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

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Prepared by Stephanie Diakité, Peter Jaeger,
Peter White, and Davon Cook

for the Bill & Melinda Gates Foundation

BILL & MELINDA GATES foundation

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  Rice is the fastest growing food commodity in SSA. Competitive supply by local farmers has the potential to increase revenue in smallholder rural economies in the 7 BMGF focus countries by $50 to $160 million annually. Bill & Melinda Gates Foundation can facilitate transformational change in local rice supply and processing by driving critical action in 3 key areas: access to finance, market based agronomy, and empowering industry stakeholder voice in rice sector policy, strategy, investment, and programming.

- **World rice market & Africa's share**
  - Global production, dominated by Asia, has grown steadily over the past 20 years. Consumption is also dominated by Asia; but SSA consumption is growing quickly.
  - International trade is thin at 6% of the market. Rice prices have been volatile and historically high of late.
  - The gap between consumer demand and supply in SSA is being met by import of more than 5 billion USD in rice annually.

- **Rice production in BMGF Focus Countries**
  - BMGF focus countries consumed 7 to 9 million tons of rice in 2011. It is projected that consumer demand will increase by at least 40% over the next 8 to 10 years.
  - 75% of local rice is produced from rain fed upland and lowland ecosystems in West Africa by small subsistence farmers. Yield is generally low and highly variable in BMGF focus countries.
  - Almost 50% of consumer needs are met with imported rice, principally from Thailand, Vietnam, and Pakistan.
  - Local rice must compete with imports, not only on price but also on quality and market service.

- **Existing and high impact future interventions**
  - There are more than 500 Government/Donor projects in BMGF focus countries. A limited number of private sector producers and processors are investing in the rice sector. Those interviewed identified enabling needs not met by current projects.
  - Enabling African producers to capture a portion of the $5bn spent annually on imports should have significant impact on their livelihood, provided they are competitive. Success will depend on innovative and strategic market based choices, particularly in access to finance (A2F), market based agronomy, and industry voice.
  - Because of its financial and convening powers, Bill & Melinda Gates Foundation can drive the necessary innovations to develop new models of market based capacity building that empower African farmers to own a progressively significant portion of the import replacement market. Initial focus is suggested on Nigeria, Ghana, Tanzania, and Burkina Faso in zones with significant rice growing potential, access to urban consumer markets, where potential commercial farming partners are active (or soon to be active).

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

Executive summary

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

Study Methodology

Stakeholder Interviews

- 11 private sector interviews
- Ghana stakeholder forum
- 8 high level surveys with international, regional, and national Public Sector actors and Donors
- Numerous informal discussions with sources

Hypotheses Identification

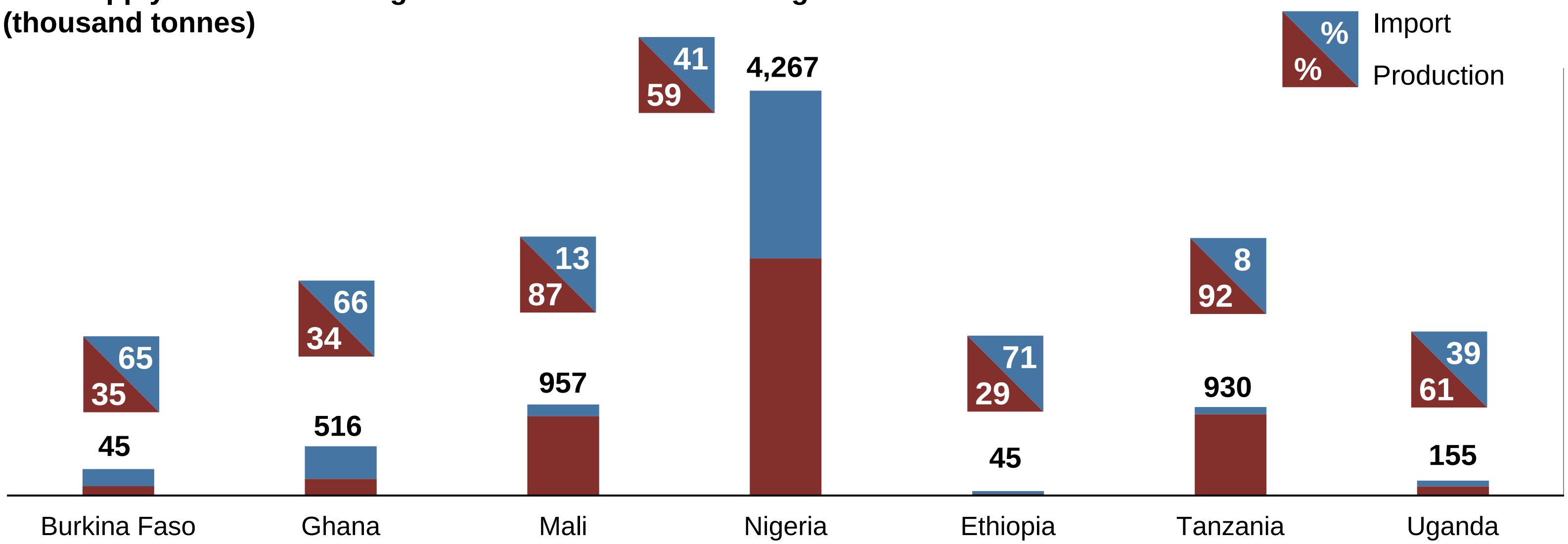
- Level of potential impact and results
- Programmatic gap
- Interventions of particular interest to the private sector

Analysis

- Desk Study utilizing more than 50 sources
- Verification of hypotheses, refinement, and deepening
- Identification of opportunities for deeper dives

FOCUS COUNTRIES IMPORT A SIGNIFICANT PORTION OF THEIR RICE NEEDS, WITH NIGERIA BEING THE DOMINANT CONSUMER & IMPORTER

Rice supply in the BMGF target countries based on average for 2007-2009 (thousand tonnes)



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. Imports meet a significant share of this demand, ranging from 13% to 71% in focus countries.

Import market of 2.6 million MT expected to grow by 8% annually

Precautionary note to the reader regarding data:
The rice data reviewed is sometimes inconsistent. This difficulty has been acknowledged by many. We have used what we consider the most reliable sources and noted concerns/omissions where appropriate. This is a first scoping exercise, and the data should be viewed in that light.
Please see Annex 1 in Appendix for further detail.

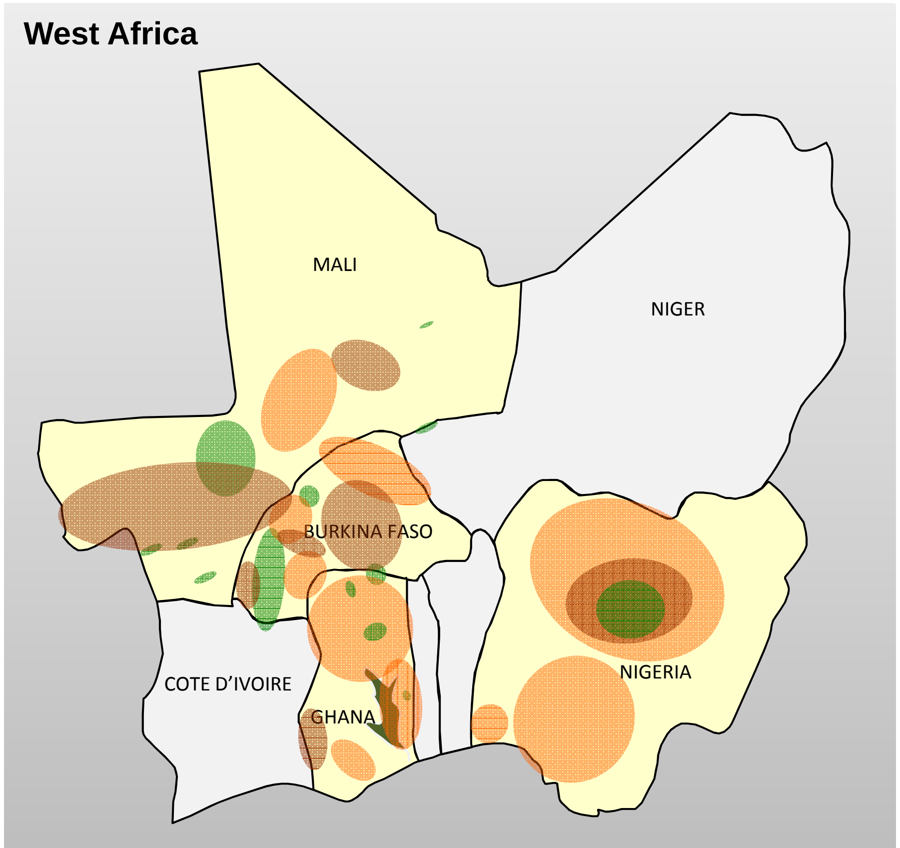
Source: FAOSTAT and USDA

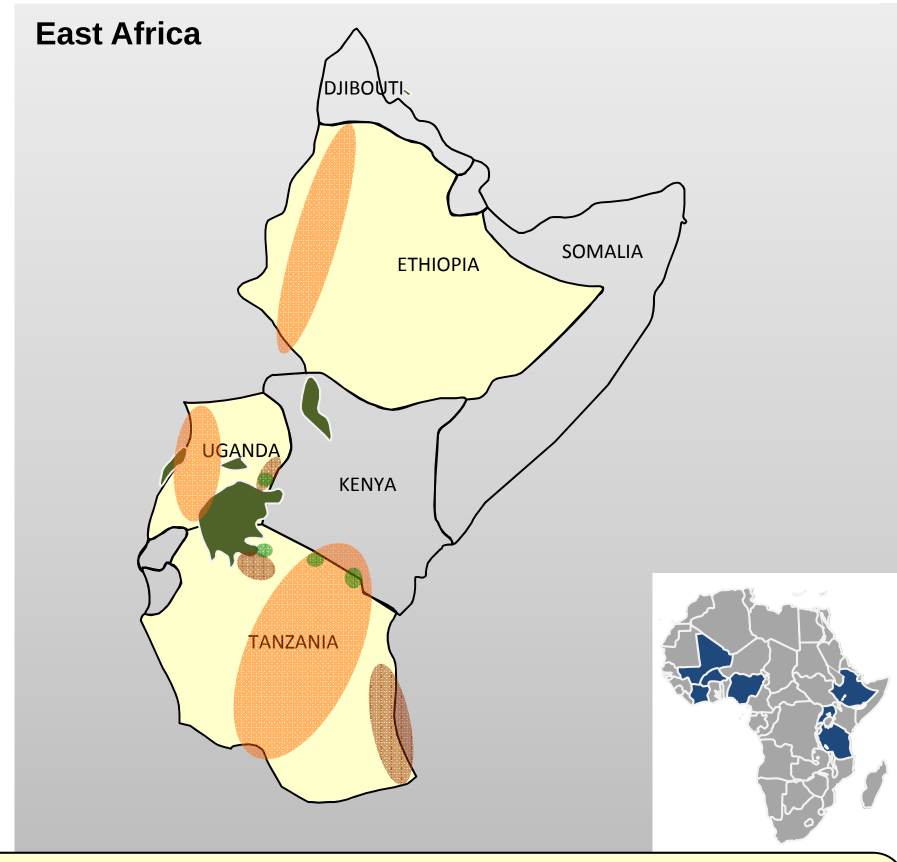
Executive summary

MOST LOCAL RICE IS PRODUCED FROM RAINFED UPLAND AND LOWLAND ECOSYSTEMS IN BMGF FOCUS COUNTRIES

General production systems in focus countries

	IRRIGATED	LOWLAND RAINFED	UPLAND RAINFED
Yield potential from Africa Rice, T/ha	**6+***	**3-6**	**2-4**





Rice production contributes to the food supply & livelihoods of an estimated 7 million African farmers. At least 500 Government and Donor projects in BMGF countries are active in rice, yet yields in Africa remain well below global averages, linkages from farmer to the urban market are absent or weak, and the comparative advantages of local production are not fully exploited for competitive gain. A commercial approach to rice farming has potential for positive impact.

* Potential for at least 2 crops per year

AN OVERALL STRATEGY PARTNERING WITH COMMERCIAL RICE FARMING IS A PROMISING PATH TO IMPACTING LOCAL PRODUCER/PROCESSOR LIVELIHOOD

RESULT: TRANSFORMATIONAL DEVELOPMENT THAT SUSTAINABLY INCREASES LOCAL PRODUCER REVENUE GENERATION CAPACITY

SITUATION:

Increasingly, African urban consumers are relying on rice for calorie intake. Rice production contributes to the food supply & livelihoods of an estimated 7 million African farmers. They chronically underachieve productivity.

OPPORTUNITY:

Capture a portion of $5bn import market not being exploited by African suppliers

PROMISING STRATEGY:

Drive the design, development and delivery of highly integrated interventions in support of commercial rice farming/processing: A2F, market based continuous agronomy improvements, industry voice and influence in key markets in collaboration with like-minded commercial/smallholder communities

- COMMERCIAL INNOVATION PARTNERS ARE COMMUNITIES OF COMMERCIAL FARMERS AND COMMERCIALLY-MINDED SMALLHOLDERS
- LINKAGES ENABLE COMMERCIAL INNOVATION PARTNERS TO LINK FOR CONSISTENT SUPPLY OF TYPE OF RICE NEEDED BY THE MARKET AT SCALE OF MARKET PENETRATION OF COMMERCIAL PARTNER

BENEFITS OF A COMMERCIAL APPROACH –

- A commercial approach will engage the private sector in ways a Government/Donor approach will not
- The commercial opportunity will attract investment that brings not only money, but much needed market based technical and managerial expertise and responsive support services
- Investor capacities can be leveraged to tackle long term, large scale challenges and constraints with Government and its partners: land and tenure; irrigation investment; agrochemicals; Research and Development

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

SELECTING COUNTRIES FOR DEEPER DIVES IS BASED ON EVALUATING SIX CRITERIA

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

Considered most important drivers for short-time horizon interventions, given proposed model of smallholders partnering with commercial farm entities

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

Generally underdeveloped in all countries (albeit significant potential), so less of distinction for selection in first round

National **policy** is supportive of import substitution

Selected countries are supportive without defining strategy; important filter for proposed model

The country (at least rice growing area in the country) is **politically stable**

Essential operational filter--not all focus countries are stable

Executive summary

BASED ON THESE CRITERIA, NIGERIA AND GHANA RISE TO THE TOP, FOLLOWED BY TANZANIA AND BURKINA FASO

○ Low
◑ Medium
● High

Qualitative ratings relative to each other	West Africa				East Africa		
	Burkina Faso	**Ghana**	**Mali**	**Nigeria**	**Ethiopia**	**Tanzania**	**Uganda**
Significant urban consumer imported rice market	◑	◕	◔	●	◔	◑	○
Commercial farmer/ processor & smallholder communities willing & interested to work & innovate together	◕	●	◔	◕	○	◕	◑
Current irrigation infrastructure*	◔ Irrigation to be integrated into Bagré project	◑ Related to Hydro projects	◕ Office due Niger	◑ Numerous existing schemes not functional because lack of upkeep	○ Nile hydro projects potential	◑ Agrica water mgmt, extensive untapped water resources	○ Extensive untapped water resources for future
Current processing infrastructure	○ No large mills identified	◔ Outdated & insufficient for the most part	◑ Almost exclusively small mobile mills but meet demand	◑ Currently <50% of production is milled with outdated equipment that causes very significant loss	○ Currently, little or no capacity, assume that future plantation farms will integrate processing	◑ Medium mills in urban groups where rice is grown but outdated & insufficient	◑
National policy supportive of import substitution	◑ Import subsidies and VAT breaks for food security	●	◑ Import subsidies and VAT breaks for food security	●	○ Export oriented projects	● High import tariff	◑ Offshore labor on few developing plantations
Politically stable country	◑ Aftermath of 2011 civil unrest	●	○ Current upheaval	◑ Chronic instability in north & oil zones	◑ Human rights/governance	●	◑ Chronic instability in north

* All focus countries have significant irrigation potential considering the very low level of current irrigation infrastructure

Source: Analysis of information contained in this report; World Bank, and United States Government for political stability ratings

Executive summary

KEY MARKET BASED OPPORTUNITIES IN NIGERIA, GHANA, TANZANIA, AND BURKINA FASO CALL FOR DEEPER DIVES

TOP CHOICES

	Nigeria	Ghana
Zones	• Central Nigeria rice belt • Southern urban market areas • Avoid oil areas	• Northern rice growing region due to enabling environment and development partner interest • Volta region with access to Accra due to market proximity and commercial interest
Potential Partners*	• OLAM, if it continues smallholder model • 100 mills investment program under Chinese technical and financial assistance	• GADCO • OLAM if expands there • Potentially GRIB (Ghana Rice Inter-Professional Body) is an interested party to represent farmers

