buy local aromatic rice and repackage it for the local market

1) 2008 "Ghana Rice" marketing campaign led to increases in the reported purchase of Ghanaian rice

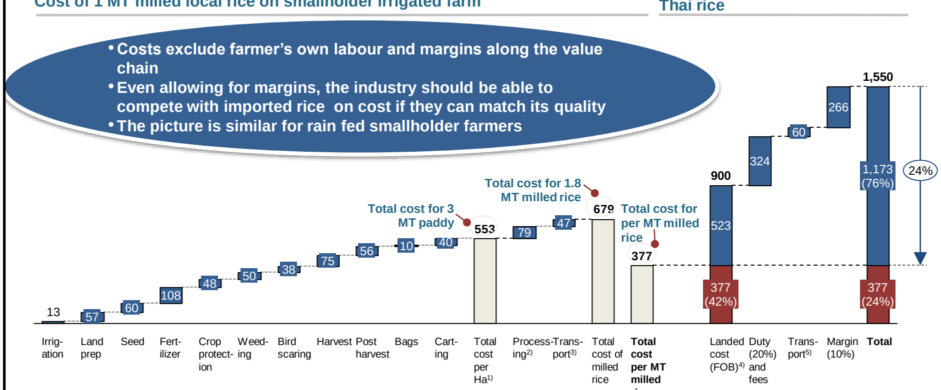
Source: OLAM, Finatrade, Interviews

IF THE CHALLENGES CAN BE OVERCOME AND QUALITY CAN BE MET, GHANAINA FARMERS COULD PRODUCE AT A COST THAT IS COMPETITIVE WITH IMPORTED THAI RICE

Cost comparison of imported and local milled rice, 2012 [USD]

Cost of 1 MT milled local rice on smallholder irrigated farm

Cost of 1 MT imported premium Thai rice



We expect production cost to fall as efficiency improves and higher yields are achieved

1) Production cost for 1 harvest and assumes yield of 3 MT per Ha for irrigated fields; 2) Assumes paddy loss of 40% from milling; 3) Transportation of 1.8 MT milled rice from Northern to main markets; 4) FOB: Freight on Board, average price per MT: USD 900; 5) Transportation of 1 MT milled rice from Port (Accra) to main markets

Source: BMGF Rive Value Chain Analysis

THE GHANAIAN RICE INDUSTRY IS DEVELOPING WELL, WITH A NUMBER OF COMMERCIAL PLAYERS ATTRACTED BY THE MARKET OPPORTUNITY AND GROWING CONDITIONS

Region	Producer	Processor	Market	Comments
	• ICOUR[1]	• ICOUR[1] • Single mothers (parboiled rice)	• Aggregators	• Industry is **very fragmented** with no major commercial players - aggregators travel to Upper East to source rice for key markets (Kumasi) • **ICOUR** offers a large pool of irrigated land (713 Ha) • Avnash plans to build a third mill in Bolgatanga to export to Burkina Faso
	• **Avnash Rice Mill[2]** • Large nucleus farmers (up to 300 Ha land)	• **Avnash Rice Mill[2]** • **Nasia rice mill[3]** • **Lolandi[3]** • **Amsig Resources**	• **Novel**	• **More developed rice processing** industry, but **production and market is very fragmented** with no major commercial players • **Avnash's mill is largest processor in Ghana** (to be operational by 2012 end) • Increasing number of smaller processors are setting up mills in Northern, e.g., Amsig • Strong interest from **Premium Food** to enter; other interested players include **GADCO** • Avnash plans to build a second mill in Northern
	• **GADCO** • **Prairie Volta[3]** • **Brazil Agro-Investment**	• **GADCO[2]** • **Prairie Volta[3]** • **Brazil Agro-Investment**	• **Finatrade** • **OLAM** • **Stallion**	• **Developed production, processing and market industry** with leading integrated commercial players along the chain • **Emerging interest of commercial players interested[4] in expanding into the region for rice production**, such as VEGPRO, Africa Atlantic, Stallion (joint venture with Asia Golden Rice)