Second picks

	Tanzania	Burkina Faso
Zones	• Kilombero Valley and Rufigi River Basin growing areas are designated as priority agricultural development areas	• Bagré Growth Pole Project is a priority investment zone with significant irrigation potential
Potential Partners*	• AGRICA as it is developing commercial farming in Kilombero Valley	• Private sector Bagré Growth Pole implementation partners

* Profiles of these potential partners follow in remaining slides

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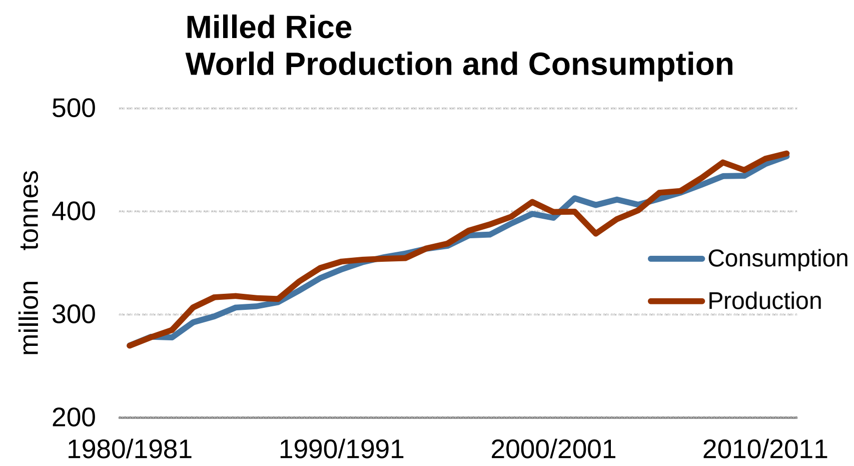
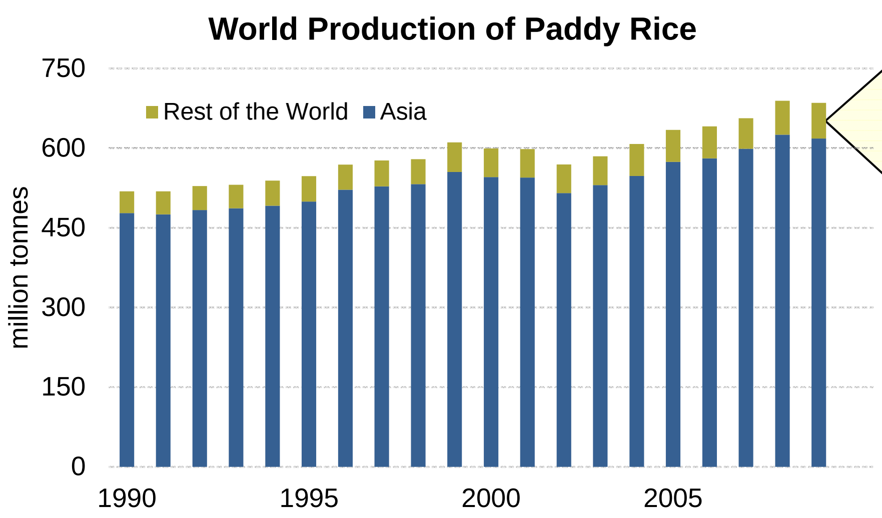
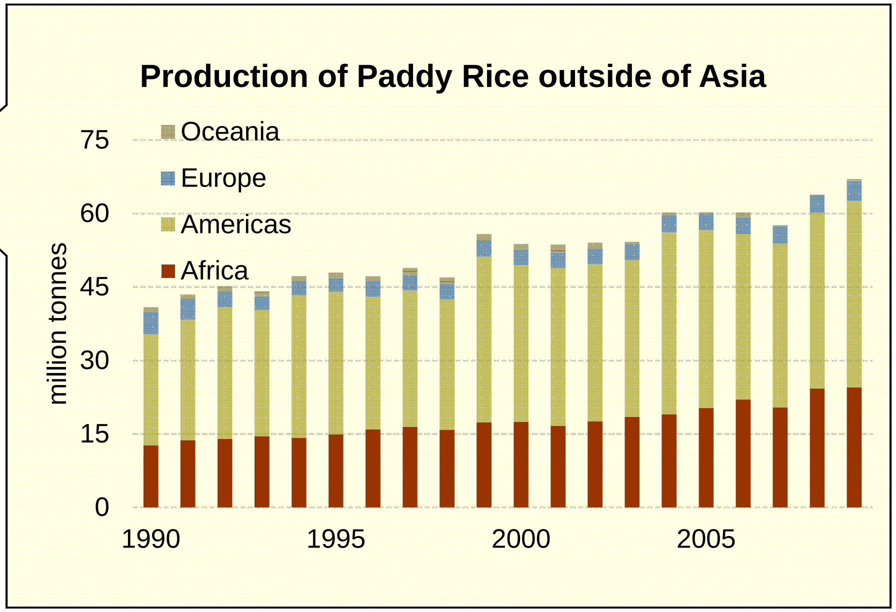
GLOBAL RICE PRODUCTION HAS GROWN STEADILY OVER THE PAST 20 YEARS, BUT REMAINS CONCENTRATED IN ASIA



- Current world production stands at approximately 460 million tons of milled rice per year
- In the long run, global output and consumption are balanced
- Rice production is heavily concentrated in Asia, but output from Africa and the Americas has grown steadily over the past 20 years

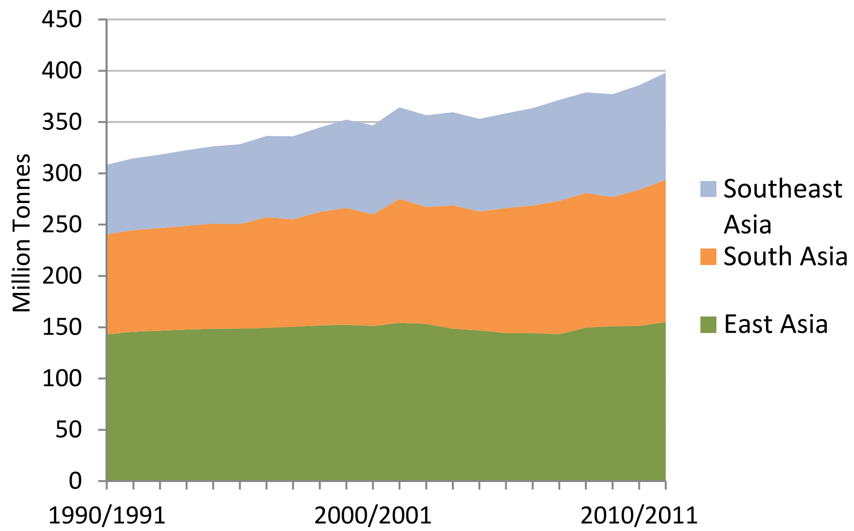




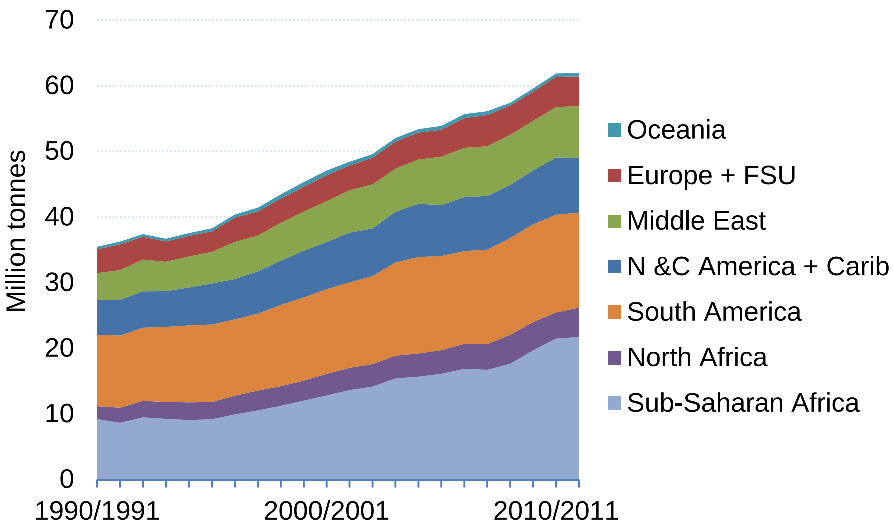
Source: Authors analysis based on FAOSTAT data

ASIAN CONSUMPTION IS FAR AHEAD OF THE REST OF THE WORLD, BUT SSA IS GROWING FASTEST AT 4% SINCE 1990

Rice Consumption in Asia



Rice Consumption outside Asia



- Asian consumption is far ahead of the rest of the world
- Continued growth in consumption is expected in the South and Southeast Asian regions
- Due to diet diversification, stagnation in rice consumption is expected in East Asia

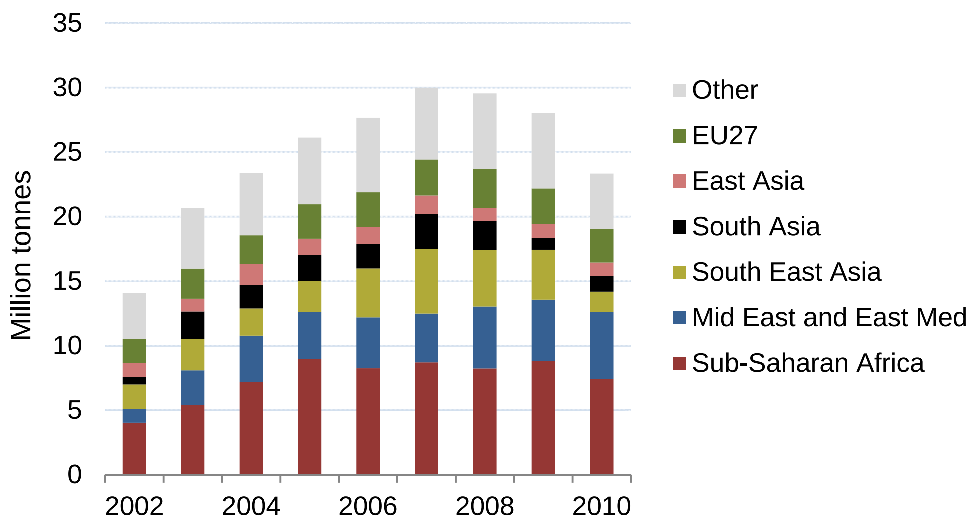
- Consumption in emerging economies has grown more strongly than in developed ones
- **SSA has the strongest consumption growth rate with a compound growth rate of 4.2% since 1990** (USDA data)
- It is expected that large markets in West Africa will experience 8% growth rate (OSIRIZ)

Source: Authors analysis of USDA data, OSIRIZ African market projection

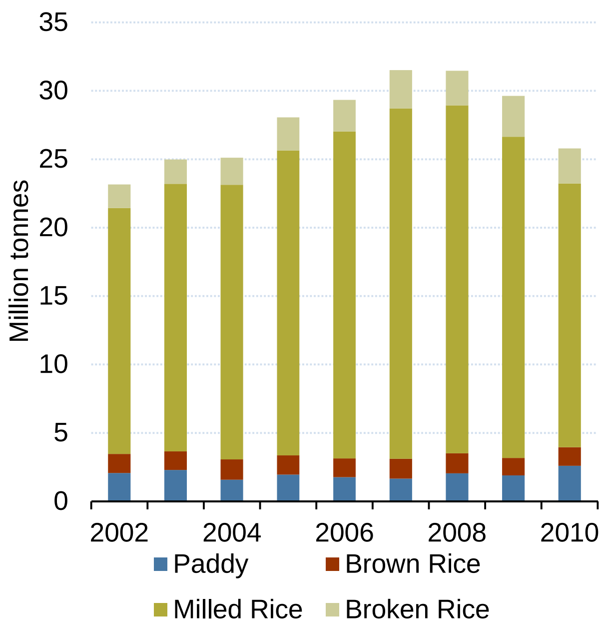
INTERNATIONAL TRADE IN RICE IS THIN WITH ONLY 6% OF GLOBAL PRODUCTION TRADED BEYOND NATIONAL BORDERS

- Growth in production around the world has not kept pace with growth in consumption.
- Exports of rice have increased, yet the proportion traded internationally remains tiny at about 6% of total global output.
- Small changes in annual yield limit export countries' quantity to export, resulting in a disproportionate effect on global availability and price.

World exports of rice by regional destination



World exports of rice by type

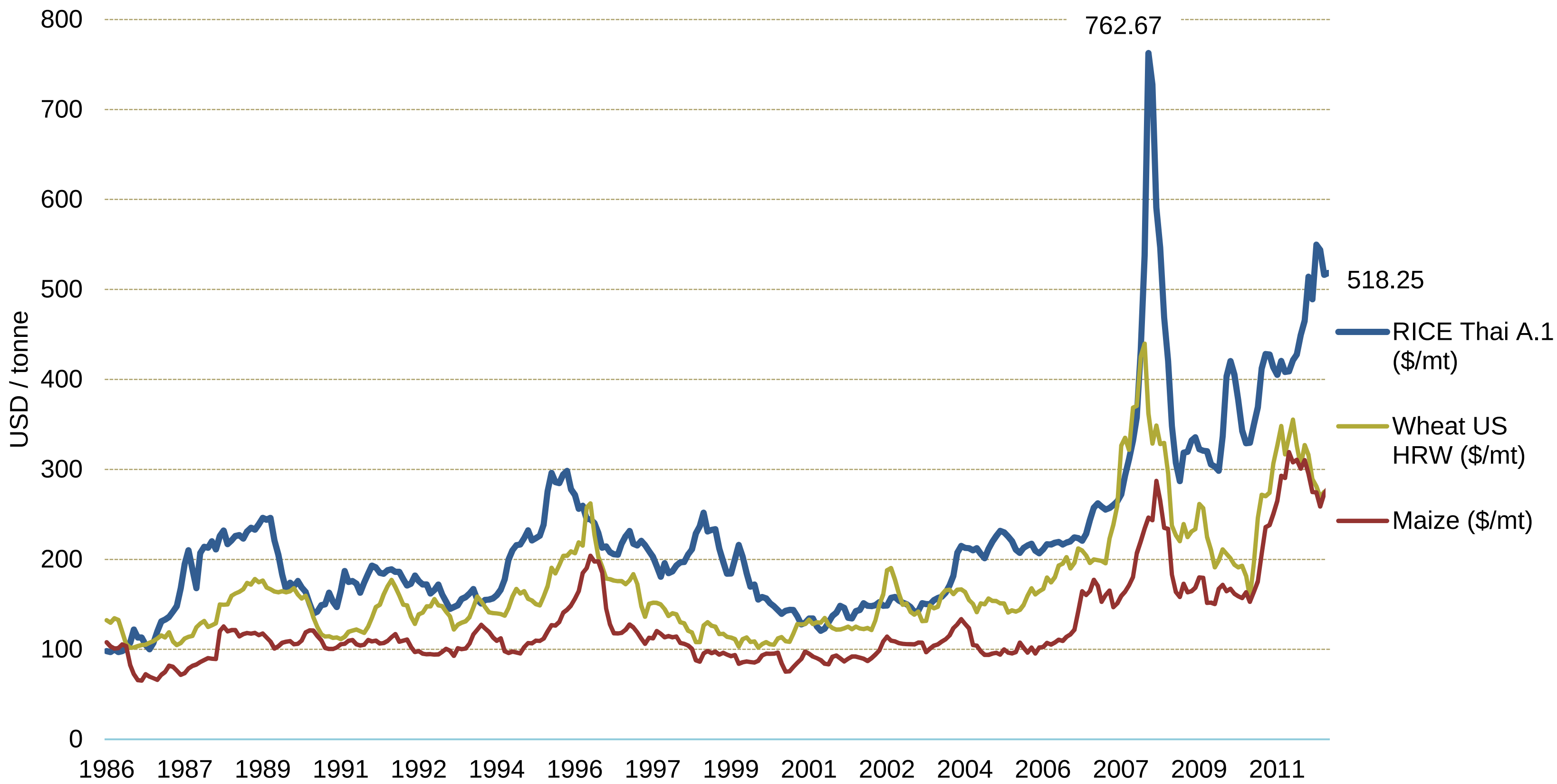


Exports represent only ~6% of total global output (460 million tons)

- Rice is an important food security product, and it is controlled by a number of governments. Market structure reflects this interference.
- A significant portion of Asian rice is traded between governments, reducing availability for free trade.
- In 2011, Thai Government rice support policies saw stockpiles rise to nearly 7M tonnes. Meanwhile India has reemerged as an exporter.

Source: Authors analysis based on COMTRADE data

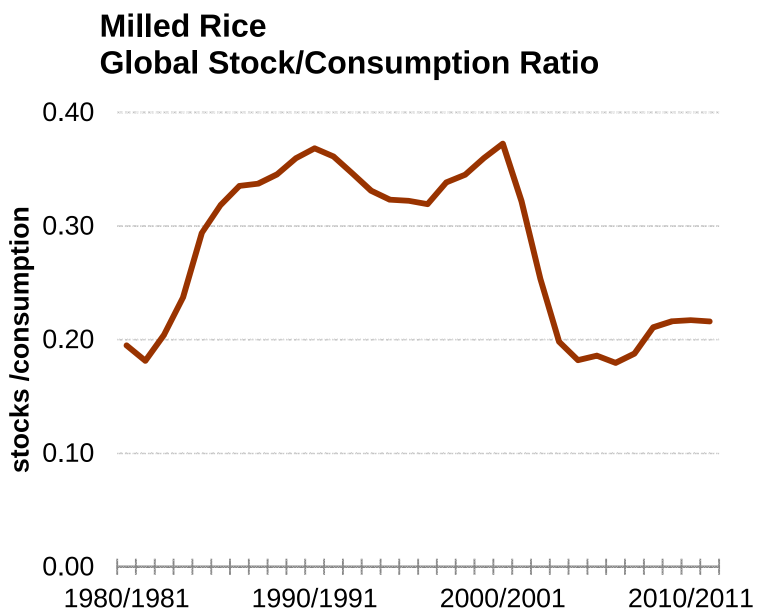
RICE PRICES CAN BE VOLATILE AND HIT RECORD LEVELS IN 2008…

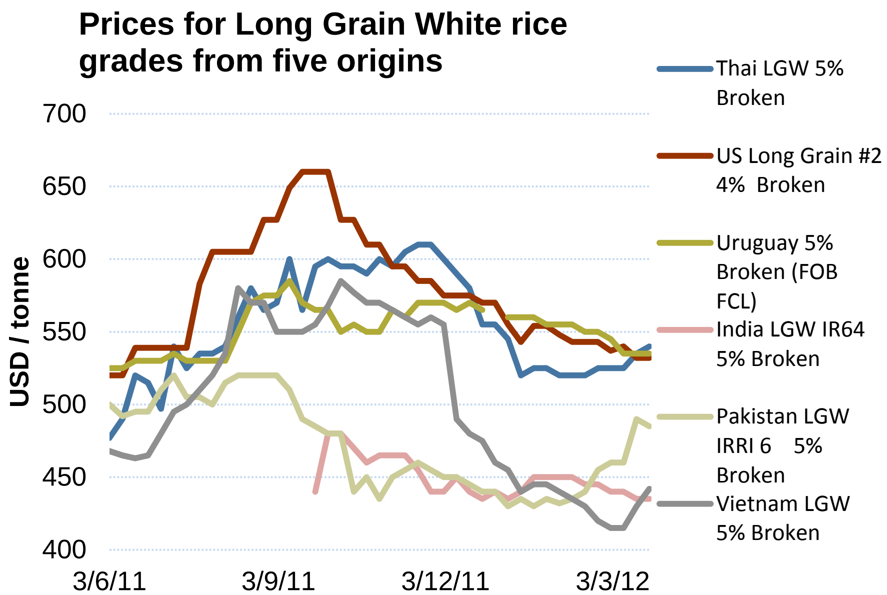


- Time series analysis shows that rice prices are more volatile than other grain prices (Gilbert and Morgan, 2010)
- With global stocks low relative to consumption, prices hit a record high in 2008. Fear, market intervention by national governments, and speculation all contributed
- Continued volatility may be expected for at least the near term. Stock/consumption ratio remains low (22%) but India has resumed exports

Source: Authors analysis based on prices in http://databank.worldbank.org/

... AND WITH LOW STOCK LEVELS, THE VOLATILITY MAY CONTINUE



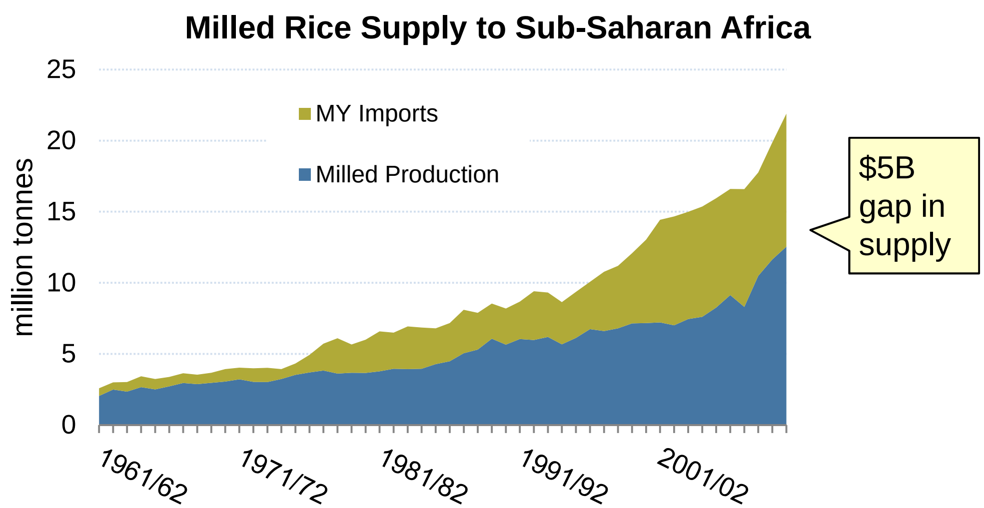


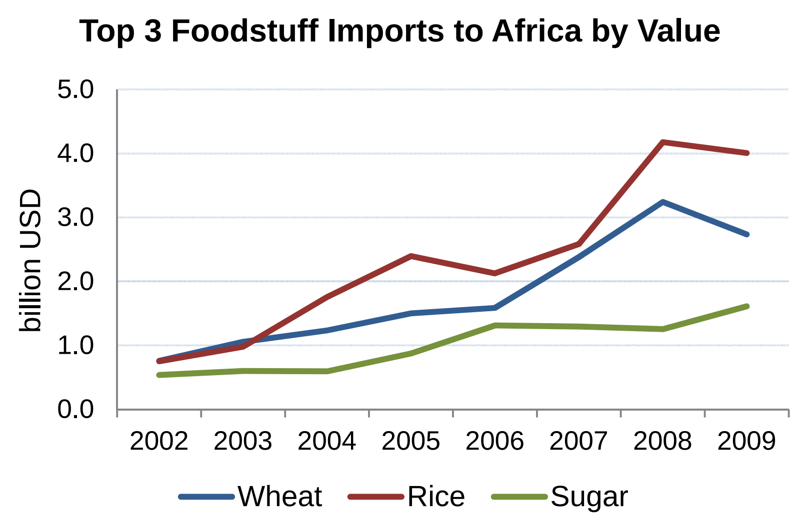
- Global stocks remain at low levels
- To replace stocks to levels held in the 1990s requires a cumulative surplus of 50mn tonnes
- We could expect continued volatility in the near to medium term, but above average yields can quickly lead to an exportable surplus...

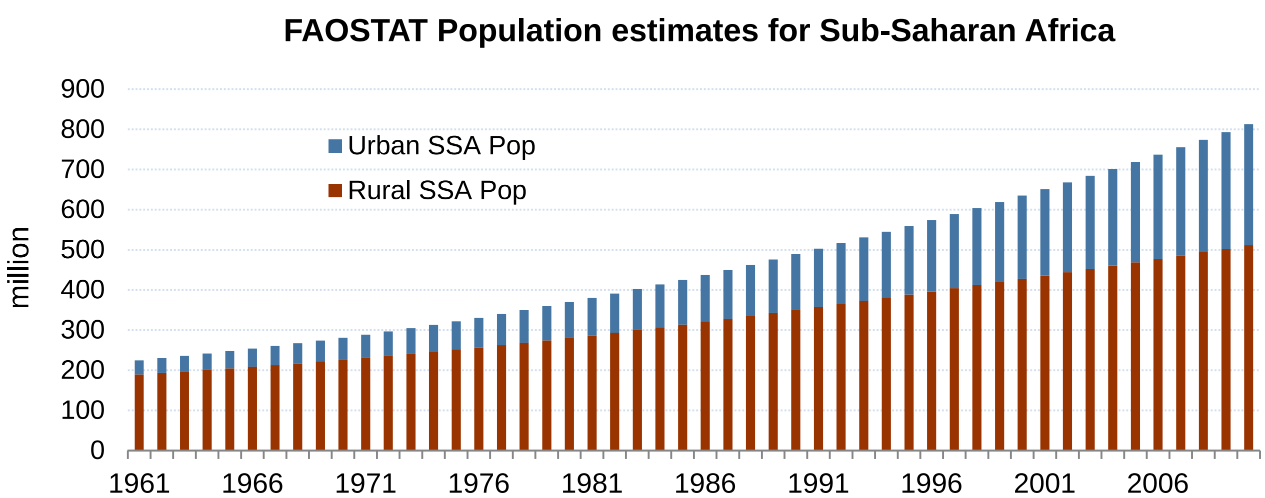
- ...and the resumption of exports from India (Sept 2011) has changed price structure of the market
- Thai, US and South American origins now trade at a significant positive differential (due to quality premium) to the Indian, Pakistani and Vietnamese rice (which compete on price)
- The significance for African markets depends on the consumer preferences for specific grades. For example, Ghana premium markets prefer Thai fragrant

Source: Authors charts of data from USDA; www.livericeindex.com

RICE LEADS IMPORT OF BASIC FOODSTUFFS IN AFRICA BECAUSE LOCAL PRODUCTION HAS FAILED TO KEEP UP WITH GROWTH IN CONSUMPTION





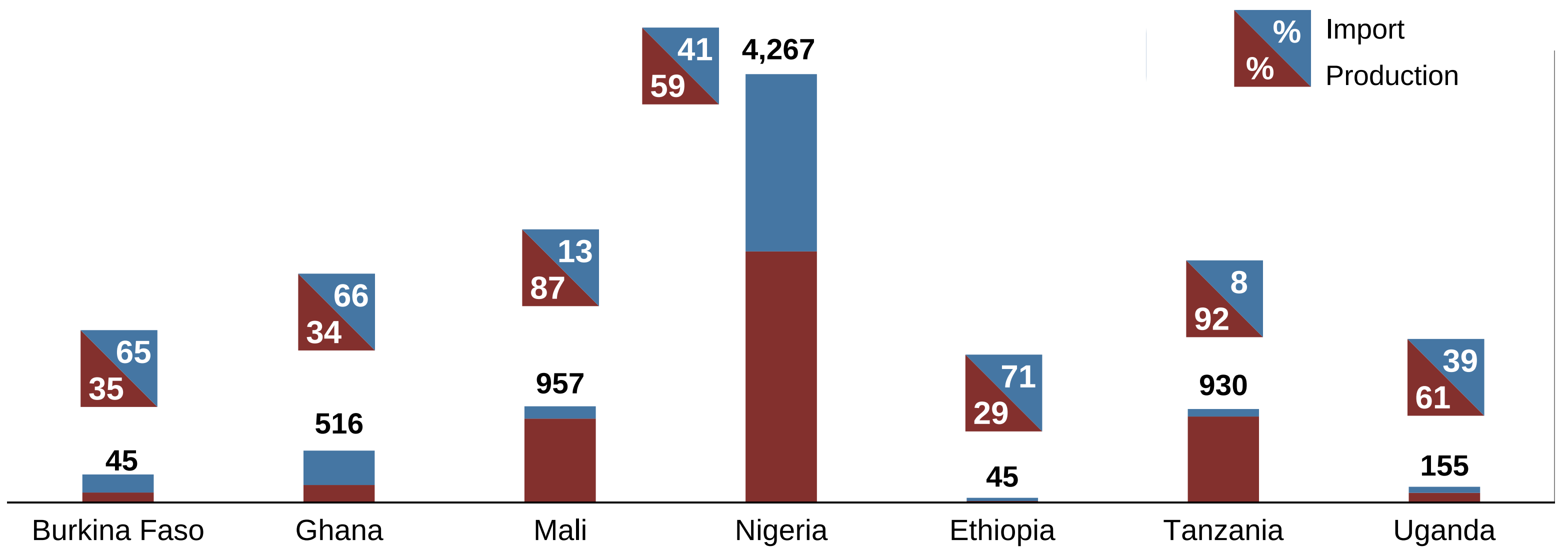


- Rice leads the import of basic foodstuffs in SSA
- Growth in demand derives from the growing purchasing power of the urban population – a population growing in size and income

Source: Authors analysis based on FAOSTAT and USDA data

THE STRUCTURE OF RICE SUPPLY INTO BMGF TARGET MARKETS VARIES FROM DEPENDENCE ON IMPORTS TO NEAR SELF-SUFFICIENCY

Rice supply in the BMGF target countries based on average for 2007-2009 (thousand tonnes)



	Burkina Faso	Ghana	Mali	Nigeria	Ethiopia	Tanzania	Uganda
Total	277	516	957	4,267	45	930	155
Imports	180	343	122	1,767	32	75	60
Production	97	173	835	2,500	13	855	95

- Imports into Mali and Tanzania are a small proportion of the total supply.
- Nigerian and Ghanaian production is, in the opinion of many observers, significantly lower than shown here.
- In both Nigeria and Ghana, the urban markets are dependent on imports and most local production is consumed in the rural areas.
- The degree of self-sufficiency therefore may depend on the country *and market within country*.
- Ethiopia data doubtful. The true position is not clear.

Source: Authors analysis based on USDA data (and FAO data for Ethiopia)

RICE MARKETS AND SEGMENTATION ARE UNIQUE IN EACH OF THE BMGF FOCUS COUNTRIES; NIGERIA IS BY FAR THE LARGEST IMPORTER

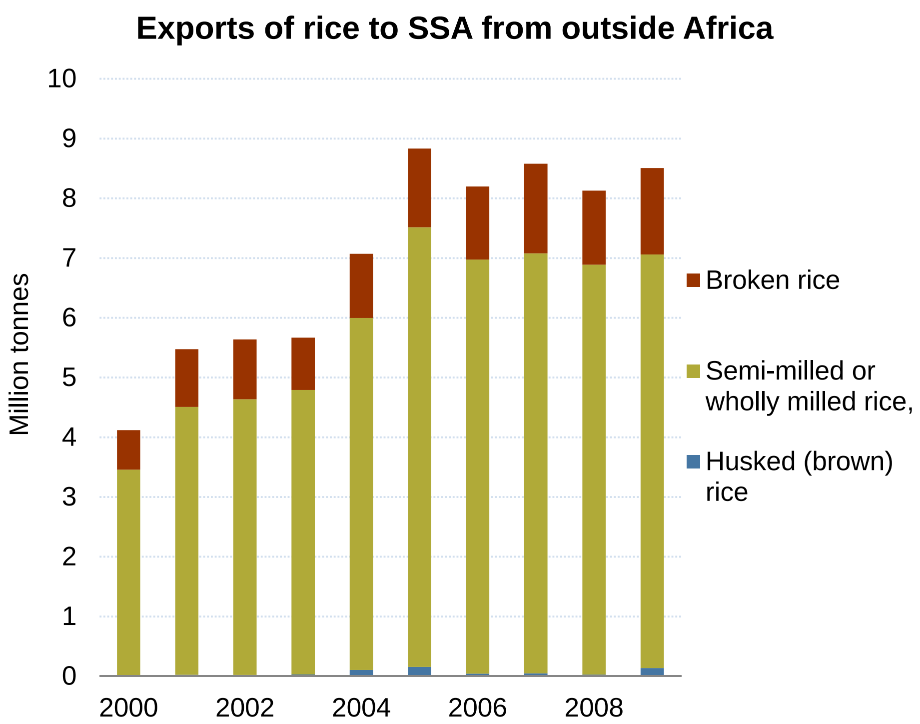
	West Africa				East Africa			Notes
	Burkina Faso	**Ghana**	**Mali**	**Nigeria**	**Ethiopia**	**Tanzania**	**Uganda**	
Principal Suppliers	China, Pakistan, Thailand, India	China, Thailand, USA, Vietnam	India, Pakistan, Thailand, Vietnam	Brazil, India, Thailand, USA	Thailand, India	Vietnam, Pakistan, Thailand, China	Tanzania, Vietnam, Japan, Pakistan, Italy	2007-2009 COMTRADE data
Overlap of local & imported rice value chains	10%	10%	80%	10%		80%	10%	0% = separate 100% = integrated (author est.)
Preferred type of imported rice	25% broken LGW*; increasing imports of brown rice	High quality fragrant rice. Range of grades 5% and 25% broken. Branding important	Broken LGW	Parboiled	LGW	LGW	Basmati, Japonica	
Average annual imports 2007-09 (000 MT milled rice equivalent) & trend	180	343	122	1,767	32	75	60	USDA (& FAOSTAT for Ethiopia)
Imports (blue) as a proportion of consumption 2007-2009	65%	66%	13%	41%	71%	8%	39%	USDA (& FAOSTAT for Ethiopia)