1) Irrigation Company of Upper Region; 2) Will be operational 2012 end; 3) Includes government ownership, currently being taken over by Avnash; 4) WIENCO interested in the Eastern region

Commercial players

Source: BMGF Rive Value Chain Analysis

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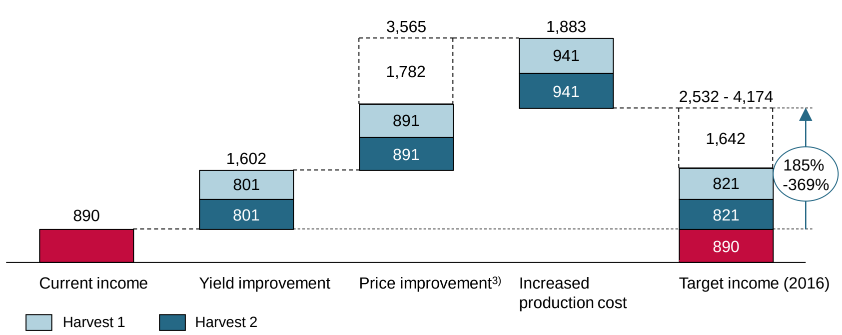
Copa Connect aims to increase irrigated smallholder income by 369% to USD 4,174 per year

Impact of Copa Connect on irrigated smallholder income[1)2)] 2016 [USD, p.a.]



1) Does not taken into account opportunity cost of producing a different crop:; 2) Irrigation allows 2 crop cycles per year; 3) GADCO's price for milled rice: CONFIDENTIAL

Source: GADCO, Interviews

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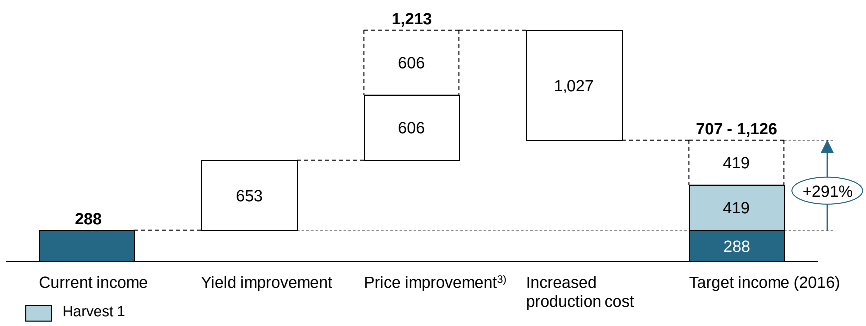
Copa Connect aims to increase rainfed smallholder income by +291% to USD 1,126 per year

copa GADCO

Impact of Copa Connect on rainfed smallholder income[1)2)] [USD, p.a.]



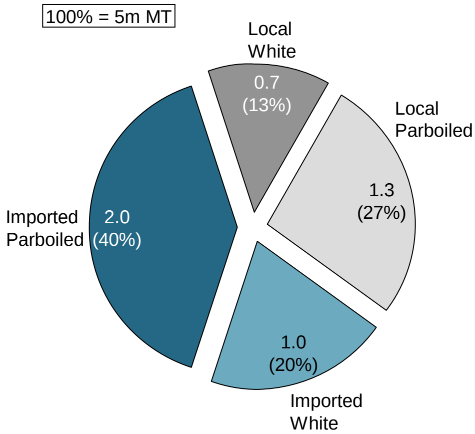
1) Does not taken into account opportunity cost of producing a different crop; 2) Rainfed farmers only have 1 crop cycle per year; 3) GADCO's price for milled rice: CONFIDENTIAL

Source: GADCO, Interviews

Nigerian consumers prefer parboiled rice, and imported rice makes up 60% of the market due to higher quality

Nigeria rice consumption by type [m MT]