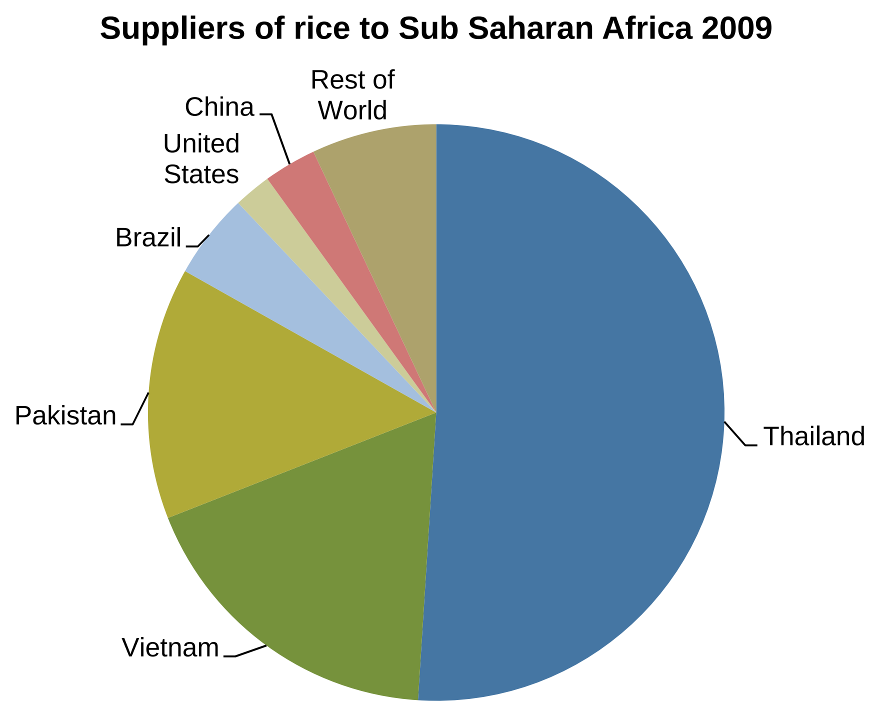
- There is limited similarity, beyond that due to geographic proximity, between the focus countries in rice products and market segmentation. This is not conducive to country grouping for BMGF intervention purposes
- With the exception of Mali and Tanzania, there is very limited integration between local and import markets
- Mali and Tanzania are near to satisfying current demand with local rice production and have potential to become regional suppliers in the near future
- Nigeria is by far the largest importer. Ghana and Nigeria are generally reported to have uptrends in imports as a proportion of consumption

* Long grain white

Source: USDA, FAOSTAT, COMTRADE, Author's Analyses

SUB SAHARAN AFRICA IMPORTS MORE THAN 8 MILLION TONS OF RICE A YEAR, MOSTLY FROM THAILAND, VIETNAM, AND PAKISTAN





Source: Authors analysis based on FAOSTAT and USDA data

IMPORTS ARE BY WELL KNOWN GLOBAL PLAYERS FROM MAJOR EXPORT ORIGINS

	Process	Major Export Origins				
		Thailand	Pakistan	India	Vietnam	China
Exporters	Buy from mills, aggregate quantity, may sort and rebag	Asia Golden Rice, Capital Rice, Chaiya Porn, CP Intertrade, Olam	Private Export Companies	Private Traders	Vinafood I and II	COFCO
Brokers	Connect buyers and sellers	Jacksons, Scheppens and Co, Marius Brun et Fils, Creed Rice				
Trade Houses	Move commodity to import markets	Olam, Louis Dreyfus, ADM/Toepfer, Nobel, Novel, Nidera				
Importers	Store and arrange for sale to wholesalers	Olam, Finatrade, Stallion, Star Saudi Arabia, CIC, Novel, VeeTee, ETC, Mohammed Enterprises and many others				
Wholesalers	Distribute locally in each country	Numerous local companies				

- A small number of trade houses have the financial capability to trade rice at any scale and they dominate the global trade, provide financing, and control risks in moving boatloads (20,000 tonnes per shipment) of rice to destination
- Without a futures market on which to hedge, and with trading risks in Africa, vertical linkages to distributors are important
- A subsidiary trade of African based importers buying rice direct from origin by the container load has grown, particularly with the equivalence of freight rates for containers and bulk shipment

Source: Author's interpretation of COMTRADE data

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  - The gap between consumer demand and supply in SSA is being met by import of more than 5 billion USD in rice annually.

- **Rice production in BMGF Focus Countries**
  - BMGF focus countries consumed 7 to 9 million tons of rice in 2011. It is projected that consumer demand will increase by at least 40% over the next 8 to 10 years.
  - 75% of local rice is produced from rain fed upland and lowland ecosystems in West Africa by small subsistence farmers. Yield is generally low and highly variable in BMGF focus countries.
  - Almost 50% of consumer needs are met with imported rice, principally from Thailand, Vietnam, and Pakistan.
  - Local rice must compete with imports, not only on price but also on quality and market service.

- **Existing and high impact future interventions**
  - There are more than 500 Government/Donor projects in BMGF focus countries. A limited number of private sector producers and processors are investing in the rice sector. Those interviewed identified enabling needs not met by current projects.
  - Enabling African producers to capture a portion of the $5bn spent annually on imports should have significant impact on their livelihood, provided they are competitive. Success will depend on innovative and strategic market based choices, particularly in access to finance (A2F), market based agronomy, and industry voice.
  - Because of its financial and convening powers, Bill & Melinda Gates Foundation can drive the necessary innovations to develop new models of market based capacity building that empower African farmers to own a progressively significant portion of the import replacement market. Initial focus is suggested on Nigeria, Ghana, Tanzania, and Burkina Faso in zones with significant rice growing potential, access to urban consumer markets, where potential commercial farming partners are active (or soon to be active).

OVER THE PAST DECADE, RICE HAS BECOME THE MOST RAPIDLY GROWING FOOD COMMODITY IN SUB SAHARAN AFRICA

Present and Future Rice Consumption Patterns in BMGF Focus Countries

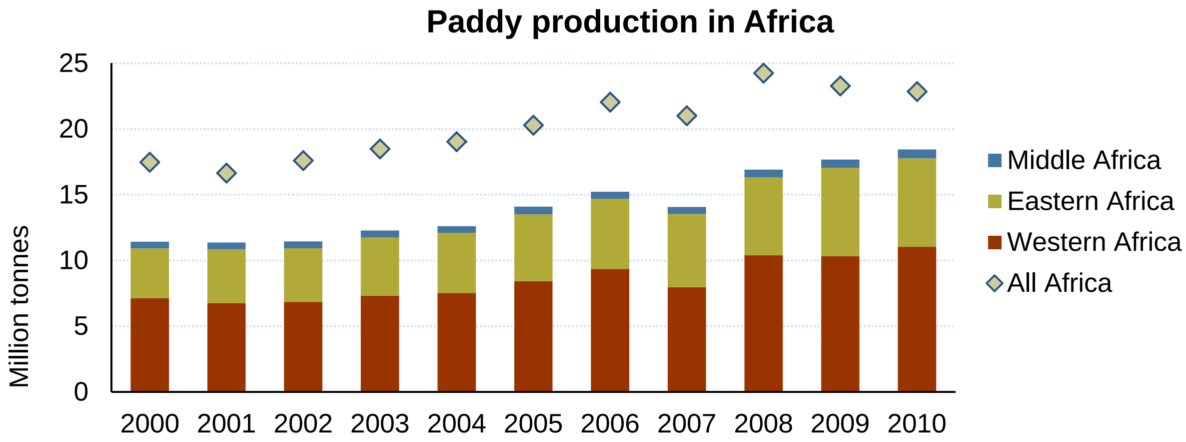
	Burkina Faso	Ghana	Mali	Nigeria	Ethiopia	Tanzania	Uganda
Population, million	14	24	15	158	76	45	33
Expected population growth rate, current DHS cycle*	3%	2.3%	3%	2.5%	2.1%	3.1%	3.1%
2011** rice consumption, 1000 MT	465	756	1719	4,879	353***	1,006	165
Calculated per capita rice consumption, kg	33	32	115	31	5	22	5
Future consumption estimate (year), 1000 MT	466 (2018)	1680 (2015)	2010 (2018)	6900 (2018)	No reliable data available	1818 (2017)	225 (2017)
Compound Annual Growth Rate	0%	22%	2%	5%	N/A	10%	5%

- Consumption is most significant in Nigeria, Mali, and Ghana in West Africa. Mali has very high per capita consumption.
- In East Africa, Tanzania is most significant market. it is estimated that consumption will increase 80% by 2017.
- Burkina Faso forecast indicates that rice consumption is capping out despite continued population growth.

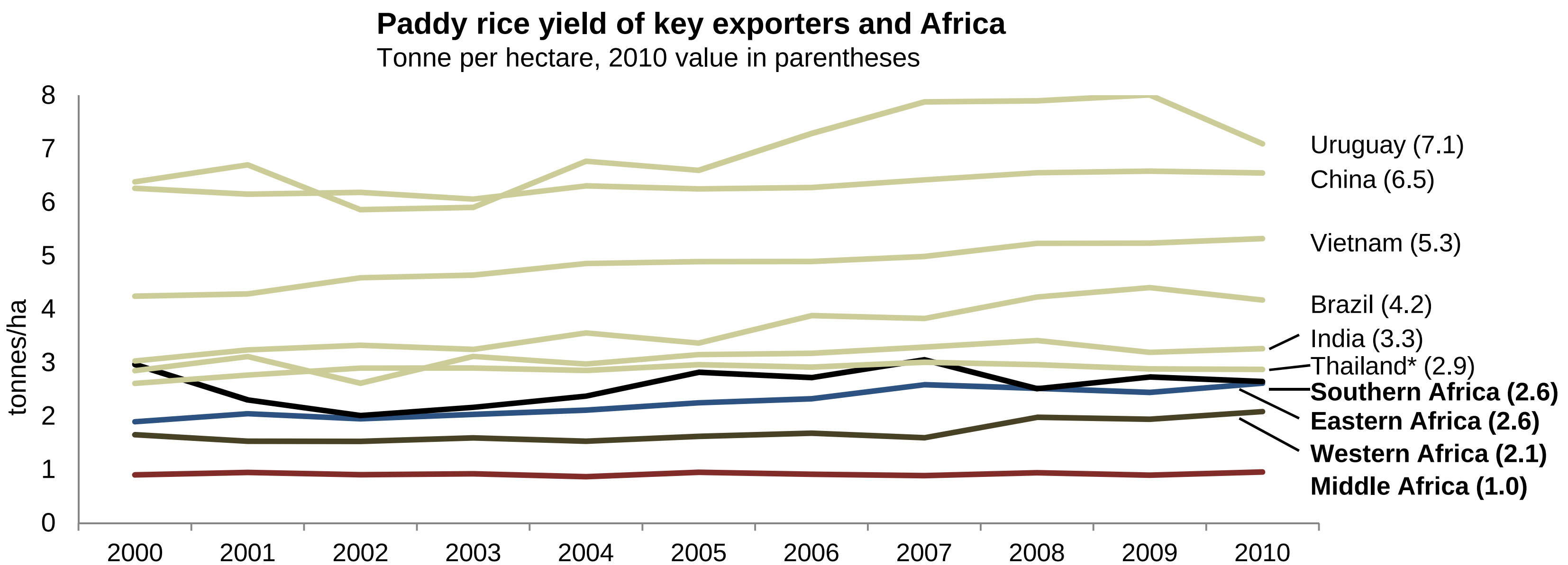
* 5-year Demographic and Health Study
** All 2011 except Ethiopia, which is 2009
*** There are very significant variations in Ethiopia data between sources. This figure is almost 8 times more than that obtained when reported imported and local production are combined.

Source: USDA and FAOSTAT statistics

RICE PRODUCTION IN SSA IS EXPANDING THROUGH INCREASING ACREAGE AND IMPROVING YIELDS, BUT YIELDS REMAIN BELOW THOSE OF ITS SUPPLIERS………



- Paddy production in SSA has grown annually by 4.9% since 2000
- West Africa is the largest regional producer of rice
- Yields remain generally low in SSA

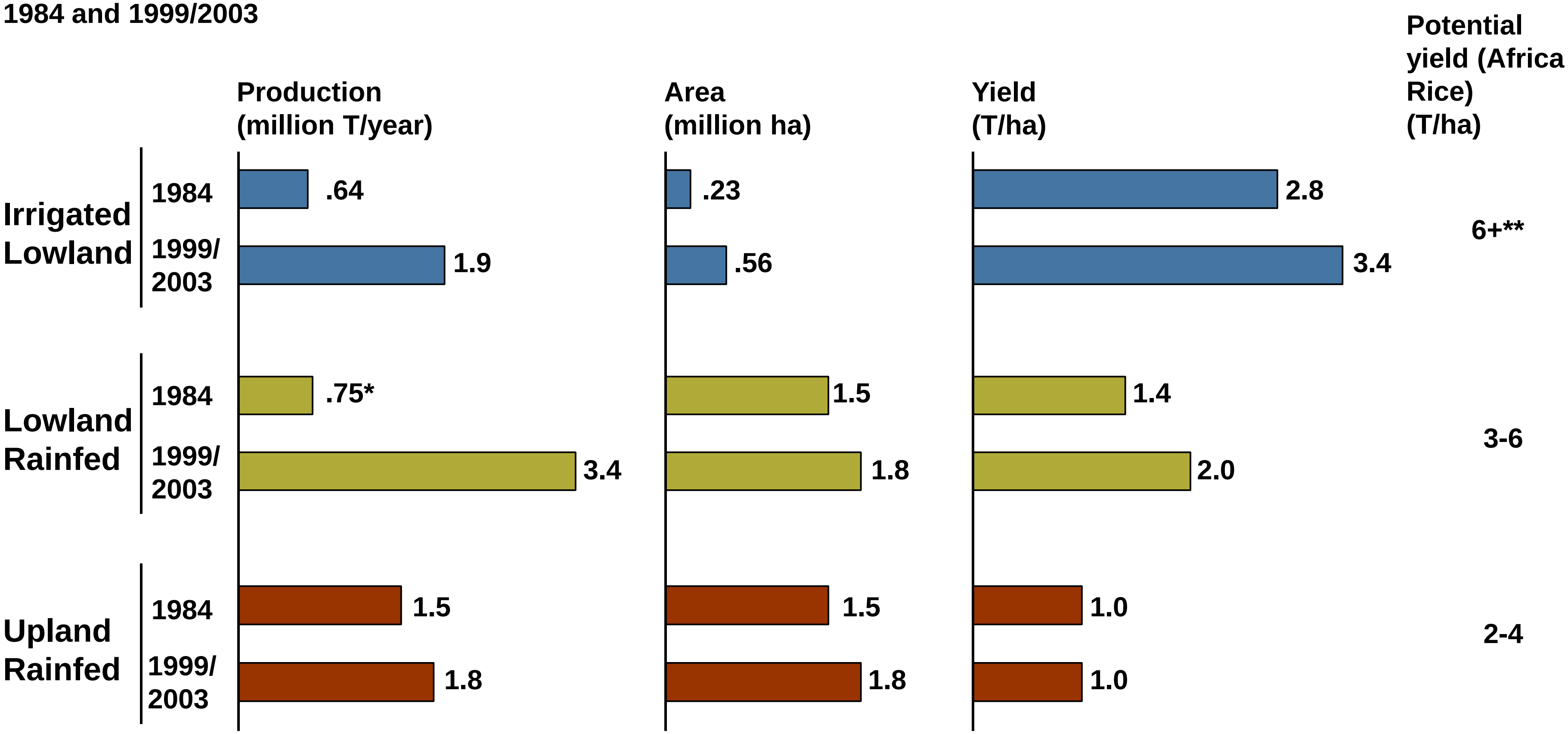


* While Thailand is major exporter of rice, its production is almost entirely by smallholders & productivity varies widely among regions (e.g. Central Plains with abundant irrigation very high yield 4.5 T/ha compared to rainfed northeast Thailand with low mechanization growing aromatic Hom rice for Mali)

Source: Author's interpretation of USDA, FAOSTAT

PRODUCTION INCREASES HAVE BEEN DRIVEN BY INCREASES IN AREA AND TO A LESSER DEGREE YIELD

Estimation of rice production trends in the principal rice production ecologies in West Africa between 1984 and 1999/2003



- According to Africa Rice, production increases are mostly due to expansion of rice production into marginal areas in West Africa
- Low and variable yield is a major obstacle to market penetration – until constant and adequate supply is ensured, the market will depend on imports to respond to demand

* Authors recognize the data inconsistency from source that .75 production estimate does not compute from area and yield estimates. This is a limitation of statistics available and is candidate for deeper dive in Phase 2.