100% = 5m MT



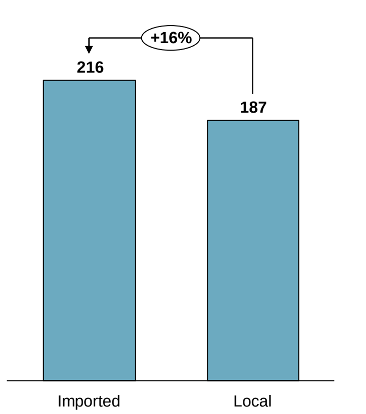
Rice consumption preferences in Nigeria

- There are two discrete market segments for household rice consumers:
  - high-quality rice consumers: less price sensitive and prefer cleaner, less broken rice
  - lower-quality rice consumers: more price-sensitive and prefer the taste of local rice
- **The most rapidly growing market segment is at the higher-end, which is being met by imported rice at the moment**
- For both domestic and imported rice, there is a strong consumer preference for parboiled rice
- Parboiling allows the rice to cook faster, prevents the grains from sticking together and offers higher nutritional content relative to rice that is not parboiled

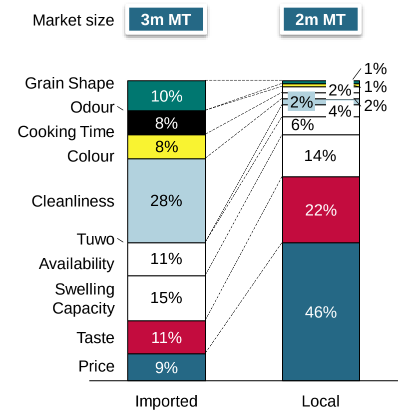
Source: USAID GLOBAL FOOD SECURITY RESPONSE NIGERIA RICE STUDY, 2009

Most consumers are willing to pay a 16% premium for the cleanliness and attractiveness of imported rice, while price sensitive consumers buy local rice

Market price of local versus imported rice, 2009, [Naira / KG]



Consumer criteria for rice consumption



The market for higher quality, imported, rice is growing more rapidly than the market for lower quality, local, rice

Source: USAID GLOBAL FOOD SECURITY RESPONSE NIGERIA RICE STUDY, 2009

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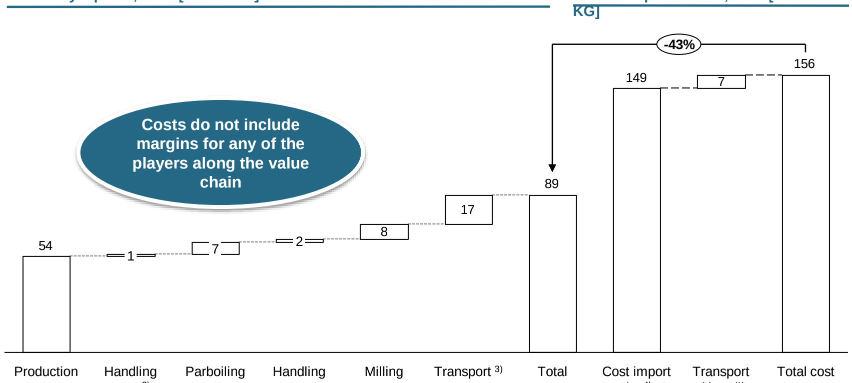
A 43% cost advantage for local rice provides sufficient room for capturing healthy margins along the value chain

Cost of production of milled parboiled rice on smallholder farm using all necessary inputs[1], 2009 [Naira / KG]

Cost of imported rice, 2009 [Naira / KG]



1) Based on a fully costed MT using market rates for inputs and **all labor,** applying best practices and achieving yields of 3.5-4 MT of paddy; 2) Handling costs are costs made for (off) loading trucks; 3) Transport includes: moving from mill to truck, transport by road, bribes paid along the road, off loading and temporary storage at the market and transport to market; 4) Cost of imported rice includes 32.5% import tariff