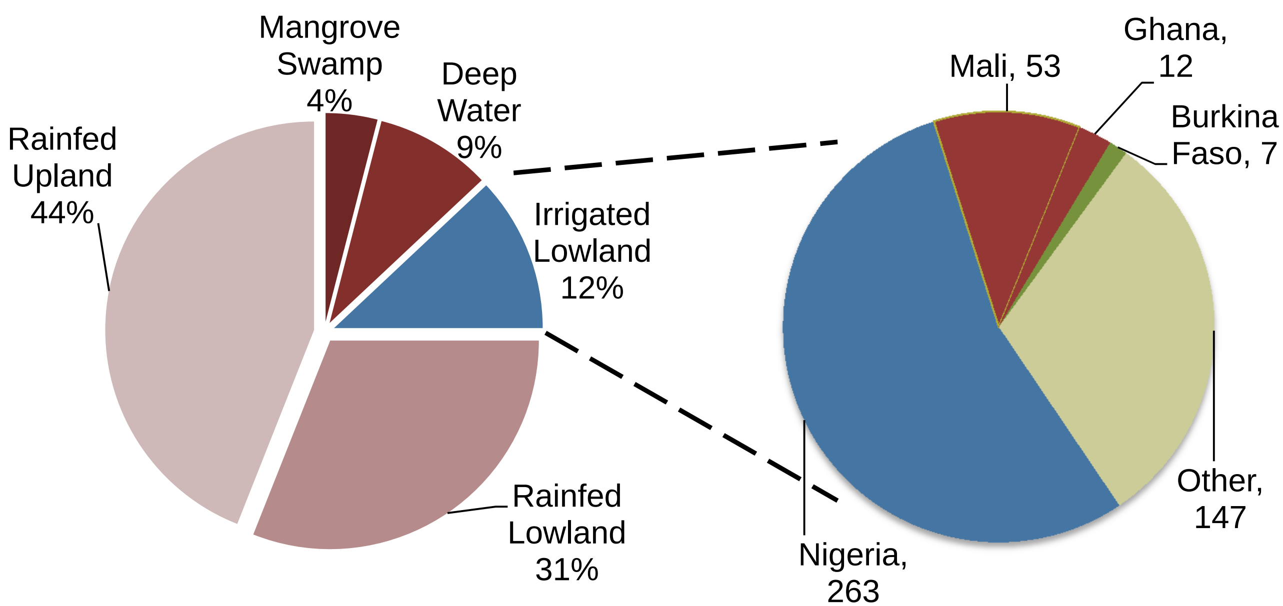
** Potential for at least 2 crops per year

Source: CCER on Integrated Genetic and Natural Resources Management, 2006, WARDA; Africa Rice

LIMITED IRRIGATION INFRASTRUCTURE IS A MAJOR ISSUE FOR SCALE UP OF RICE PRODUCTION IN BMGF COUNTRIES

Total area under rice cultivation in various ecologies in West Africa
100% = 4,011,000 ha

Irrigated lowland rice cultivation In West Africa
Thousand ha



Source: Africa Rice

Source: Africa Rice

FAO Aquastat statistics for **East Africa** suggest:

- Ethiopia 290k ha irrigated all industrial crops (mostly sugar, cotton, fruit)
- Tanzania ~184k ha (mostly smallholder maize & rice)
- Uganda 1.6k ha irrigated rice

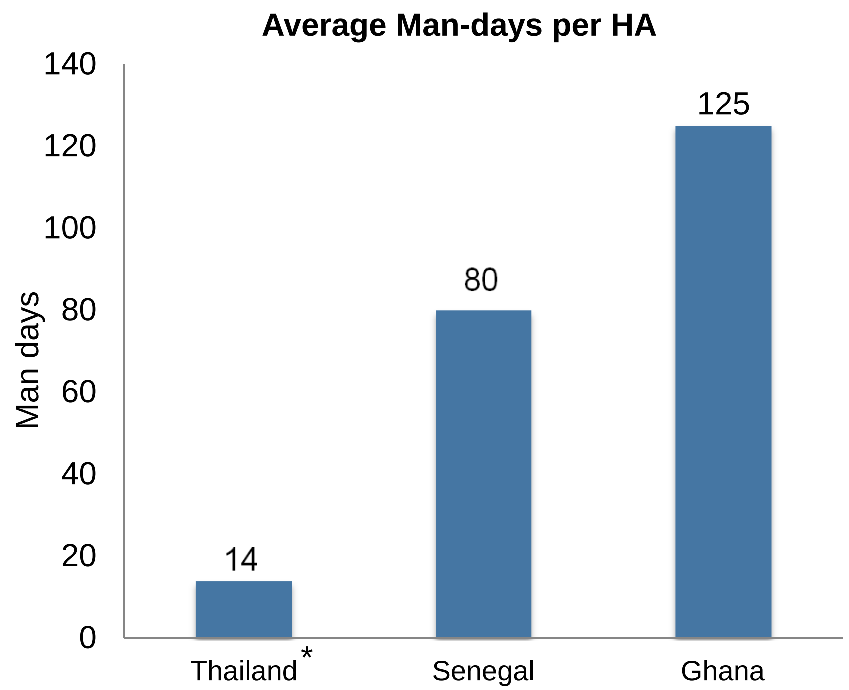
Source: Africa Rice, 2002, Lancon and Erenstein, FAO Aquastat

LACK OF MECHANIZATION ALSO AFFECTS THE ABILITY OF SMALLHOLDERS IN AFRICA TO INCREASE THEIR PRODUCTION AND/OR THEIR YIELD

What happens when mechanization is lacking:

- Poor land preparation
- Late planting & input application
- Late harvesting
- Post harvest losses
- Inferior paddy quality with grains of heterogeneous maturity
- Difficult to manage scale or other crops without readily available local labor

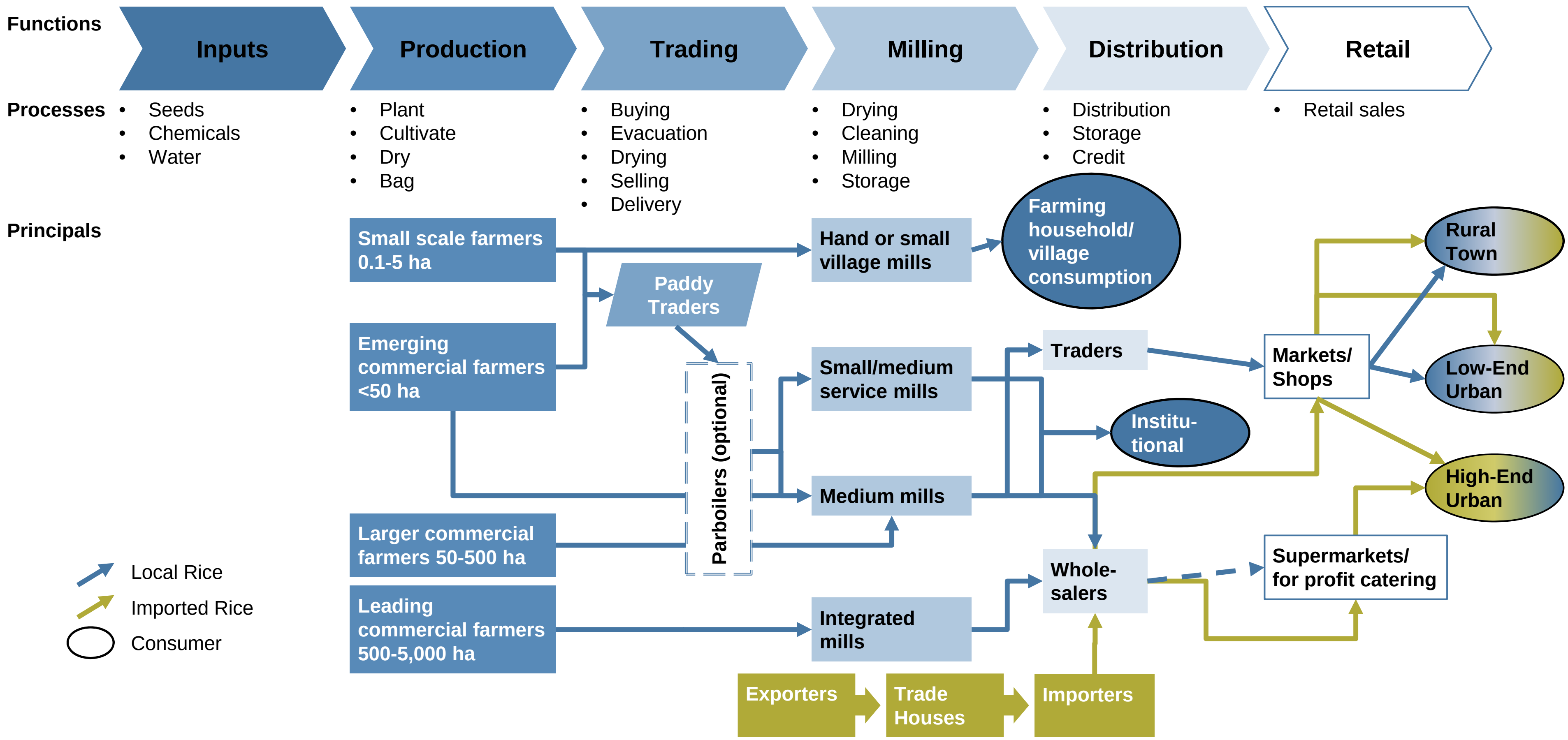
REDUCED HOUSEHOLD INCOME FROM RICE



* Mechanized operation in Central Plains
Source: Author’s expertise

THE VALUE CHAIN CAN BE DISTINCT BETWEEN LOCAL AND IMPORTED RICE

GENERALISED MAP OF THE RICE VALUE CHAINS IN AFRICA



- This value chain map is a summary compilation. There are many variants, but the supply lines shown are the dominant ones.
- Most of the rice in BMGF countries moves along one of two value chains: importer to urban consumer or small scale farmer to consumption within the producing region. Excess is then moved out of the production area. In Mali the movement is widespread within the country. In Tanzania, rice is moved out of the country to regional markets.
- The most variations are found in the degree of overlap of imported rice into rural towns and local rice into major urban centers: Mali and Tanzania are relatively integrated while Ghana and Nigeria are strongly separated.
- *Country specific value chains, as available, are included in Appendix in Country Specific Data section*

Source: Author’s expertise

A SURVEY OF THE LITERATURE SHOWS LIMITED PROCESSING CAPACITY IN BMGF FOCUS COUNTRIES

	Burkina Faso	Ghana	Mali	Nigeria	Ethiopia	Tanzania	Uganda
Larger import competitive rice mills		Prairie Volta(10t/hr); Brazil Agro Investment (5t/hr); Worawora (2t/hr)	GDCM; AMI	Olam; Flour Mills of Nigeria (for milling brown rice)	Nint Agri	Agrica; AP&AP (total 240 t/d in several mills); ETG; Wela Millers; RAFA;	Tilda (6t/hr) Rwenzori Rice (3t/hr);
Plans	Development of the Bagré Growth pole will encourage milling investment	GADCO Board has allocated funds to purchase a mill	Government plans to make a large number of mobile mills developed with Ag Extension services available to farmers	Acquisition of 100 mills (2012) from China giving an extra 2.1mn tonnes cap	MCG building mill in Gambella Alwero Rice Project (GARP)		
Parboiling or other manual processing	At least 50% of local production	Extensively for local market in the north		Extensively for local market			
Notes		Modern milling capacity focussed in Volta Region - proximity to Accra	In Mali, rice producers use small mobile mills	Several more non operational mills, e.g. VeeTee and Deans-hanger	83,000 ha allocated by Government to investors in rice		591 operational mills; “10 med to large”

There are many reasons for limited capacity in processing in focus countries: capex financing is scare and expensive in SSA, margins are low, securing consistent supply of rice is difficult, competition with small village mills is significant, and the business environment is generally difficult.

Note: Empty square indicates that no reliable qualitative or quantitative information available; literature does not indicate if mills listed are currently operational

Source: NRDS, various country reports, MOA and CARD

THERE ARE CRITICAL QUALITY AND PRICE ISSUES IN LOCAL RICE PRODUCTION AND PROCESSING IN BMGF COUNTRIES

Major Quality Issues

- Uneven quality
- Impurities
- Processing/ Packaging is not optimal
- Mixed Grades

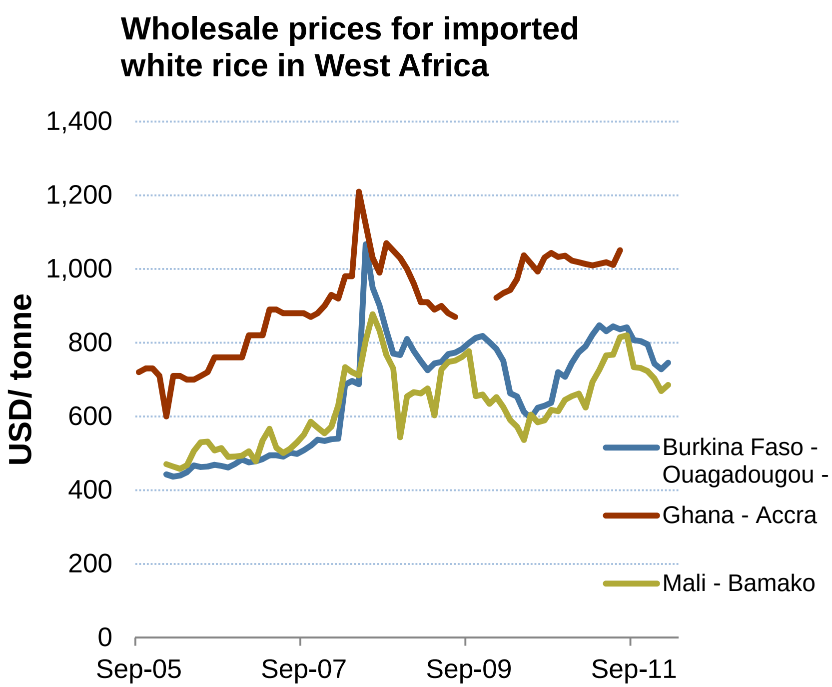
Major Price Issues

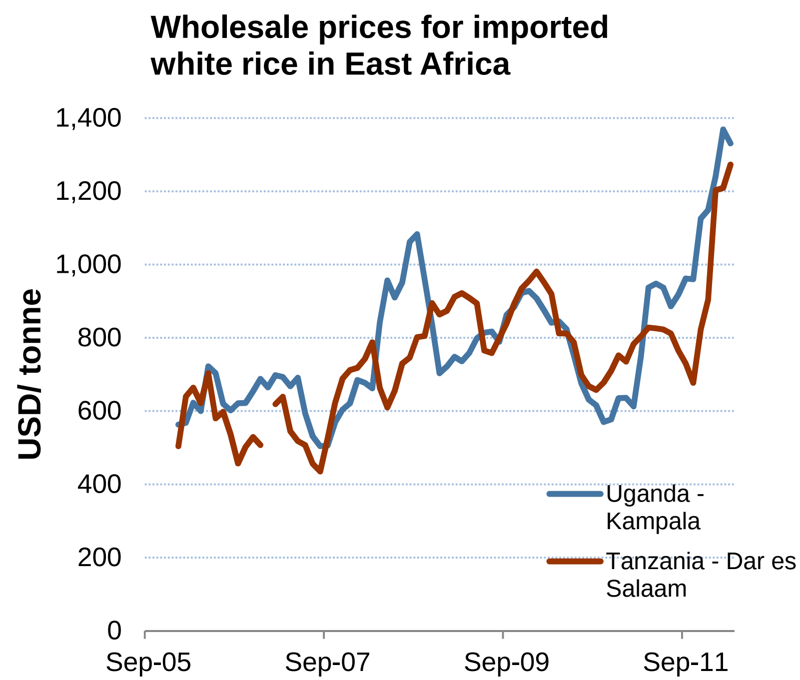
- Low yield affects sales price
- Supply is not reliable nor steady
- Low volume affects marketability at competitive pricing

For the time being, local rice cannot compete (neither in terms of quality, nor of price) with imports in BMGF countries, especially for very significant consumer markets such as **Ghana and Nigeria in West Africa.**

Source: Author's analysis based on COMTRADE data

PRICES FOR IMPORTED RICE IN THE TARGET COUNTRIES SHOW REGIONAL EQUIVALENCE ALTHOUGH THE REQUIREMENT FOR PREMIUM RICE IN GHANA IS CLEAR