Source: USAID GLOBAL FOOD SECURITY RESPONSE NIGERIA RICE STUDY, 2009

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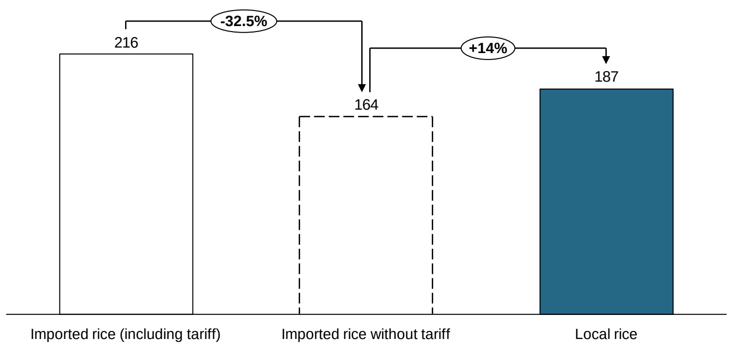
If the 32.5% import tariff were removed, local rice would be 14% more expensive than imported rice, requiring either production cost or margins to fall

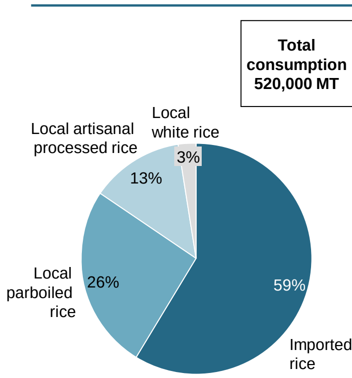
Price comparison of domestic and imported rice, 2009 [N / KG]



Source: USAID GLOBAL FOOD SECURITY RESPONSE NIGERIA RICE STUDY, 2009

IN BURKINA FASO, LOCAL RICE CANNOT COMPETE WITH VERY LOW QUALITY IMPORTED RICE, ESPECIALLY AS THE IMPORTED RICE ABSORBS 25%-30% MORE MOISTURE, MAKING ITS COOKED PRICE EVEN LOWER

Burkina Faso annual rice consumption per type, 2010



Types of rice in Burkina Faso

- **Imported rice**
  - The majority is over-aged buffer stock from Asia, it is therefore very dry
  - Preferred for its taste and because it increases volume on cooking by 25%-30% more than fresh local rice (as it is dry)
  - Imported by large traders and is most easily accessible for the urban consumers in Bobo and Ouagadougou
- **Local parboiled rice**
  - Processed and marketed in local markets by women groups
  - The majority of parboiled rice is eaten in rural areas – preference there because fewer impurities than local white
  - Rural communities combine parboiled rice with many dishes
  - Urban consumers only eat it with the dish ‘riz graz’
- **Local artisanal processed rice**
  - White rice that is processed on the side of the field and consumed by the smallholder and his/her family
- **Local white rice**
  - Traded by some larger traders and is difficult to come by
  - Quality is poor, the price is high
  - In addition, it absorbs less water on cooking than imported rice, giving 25%-30% less volume per kg of milled rice (implying a 25%-30% higher price to consumers)

Source: Direction de la Prospective a des statistiques Agricoles a Alimentaire, STRATEGIE NATIONALE DE DEVELOPPEMENT DE LA RIZICULTURE, ETUDE DE MARCHE SUR LE RIZ LOCAL by IntermonOxfam-UNPR-B