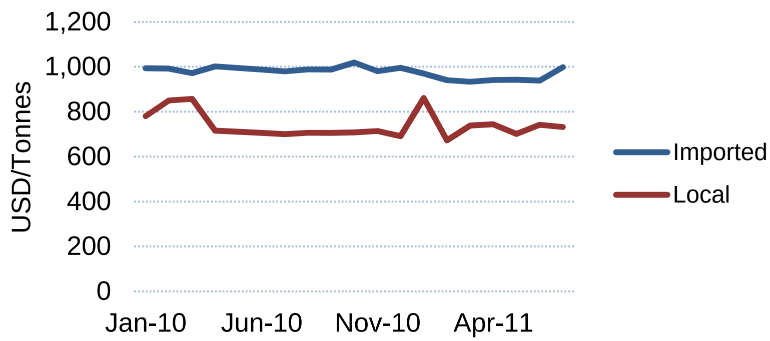
- An upward trend in urban rice prices over the past six years is clear
- The market for imported rice in Ghana is higher priced than in other West African countries. This reflects the premium quality, particularly for fragrant rice, demand by the Accra consumer
- Prices for imported rice in Bamako and Ouagadougou are generally quite similar

- Prices in East Africa seem to show more volatility than in West Africa but the price spike of 2008 is less apparent
- Recent prices have moved ahead strongly

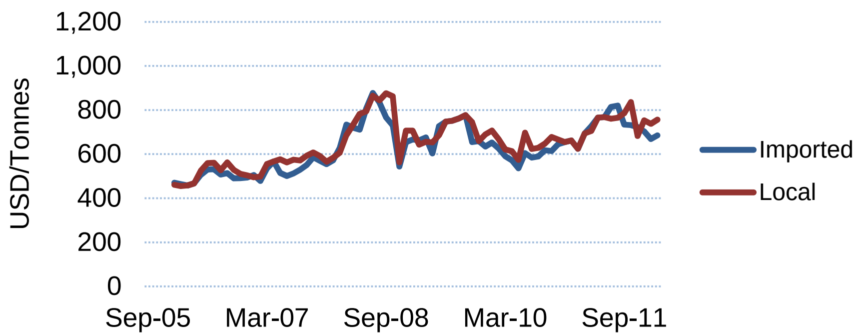
Source: Authors analysis of FAO data (http://www.fao.org/giews/pricetool2/) and data from Statistics Research and Information Directorate of the Ministry of Food and Agriculture, Ghana

PRICES FOR LOCALLY GROWN RICE MIRROR THOSE OF IMPORTED RICE; PRODUCTION OF FRAGRANT RICE HAS STARTED IN GHANA

Wholesale prices for milled rice in Kumasi, Ghana



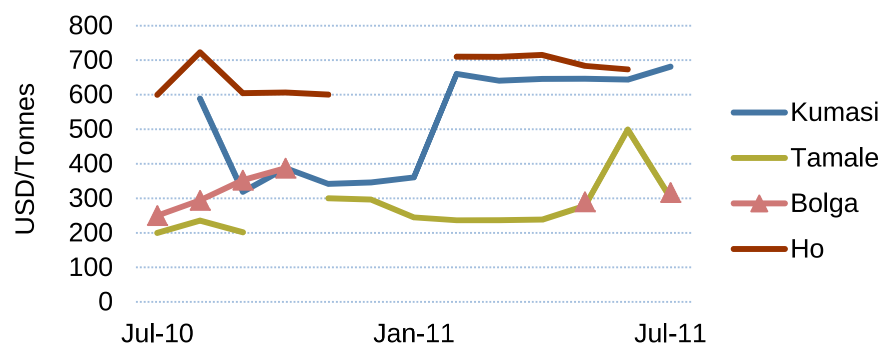
Wholesale prices for milled rice in Bamako, Mali



- Most of the local rice in Kumasi grown in region
- Local rice price tends to follow imported price, generally achieving 70-80% of the imported rice price in the wholesale market. Local rice price is not necessarily a direct function of cost of production.
- So while import tariffs (39% in Ghana although significant quantities evade tariffs overland) play a role in the price difference, deeper dive into cost of production is required to compare competitiveness.

- Lower priced than Ghana
- Closer match between imported and local – they compete with each other.
- Note the rise in 2008 but not a spike as in world prices. Note also how the local producers benefitted

Wholesale prices for paddy rice in 4 regional markets, Ghana



- Paddy prices can be quite variable both in time and between markets.
- Some of the variation may be explained by quality differences – Ho, in Volta Region lies in an area of higher quality production by farmers growing **fragrant** varieties of rice (Jasmine 85, Togo Marshall) to match the urban requirement

Source: Ghanadata---Author's analysis of data from Statistics Research and Information Directorate of the Ministry of Food and Agriculture, Ghana; Burkina Faso data—Author's analysis of FAO data (http://www.fao.org/giews/pricetool2/)

GOVERNMENT PROTECTION FOR NATIONAL PRODUCTION VARIES IN BMGF FOCUS COUNTRIES

	Target Country	Import Duty	Additional Government Levies*	Total	Notes
West Africa	**Burkina Faso**	10%	3%	13%	
	Ghana	20%	19.4%	39.4%	
	Mali	10%	22%	32%	Regular duty and VAT exonerations for major importers
	Nigeria	10%	22%	32%	Applied to a benchmark figure, currently $690/tonne to give an effective duty of $220/tonne
East Africa	**Ethiopia**	5%	0%	5%	Plus 3% withholding tax (advance payment of income tax)
	Tanzania	12.5 – 75%	0%	12.5 -75%	75% o $200 /tonne whichever is higher for Mainland. 12.5% for Zanzibar
	Uganda	75%	Not confirmed		Or $200 /tonne whichever is higher

- African rice producers are given substantial protection from imports in a number of countries.
- However, these supply side policies have not proven successful in stimulating production to reduce imports. It is not simply price competitiveness that keeps local producers out of the urban market, but also quality and consistent supply.
- While local rice prices tend to follow the price of imported rice, the opportunity for profit from the protective policies cannot be relied upon.

* Includes where applicable VAT, import levies, customs payments, etc.

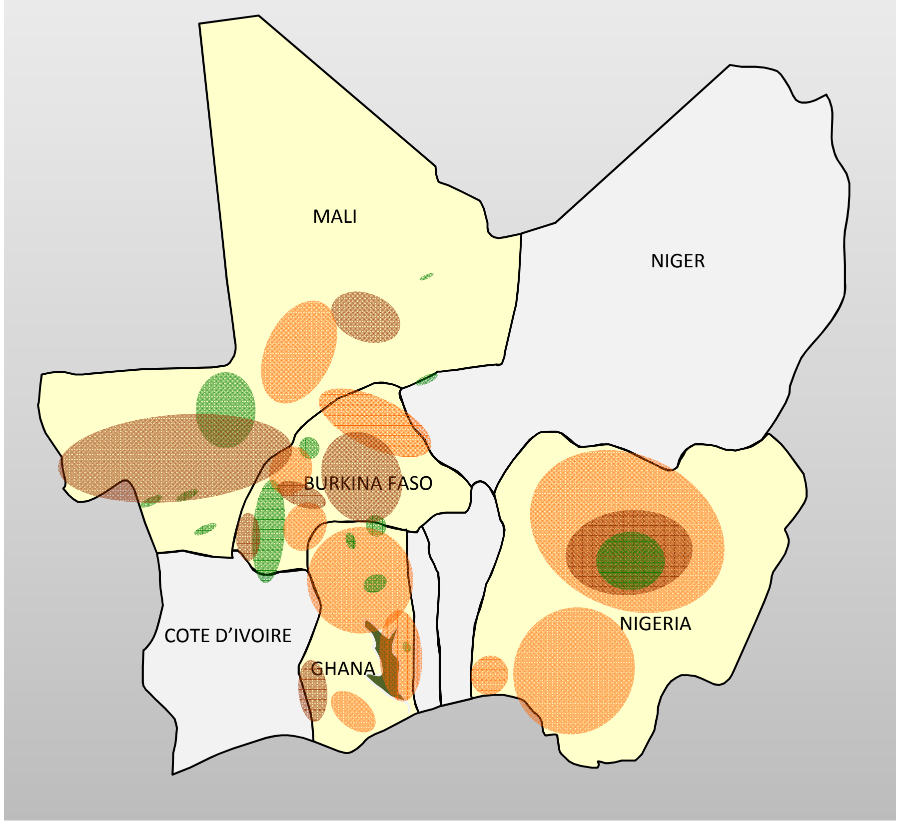
Source: Author's interpretation of FAOSTAT, COMTRADE and USDA information

MOST LOCAL RICE IS PRODUCED FROM RAINFED UPLAND AND LOWLAND ECOSYSTEMS IN BMGF FOCUS COUNTRIES

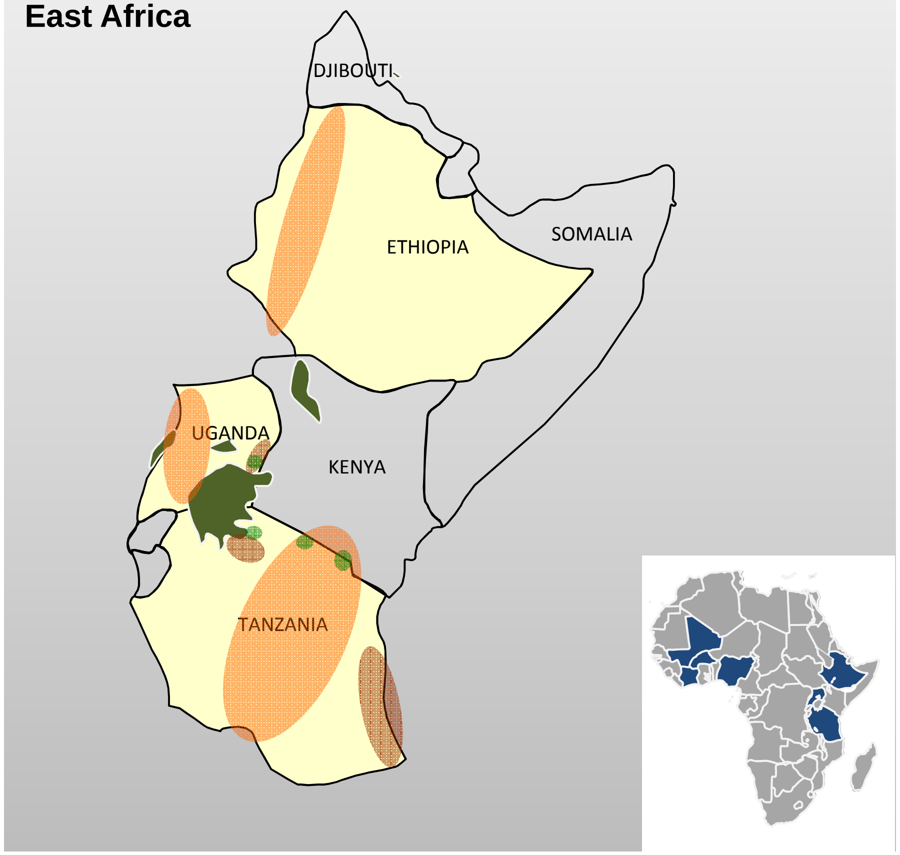
General production systems in focus countries

Yield potential from Africa Rice, T/ha	IRRIGATED	LOWLAND RAINFED	UPLAND RAINFED
	6+*	3-6	2-4

West Africa



East Africa



The following slides contain maps of each focus country with estimates of a) production systems, b) yield, and c) major farms/processors. These are directional in nature to help orient the reader to geographies and companies of interest.

* Potential for at least 2 crops per year

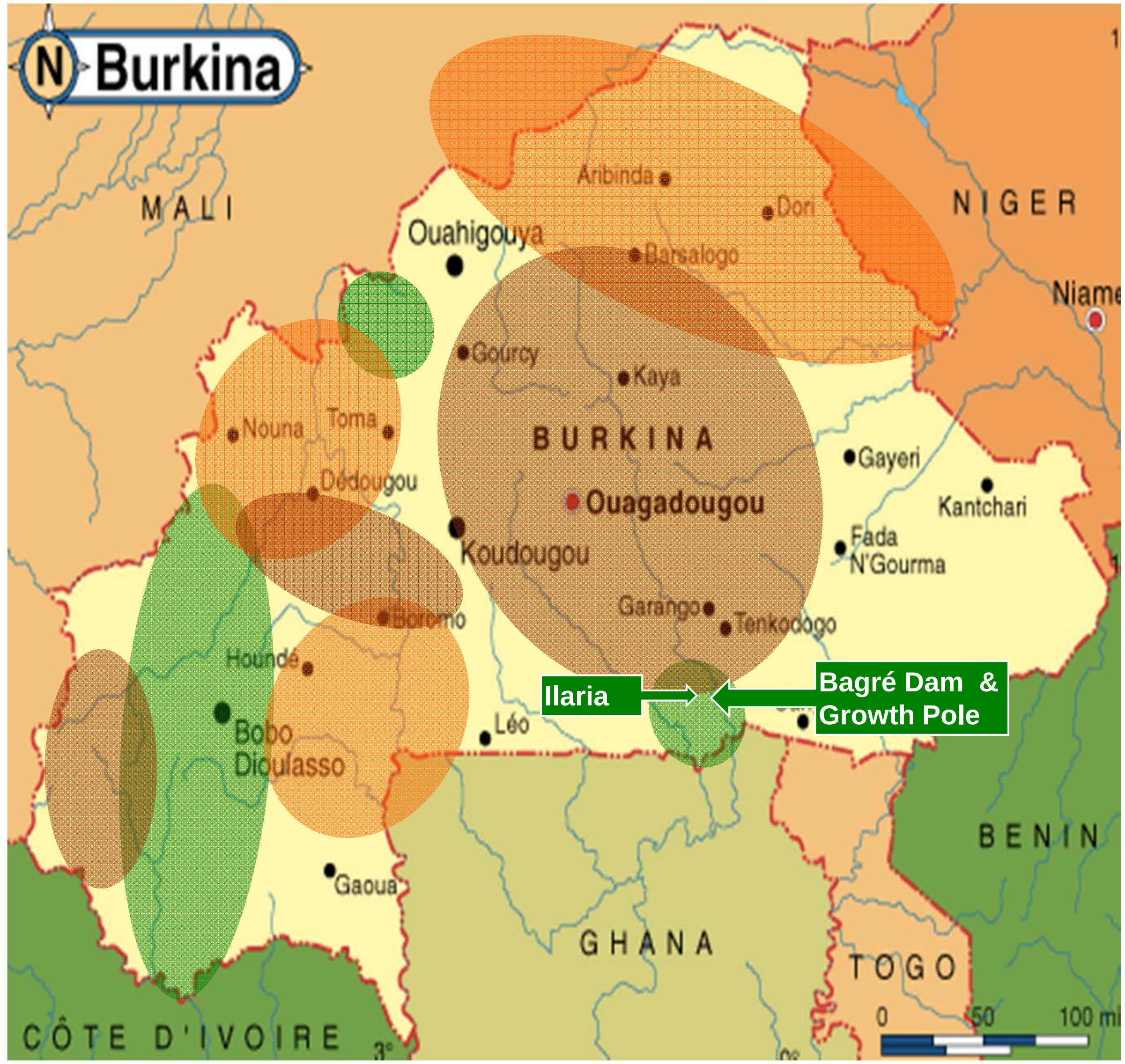
BURKINA FASO: RICE PRODUCTION MAP

Paddy produced 2007 in 1000 MT*	233

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	3.4	12.7**
Lowland Rainfed in MT/HA	2.0	4
Upland Rainfed in MT/HA	1.0	2.5

Major commercial farms/processors and production system indicated in arrows

IRRIGATED | LOWLAND RAINFED | UPLAND RAINFED



* CARD data

** Estimations considered aggressive by the authors

Source: Author's interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

GHANA: RICE PRODUCTION MAP

Paddy produced 2007 in 1000 MT*	242

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	2	6**
Lowland Rainfed in MT/HA	2.5	3.5
Upland Rainfed in MT/HA	2.7	2.5

Major commercial farms/processors and production system indicated in arrows

* CARD data

** Estimations considered aggressive by the authors

Source: Author’s interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

MALI: RICE PRODUCTION MAP

Paddy produced 2007 in 1000 MT*	955

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	6.5**	8.8**
Lowland Rainfed in MT/HA	2	3
Upland Rainfed in MT/HA	3	4.1

Major commercial farms/processors and production system indicated in arrows

IRRIGATED | LOWLAND RAINFED | UPLAND RAINFED

* CARD data

** Estimations considered aggressive by the authors

Source: Author’s interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

NIGERIA: RICE PRODUCTION MAP

Paddy produced 2007 in 1000 MT*	4,005

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	1.98	2.5
Lowland Rainfed in MT/HA	1.39	2
Upland Rainfed in MT/HA	0.71	1.4

Major commercial farms/processors and production system indicated in arrows

IRRIGATED | LOWLAND RAINFED | UPLAND RAINFED

* CARD data

Source: Author’s interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

ETHIOPIA: RICE PRODUCTION MAP

Paddy produced 2007 in 1000 MT*	498

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	3.2	3.8
Lowland Rainfed in MT/HA	n/a	2
Upland Rainfed in MT/HA	n/a	1.6

Major commercial farms/processors and production system indicated in arrows

IRRIGATED | LOWLAND RAINFED | UPLAND RAINFED

* CARD data

Source: Author's interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

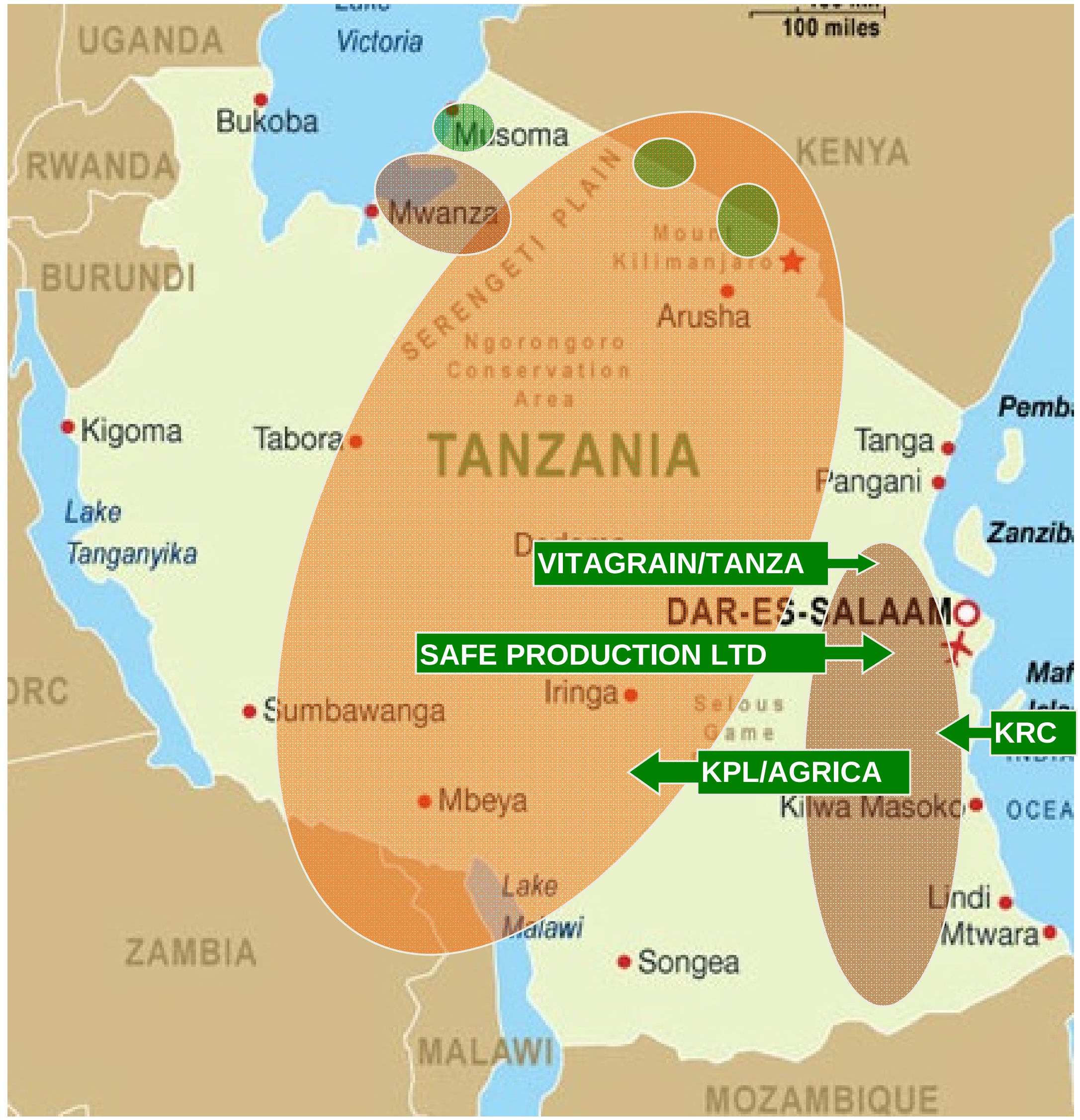
TANZANIA: RICE PRODUCTION MAP

IRRIGATED | LOWLAND RAINFED | UPLAND RAINFED

Paddy produced 2007 in 1000 MT*	693

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	1	3.8
Lowland Rainfed in MT/HA	2.5	2
Upland Rainfed in MT/HA	1	1.6

Major commercial farms/processors and production system indicated in arrows



* CARD data

Source: Author’s interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

UGANDA: RICE PRODUCTION MAP

Paddy produced 2007 in 1000 MT*	140

Production system	Current yield*	Potential yield*
Irrigated in MT/HA	1.5-2	2.3
Lowland Rainfed in MT/HA	1.8-2.3	2
Upland Rainfed in MT/HA	1.5-2	2

Major commercial farms/processors and production system indicated in arrows

* CARD data

Source: Author's interpretation NRDS, FAOSTAT, MOA Maps, CARD Rice Data, COMTRADE Data, USDA Data

TABLE OF CONTENTS

- **Executive Summary**

  Rice is the fastest growing food commodity in SSA. Competitive supply by local farmers has the potential to increase revenue in smallholder rural economies in the 7 BMGF focus countries by $50 to $160 million annually. Bill & Melinda Gates Foundation can facilitate transformational change in local rice supply and processing by driving critical action in 3 key areas: access to finance, market based agronomy, and empowering industry stakeholder voice in rice sector policy, strategy, investment, and programming.

- **World rice market & Africa's share**
  - Global production, dominated by Asia, has grown steadily over the past 20 years. Consumption is also dominated by Asia; but SSA consumption is growing quickly.
  - International trade is thin at 6% of the market. Rice prices have been volatile and historically high of late.
  - The gap between consumer demand and supply in SSA is being met by import of more than 5 billion USD in rice annually.

- **Rice production in BMGF Focus Countries**
  - BMGF focus countries consumed 7 to 9 million tons of rice in 2011. It is projected that consumer demand will increase by at least 40% over the next 8 to 10 years.
  - 75% of local rice is produced from rain fed upland and lowland ecosystems in West Africa by small subsistence farmers. Yield is generally low and highly variable in BMGF focus countries.
  - Almost 50% of consumer needs are met with imported rice, principally from Thailand, Vietnam, and Pakistan.
  - Local rice must compete with imports, not only on price but also on quality and market service.

- **Existing and high impact future interventions**
  - There are more than 500 Government/Donor projects in BMGF focus countries. A limited number of private sector producers and processors are investing in the rice sector. Those interviewed identified enabling needs not met by current projects.
  - Enabling African producers to capture a portion of the $5bn spent annually on imports should have significant impact on their livelihood, provided they are competitive. Success will depend on innovative and strategic market based choices, particularly in access to finance (A2F), market based agronomy, and industry voice.
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AN OVERALL STRATEGY PARTNERING WITH COMMERCIAL RICE FARMING IS A PROMISING PATH TO IMPACTING LOCAL PRODUCER/PROCESSOR LIVELIHOOD

RESULT: TRANSFORMATIONAL DEVELOPMENT THAT SUSTAINABLY INCREASES LOCAL PRODUCER REVENUE GENERATION CAPACITY

SITUATION:

Increasingly, African urban consumers are relying on rice for calorie intake. Rice production contributes to the food supply & livelihoods of an estimated 7 million African farmers. They chronically underachieve productivity.

OPPORTUNITY:

Capture a portion of $5bn import market not being exploited by African suppliers

PROMISING STRATEGY:

Drive the design, development and delivery of highly integrated interventions in support of commercial rice farming/processing: A2F, market based continuous agronomy improvements, industry voice and influence in key markets in collaboration with like-minded commercial/smallholder communities

- COMMERCIAL INNOVATION PARTNERS ARE COMMUNITIES OF COMMERCIAL FARMERS AND COMMERCIALLY-MINDED SMALLHOLDERS
- LINKAGES ENABLE COMMERCIAL INNOVATION PARTNERS TO LINK FOR CONSISTENT SUPPLY OF TYPE OF RICE NEEDED BY THE MARKET AT SCALE OF MARKET PENETRATION OF COMMERCIAL PARTNER

BENEFITS OF A COMMERCIAL APPROACH –
- A commercial approach will engage the private sector in ways a Government/Donor approach will not
- The commercial opportunity will attract investment that brings not only money, but much needed market based technical and managerial expertise and responsive support services
- Investor capacities can be leveraged to tackle long term, large scale challenges and constraints with Government and its partners: land and tenure; irrigation investment; agrochemicals; Research and Development

THERE ARE PIECES MISSING IN THE COMMERCIAL RICE PRODUCTION AND PROCESSING ENABLING ENVIRONMENT

The current rice sector enabling environment is not geared to scale-up based on market dynamics.

Priorities to drive commercial farming identified during this assessment:

1st

2nd

3rd

Access to Finance

Facilitate delivery of finance services & products – commensurate to rice industry value chain stakeholders needs.

100% identified increased access to finance products & services as a need.

Market Based Agronomy Approach

Focus on high potential & commercially oriented agronomy/quality activities offering viable opportunities for smallholder empowerment/participation.

Yield gap widely documented among all. Furthermore, many recognize that producing the specific product the market wants & responding to market signals is also critical to obtain import substitution objectives in NRDS.

Industry Voice

Build industry stakeholder voice & influence to ensure policy & service delivery is market based.

Majority of interviewees indicated that integration of policy, strategy, & programming to enable commercial farming has potential to increase smallholder revenue. Private sector driven industry alliance partnered with other organizations offered as an path to achieve this.

International, regional, & national private sector stakeholders working in rice in BMGF countries feel that these development strategies have strong potential for driving increased market share by local producers/ processors.

Derived from investigation set of:

- 25 technical studies reviewed
- National Rice Development Strategy from 7 countries
- 29 interview/focus group/survey participants:
  - 19 private sector
  - 10 public/donor

Source: Author's review of documentary sources and interviews

ACCESS TO FINANCE PRODUCTS AND SERVICES ARE NEEDED TO DRIVE RICE FARMING/PROCESSING FOR BOTH LARGE AND SMALL HOLDER

Commercial investors do not want to take this on

1 INFRA-STRUCTURE FINANCING IS VERY WEAK

Irrigation infrastructure & roads to access farms & markets are necessary for top production & marketing

Government needs to mobilize

Commercial farmers and processors need to access through CFI* and DFI*

DFI can assist CFI in the design, development & delivery of commercial farming products & services including guarantees, insurance, investment, & input financing

2 CAPEX & OPEX FINANCING FOR COMMERCIAL FARMERS IS NOT COMPETITIVE

Commercial farmers need to access attractive financing products in SSA to fully engage

Commercially minded smallholders are riskier financial service beneficiaries than their commercial farming partners

3 CAPEX & OPEX FINANCING FOR SMALL-HOLDERS IS NOT AFFORDABLE

Same products as commercial farmers but at smallholder scale. DFI can assist CFI (including microcredit organizations transitioning to S&L)

Commercially minded smallholders need to access affordably through CFI and DFI to collaborate successfully with commercial farmers

Current weaknesses in A2F represent opportunities for BMGF to design, develop, and deliver catalytic financing gap interventions in collaboration with international, regional, national and local financial services stakeholders – DFI, CFI and MFI.

* CFI = Commercial Finance Institution, DFI = Development Finance Institution, MFI= Micro-Finance Institution, S&L= Savings and Loan

MARKET BASED AGRONOMY CAN GUIDE FARM INTERVENTIONS TO PRODUCE RICE THE MARKET WANTS

- Agronomy interventions typically contain similar types of activities. The rice case is not different, but focus should be *driven by market signals* in order to provide agronomy tools/training specifically to deliver product needed by the market.
- Commercial farms partnered with smallholders could provide the needed direction and market access to achieve this marketable product.

Desired outcomes

Right product
(type, variety)

Right quality

Right quantity
(reliable)

Right place
(urban market)

Right price
(competitive cost)

Production tools needed to get there

- Management/ knowledge
- Quality inputs (seed, chemical, application, credit to obtain)
- Mechanization as appropriate
- Irrigation scale
- Post harvest quality preservation

A PRIVATE SECTOR DRIVEN INDUSTRY ALLIANCE COULD SUPPORT COMMERCIAL RICE FARMING

Potential vision for
"African Rice Industry Alliance"
-ARIA-

Regional Organization created by private sector commercial rice farming stakeholders including commercially minded smallholders (international, regional, national and local)

Mission and mandate are to satisfy the strategic interests and practical needs of rice farming stakeholders in their quest to capture a significant portion of the rice import market in SSA. This kind of mission and mandate could also include the following roles: technical coordination/linkage to Africa Rice and other PPP/Government/Donor Initiatives, market research/development, investment promotion, norms and standards, mediation.

Is self sustaining and financed by its membership to ensure its independence and credibility*

Influences public policy, strategies, and programming to ensure Government and its partners enable and empower commercial rice farming in SSA

Partners with existing PPP and Multilateral initiatives such as Africa Rice and CARD to drive crosscutting improvements in rice development in SSA

ARIA

Networks with existing national rice sector development organizations (e.g. Ghana Rice Interprofessional Body)to drive the commercial farming agenda

- There are no purely private sector rice industry alliances with a similar mission and mandate in SSA. This a an important enabling environment gap that BMGF can support private sector to fill.
- Partnerships with other regional organizations such as Africa Rice and CARD and existing national rice sector development organizations will ensure that ARIA seamlessly integrates the institutional fabric at international, regional, and, national levels. See annex for mini survey of existing rice sector development organizations in BMGF focus countries.
- Future analysis should consider strategy of starting organization at country/region level and expanding as appropriate.

* It is assumed it will take at least five years for the Alliance to become self-sustaining.

INDUSTRY ALLIANCE PARTNERSHIP WITH EXISTING GROUPS IS A KEY STRATEGY FOR TRANSFORMATIONAL CHANGE

EXAMPLE: VIRTUAL PARTNERSHIP BETWEEN ARIA, AFRICA RICE, AND CARD

'ARIA'
African Rice Industry Alliance

Private sector industry alliance
Satisfy the strategic interests and practical needs of commercial rice farming stakeholders in their quest to capture a significant portion of the rice import market in SSA

Result: Research focused on right rice, right market, grown for import substitution

Result: Government/donor policy, strategy, and programming in support of commercial oriented farming is realized

Process
Commercial farming interests and needs are integrated in Africa Rice and CARD thinking and doing

AfricaRice
Rice science at the service of Africa
La science rizicole au service de l'Afrique

Pan-African research organization
Improve livelihoods through strong science and effective partnerships

CARD
Coalition for African Rice Development

Consultative group of bilateral donors and international organizations working in collaboration with rice-producing countries
Respond to the increasing importance of rice production in Africa, not by "reinventing the wheel," but by building on existing structures, policies and program

Source: Author's analysis Africa Rice and CARD presentation materials

ALTHOUGH THERE ARE 500 PROJECTS WORKING IN THE SECTOR IN FOCUS COUNTRIES…

The limited number of project activities in areas identified as critical by private sector stakeholders (A2F, market based agronomy, industry voice) represents an important programming gap opportunity for BMGF

	Access to Credit	Access to Market	Fertilizer	Irrigation and Water Management	Mechanization	Monitoring and Evaluation	On Farm Dissemination	Other	Seed	Quality Improvement	Overall Rice Policy	TOTAL
Burkina Faso	1	1					1		2		5	**10**
Ethiopia											4	**4**
Ghana	7	8	8	8	6		30	9	14	10	26	**126**
Mali	8	3	2	44	2	9		37	11		13	**129**
Nigeria	9	27	9	6	3		19	8	23	24	35	**163**
Tanzania	3	5	2	15		3	7	10	2	5	14	**66**
Uganda	3	14	1	3	2		22	4	4	5	13	**71**
TOTAL	**31**	**58**	**22**	**76**	**13**	**12**	**79**	**68**	**56**	**44**	**110**	**569**

- There are currently more than 500 project activities being implemented in BMGF focus countries in 11 program areas
- Nigeria has the largest number of government/donor projects, followed by Mali and Ghana
- Government/donors are prioritizing investment in overall rice policy improvement, followed by on farm technologies dissemination, irrigation, and water management. There is very limited donor coordination in general. There are no regional projects covering the focus countries.

Note: A project's activities may be counted in multiple categories
Source: CARD

...COMMERCIAL FARMING DEVELOPMENT IS RARELY THE FOCUS

Access to credit projects are generally focused on subsistence farmer input financing needs.

Access to market projects are generally not focused on import market substitution dynamics. Focus is on marketing of subsistence farmer production.

Irrigation and water management projects are rarely for much needed macro infrastructure or farm/market access. Focus is on renovation or improved management of existing infrastructure.

The extremely limited number of **fertilizer and mechanization** projects will not enable commercially minded smallholders to transition out of subsistence farming.