A LACK OF ACCESS TO FINANCE WAS MENTIONED AS A SERIOUS ISSUE BY ALL ACTORS ALONG THE VALUE CHAIN IN BURKINA FASO

Impact of lack of finance along the value chain

Inputs	Production	Processing	Market
• **Seed producers** cannot access finance from banks to **make investments** in larger storage facilities • They also don't have sufficient **working capital** to contract more outgrowers	• Farmers generally have **no cash** at the start of the harvest to **purchase the right amount and quality of seeds, fertilizer and crop protection** • Because farmers buy fertilizer and crop protection too late, they **cannot adhere to the optimal production calendar** • Farmers have **no funds** to access any kind of **mechanization** for production and harvesting	• Processors are constrained by their **working capital**, limiting the **amount of paddy they can keep in stock**, thereby limiting the amount of processed rice • Some processors **even buy paddy from farmers on credit** • They are also constrained by a lack of finance for **capital investments** in new equipment with more capacity and more **storage capacity**	• Traders of local rice are constrained by their **working capital** – they would like to keep more rice in stock to satisfy orders better but they cannot • They also lack sufficient finance to invest in more **storage capacity**

Enabling Environment and Infrastructure

Infrastructure	Business & finance environment	Industry bodies & sector policies	Research & extension services

Source: BMGF Rive Value Chain Analysis

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A CHALLENGING BUSINESS ENVIRONMENT MAKES IT VERY DIFFICULT TO DO BUSINESS IN BURKINA FASO, HOLDING BACK THE RICE INDUSTRY

World Bank doing business ranking of Sub-Saharan Africa: selected countries

RANK	COUNTRY
1	Mauritius
5	Ghana
7	Zambia
10	Ethiopia
12	Uganda
14	Tanzania
15	Nigeria
22	Mali
24	Burkina Faso
26	Senegal
34	Côte d'Ivoire
38	Niger
46	Chad

Burkina Faso ranks #150 on Global list - below Iran, Tajikistan and the West Bank & Gaza

Comments

- Burkina Faso scores particularly low on the dimensions Electricity, Protecting Investors, Paying Taxes and Trading Across Border
- There is anecdotal evidence of multiple investors in the agricultural sector who decided not to invest in Burkina Faso after initial research, reasons quoted are:
  - No *physical access* to the relevant legislation documents
  - No clarity around which GoBF bodies are responsible for what rules and regulations
  - General lack of clarity in various business rules and regulations (e.g., export, labour, land ownership)

Source: World Bank 'Doing Business' ranking 2012, interviews

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While there is donor activity in rice, it is focused on upstream R&D and improving production practices with a narrow geographic focus

Donor activities in the rice value chain in Nigeria, Ghana, Burkina Faso, Tanzania

Upstream R&D → Input supply → Production → Processing → Trading / retailing → Consumers

Upstream R&D
- **All:**
  - Extensive research on new rice varieties by Africa Rice
  - Dissemination of NERICA in Nigeria, Ghana, Burkina Faso by AfDB, Africa Rice, UN
  - Research into improved soil fertility in Ghana, Nigeriam Tanzania by Africa Rice, FARA, AfDB

Input supply
- **Nigeria**:
  - IFDC is promoting the supply and use of pellet fertilizer
- **Ghana**:
  - ACDI/VOCA and AfD providing inputs in Northern Ghana
- **Tanzania**:
  - A number of value chain programmes linking farmers to market funded by Aga Khan, Oxfam, World Bank, USAID), but often with other crops
- **Burkina Faso**:
  - GTZ providing inputs in Eastern Burkina Faso

Production
- **Nigeria**:
  - IFDC providing training in the north
- **Ghana**:
  - ACDI/VOCA and AfD providing training in Northern Ghana
  - JICA developing farmer practices for upland and lowland rainfed rice
- **Tanzania**:
  - ACDI/VOCA is providing training in Kilombero
  - Aga Khan Foundation is providing training in Mtwara
  - JICA using farmer-to-farmer training to improve practices
- **Burkina Faso**:
  - GTZ providing training in Eastern Burkina Faso

Processing
- **Nigeria**:
  - GoN importing 100 mills from China
- **Ghana**:
  - ACDI/VOCA provided parboiling equipment in Northern Ghana
- **Burkina Faso**:
  - GTZ providing parboiling equipment in Eastern Burkina Faso

Trading / retailing
- **Ghana**:
  - ACDI/VOCA linking farmers in Northern Ghana to markets
- **Tanzania**:
  - A number of value chain programmes linking farmers to market funded by Aga Khan, Oxfam, World Bank, USAID), but often with other crops

Consumers
- **All**
  - Value chain studies have been carried out in all countries by various organisations

Most donor projects have a narrow geographic focus and only deal with specific parts of the value chain

Enabling Environment and Infrastructure

Infrastructure | Finance environment | Industry bodies | Policy & business environment

Source: BMGF Rice IVCT

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There is little donor support for industry bodies or improvements to the policy and business environment

Donor activities in the rice value chain in Nigeria, Ghana, Burkina Faso, Tanzania

Upstream R&D → Input supply → Production → Processing → Trading / retailing → Consumers

Enabling Environment and Infrastructure

Infrastructure
- **Ghana**:
  - AfDB investing in irrigation schemes and feeder roads
- **Tanzania**:
  - World Bank funding road and irrigation investment through SAGCOT initiative
- **Burkina Faso**:
  - Extensive development of irrigation schemes by a number of donors

Finance environment
- **Nigeria:**
  - Government funding mechanism NIRSAL providing subsidized capital to agriculture
- **Ghana:**
  - A number of value chain programmes linking farmers to credit funded by USAID, World Bank)
- **Tanzania:**
  - A number of value chain programmes linking farmers to credit funded by Aga Khan, Oxfam, World Bank, USAID), but often with other crops

Industry bodies
- **Ghana:**
  - AfD has supported the development of an industry association

Policy & business environment
- **All:**
  - CARD is supporting the development of rice policies
- **Tanzania:**
  - JICA funding capacity building among researchers, irrigation technicians
- **Ghana:**
  - AfD supporting development of local and national public sector employees
- **Nigeria:**
  - CADP providing wide ranging support to public sector development

Source: BMGF Rice IVCT

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There is therefore a need to scale improvements in production practices, improve access to finance, create self-sustaining industry associations and advocate for improvements in policies in all countries

Donor opportunities in the rice value chain in Nigeria, Ghana, Burkina Faso, Tanzania

Upstream R&D	Input supply	Production	Processing	Trading / retailing	Consumers
• **Develop drought and stress resistant** varietals that meet local consumer demands • **Develop small scale machinery** suitable for African rice farmers	• Create a **sustainable input supply** solution that can meet the needs of all rice farmers	• **Scale improvements in production practices**, using current small scale initiatives as the proof of concept for large scale impact	• **Link farmers to high quality processors** to improve quality of milled rice	• **Link farmers more directly to processors** to increase farm gate prices	• Carry out **market research** to understand consumer requirements

Enabling Environment and Infrastructure

Infrastructure	Finance environment	Industry bodies	Policy & business environment
• **Advocate for infrastructure improvements**, particularly in road, electricity and irrigation	• Encourage agricultural lending by **sharing credit risk** with local banks • Develop **crop insurance products** aimed at rice	• **Create and support industry associations** in all countries until they are self sustaining	• **Advocate for policy improvements** to improve both the general business environment and rice specific policies

Source: BMGF

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SUGGESTED INTERVENTIONS START TARGETED AND INSTITUTIONALIZE IN LONGER TERM; COMMERCIAL INNOVATION PARTNERS OWN THE PROCESS

3 year | 6 year | 10 year

Smallholder production/processing-oriented interventions:

In collaboration with commercial innovation partners

• Farmer training/skill development • Block farms/land aggregation for irrigation efficiency • Processing linkages	**Commercial farming models designed, developed**	10% to 30% of import replacement achieved by local commercial farms that empower smallholders
Access to finance	**Commercial farming products/services designed, developed**	Rice integrated into CFIs, DFIs and/or rice specific instrument
Industry alliance	Alliance up and running	Regional/ partial value chain → Fully functional, pan-African
Facilitating policy and investment for irrigation infrastructure	Utilizing BMGF country relationships to facilitate rice infrastructure in collaboration with Alliance	

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