BMGF efforts in **seed** are well recognized, but there is room for all seed donors to design, develop and deliver specialized programming in support of market demand.

Monitoring and evaluation and quality control projects are still quite limited. It ensues that overall programming is not necessarily responsive to stakeholder interests and needs, particularly in for the development of commercial rice farming.

There is a significant programming gap to realize import substitution objectives. This is an opportunity for BMGF to drive innovative policy, strategy, programming in support of commercial farming for the purpose of private sector production and processing stakeholders (including commercially minded smallholders) capturing a healthy portion of the urban rice consumption market.

Overall rice policy programming is in support of import substitution but there is essentially no strategy nor programming in support of commercial farming to attain this objective.

Note: A project's activities may be counted in multiple categories
Source: Author's analysis of existing donor and government projects

BMGF'S VALUE ADD IS IN DRIVING IMPORT REPLACEMENT BY LOCAL PRODUCERS AND PROCESSORS…

PURPOSE OF INTERVENTION	ENABLER WITH COMPARATIVE ADVANTAGE TO DRIVE SUCCESS	RICE SECTOR ASSISTANCE AREAS	BMGF Intervention Areas

Import replacement by local producers & processors	Commercial farmers & specialized private sector market driven development donors	• Inclusive commercial **farming models linking private sector farmers/processors & commercially minded smallholders**
		  ◦ Consistent market supply with the right rice at the right place in the right way as an alternative to imports for urban market consumers
		  ◦ Close the yield gap for smallholders for urban market access to be viable
			A2F, Market Oriented Agronomy, Industry Voice + Specialized Seed Work

Socioeconomic development	Government, multilateral, & bilateral sector & crosscutting development partners	• Design, development & delivery of technical & financial assistance for **food security** • Assistance to a very large numbers of smallholders with **different strategic interests & practical needs** • **Regional rice sector development** objective attainment, including overall yield gap (for cash crops & for subsistence crops)	**BMGF Overall Seed Work**
Macro Economics	Government	• **Macro policy analysis & implementation** for issues including foreign exchange, price volatility, balance of trade, consumer impact, jobs	

- BMGF seed wok is highly valued by interviewees and it stands out among more than 500 projects being implemented by Government and donors.
- There are a limited number of A2F projects, limited direct support to commercial farms willing to develop mixed models with smallholders, and no industry voice projects

BMGF applying a commercial approach to assistance could drive sustainable market penetration results for smallholders

…WITH INNOVATION THAT IS ALIGNED WITH PANAFRICAN, REGIONAL, AND NATIONAL POLICY

PAN AFRICAN POLICY

The second Africa Rice Congress of 2010 calls for national and foreign investments to unlock Africa's tremendous rice potential, while ensuring that this leads to win-win for all of Africa's rice farmers and consumers.

West and East African Regional Economic Community policies call for harmonized National Rice Development Strategies (NRDS) in member states that include private sector and farmer participation in rice production scale- up for import substitution.

REGIONAL POLICY

NATIONAL POLICY

NRDS for six of seven focus countries include import replacement policy. Ethiopia places emphasis on exports in consideration that rice is not included in basic staple food definitions

Suggested BMGF interventions build private sector and smallholder capacities to supply African markets, notably urban markets currently supplied by importers

Overall, pan African, regional and national policy call for increased production, processing, and import substitution without providing clear strategic guidance on how to attain these objectives.

Source: Africa Rice, ECOWAS AND EAC Policy Statements, NRDS Focus Countries

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

3 year | 6 year | 10 year

In collaboration with commercial innovation partners

Smallholder production/processing-oriented interventions:

- 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

SELECTING COUNTRIES FOR DEEPER DIVES IS BASED ON EVALUATING SIX CRITERIA

There is a significant urban consumer import substitution **market**	***Considered most important drivers for short-time horizon interventions, given proposed model of smallholders partnering with commercial farm entities***
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)	Generally underdeveloped in all countries (albeit significant potential), so less of distinction for selection in first round
There is existing **processing** capacity or investments in the short-term pipeline for such	
National **policy** is supportive of import substitution	Generally supportive without defining strategy; important filter for proposed model
The country (at least rice growing area in the country) is **politically stable**	Essential operational filter--not all focus countries are stable

BASED ON THESE CRITERIA, NIGERIA AND GHANA RISE TO THE TOP, FOLLOWED BY TANZANIA AND BURKINA FASO

Low
Medium
High

Qualitative ratings relative to each other	West Africa				East Africa		
	Burkina Faso	**Ghana**	**Mali**	**Nigeria**	**Ethiopia**	**Tanzania**	**Uganda**
Significant urban consumer imported rice market							
Commercial farmer/ processor & smallholder communities willing & interested to work & innovate together							
Current irrigation infrastructure*	Irrigation to be integrated into Bagré project	Related to Hydro projects	Office due Niger	Numerous existing schemes not functional because lack of upkeep	Nile hydro projects potential	Agrica water mgmt, extensive untapped water resources	Extensive untapped water resources for future
Current processing infrastructure	No large mills identified	Outdated & insufficient for the most part	Almost exclusively small mobile mills but meet demand	Currently <50% of production is milled with outdated equipment that causes very significant loss	Currently, little or no capacity, assume that future plantation farms will integrate processing	Medium mills in urban groups where rice is grown but outdated & insufficient	
National policy supportive of import substitution	Import subsidies and VAT breaks for food security		Import subsidies and VAT breaks for food security		Export oriented projects	High import tariff	Offshore labor on few developing plantations
Politically stable country	Aftermath of 2011 civil unrest		Current upheaval	Chronic instability in north & oil zones	Human rights/governance		Chronic instability in north

* All focus countries have significant irrigation potential considering the very low level of current irrigation infrastructure
Source: Analysis of information contained in this report; World Bank, and United States Government for political stability ratings

THE COUNTRIES' ATTRACTIVENESS IN SHORT TERM SEGMENTS INTO THREE GROUPS

Nigeria

Ghana

TOP CHOICES

Market potential for import substitution that will attract commercial partners; other criteria supportive

Tanzania

Burkina Faso

SECOND PICKS

Follow with similar reasoning, to a lesser degree

Ethiopia

Mali

Uganda

NOT SELECTED FIRST TIME HORIZON

Ethiopia
- Rice development focus is on large-scale export plantations
- Limited rice consumed locally: for tef supplementation in injera or to produce alcoholic beverages
- Chronic human rights issues

Mali
- Rice consumption maxed out per capita and almost self sufficient
- Long-term potential for export market development given Office du Niger irrigation, depending on transport economics
- Current political instability

Uganda
- No major rice consumption
- Plantation farms using offshore labor
- Persistent political instability in north

- These markets could show promise for rice exports that involve local producers and processors in the mid- to long-term
- BMGF could use its voice and advocacy to, notably in governance and smallholder participation, that would enable export potential and empower models that benefit smallholders in the 6-10 year time horizon

LOCATIONS WITHIN COUNTRIES FOR FURTHER INVESTIGATION IN COUNTRY LEVEL DEEP DIVES DEPEND ON BOTH PRODUCTION AND MARKET POTENTIAL

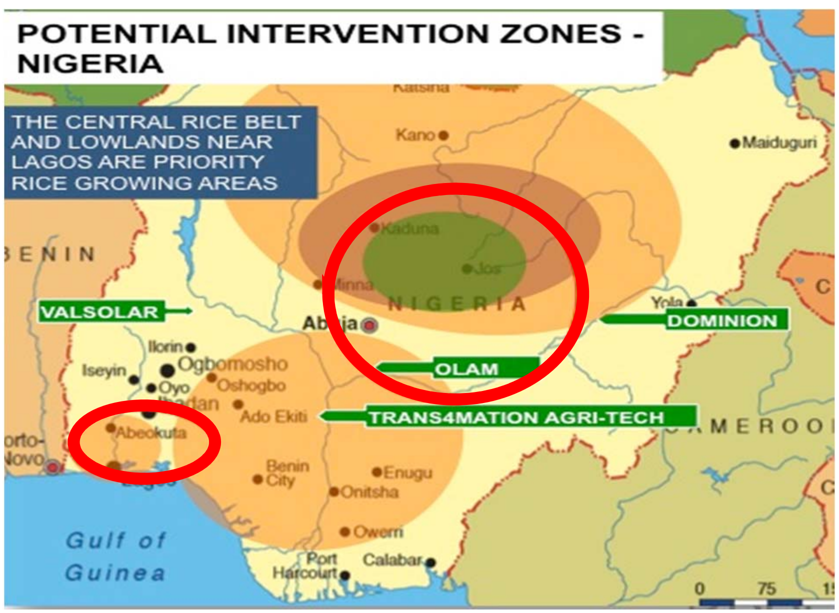
Within each country, interventions should be based in areas with
- Strong rice growing potential
- Access to significant urban markets
- Active potential partners (or plan to be soon)

TOP CHOICES

Zones

Nigeria
- Central Nigeria rice belt
- Southern urban market areas
- Avoid oil areas

Ghana
- Northern rice growing region due to enabling environment and development partner interest
- Volta region with access to Accra due to market proximity and commercial interest



THE SAME IS TRUE IN SECOND TIER COUNTRIES

SECOND PICKS

Zones

Tanzania

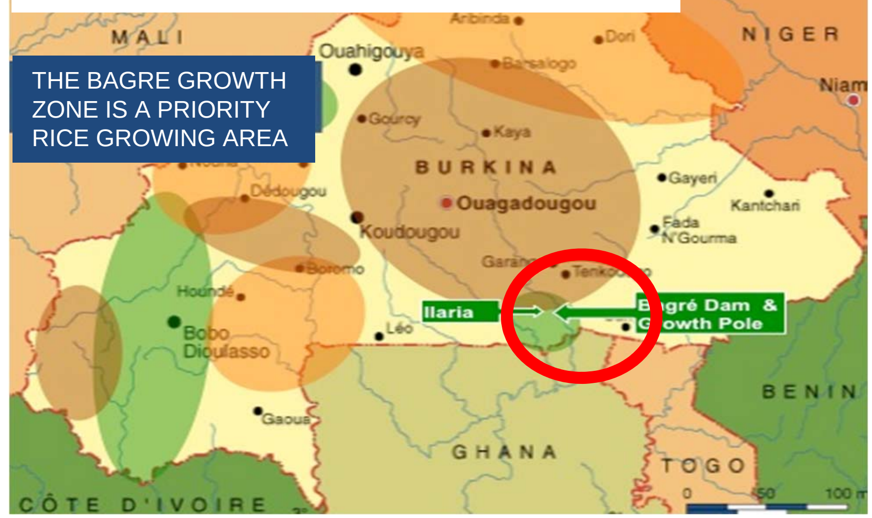
- Kilombero Valley and Rufigi River Basin growing areas are designated as priority agricultural development areas

Burkina Faso

- Bagré Growth Pole Project is a priority investment zone with significant irrigation potential

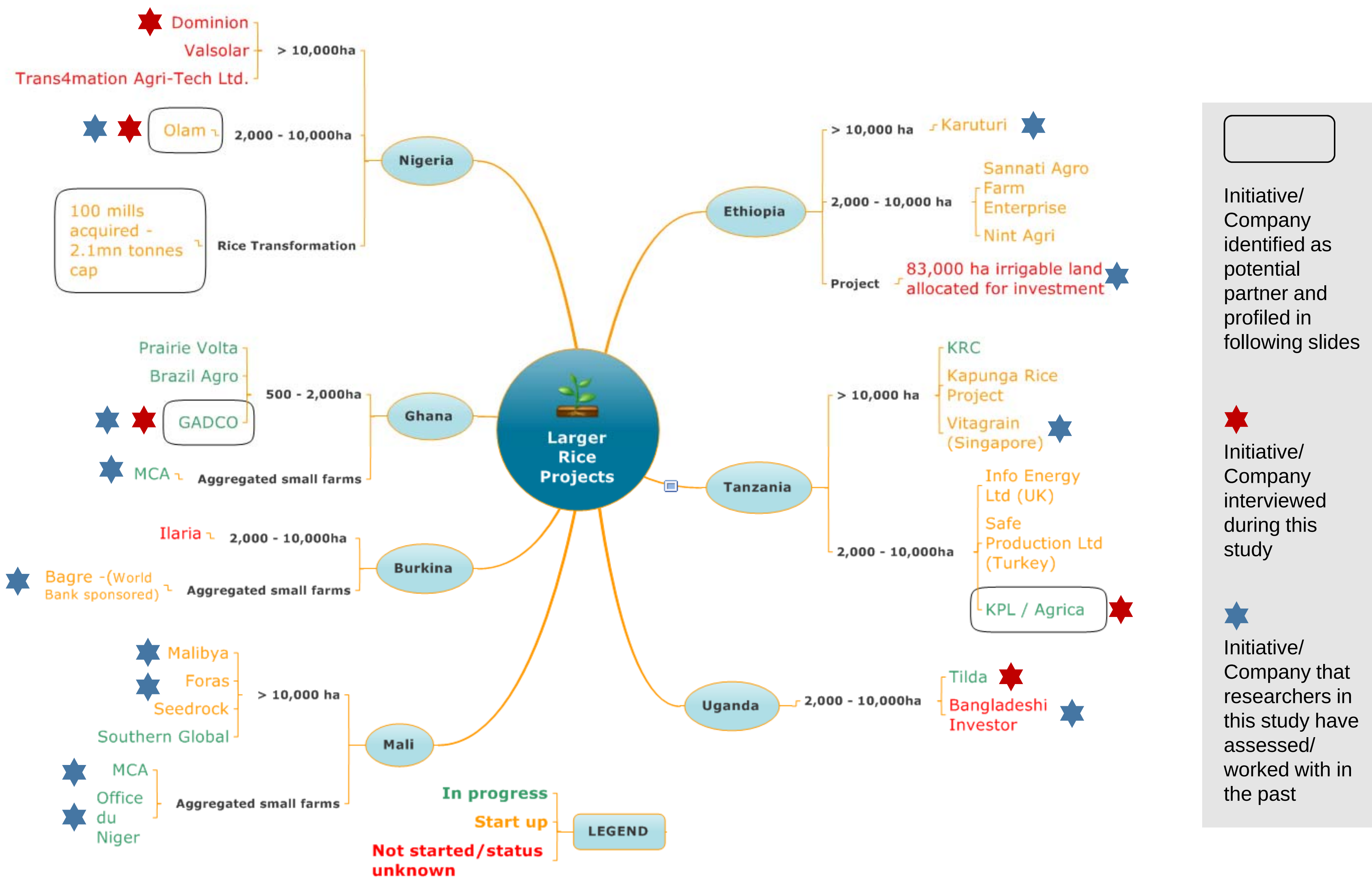
POTENTIAL INTERVENTION ZONES - TANZANIA

POTENTIAL INTERVENTION ZONE – BURKINA FASO



COMMERCIAL OPERATORS OF VARIOUS SIZE EXIST IN FOCUS COUNTRIES; SOME WERE IDENTIFIED AS POTENTIAL PARTNERS FOR FURTHER STUDY

Major Rice Sector Public-Private Partnerships and Private Sector Investments in BMGF Focus Countries



Source: NRDS, various country reports, MOA and CARD

IN SUMMARY, NIGERIA AND GHANA ARE FIRST CHOICES FOR FURTHER INVESTIGATION, WITH INITIAL SUGGESTIONS ON LOCATIONS AND PARTNERS TO CONSIDER

TOP CHOICES

	Nigeria	Ghana
Zones	• Central Nigeria rice belt • Southern urban market areas • Avoid oil areas	• Northern rice growing region due to enabling environment and development partner interest • Volta region with access to Accra due to market proximity and commercial interest
Potential Partners*	• OLAM, if it continues smallholder model • 100 mills investment program under Chinese technical and financial assistance	• GADCO • OLAM if expands there • Potentially GRIB (Ghana Rice Inter-Professional Body) is an interested party to represent farmers

SECOND PICKS

	Tanzania	Burkina Faso
Zones	• Kilombero Valley and Rufigi River Basin growing areas are designated as priority agricultural development areas	• Bagré Growth Pole Project is a priority investment zone with significant irrigation potential
Potential Partners*	• AGRICA as it is developing commercial farming in Kilombero Valley	• Private sector Bagré Growth Pole Implementation partners

* Profiles of these potential partners follow in remaining slides

POTENTIAL COMMERCIAL INNOVATION PARTNER GHANA: GADCO

★ Gadco in South Tongu

Operations began:	2011
Location:	Sogakope, South Tongu District, Volta region
Funding/partners:	Acumen Fund, Summit Capital, Deutsche Bank, Syngenta, Finatrade, Brazilian rice industry

Commercial Model

- 1100 hectare irrigated commercial farm, plans to expand; largest rice farm in Ghana
- Processing plant being built 2012
- Selling branded Copa jasmine rice with Finatrade as distributor
- Yielding 5 T/ha now; seed trials suggest 9T/ha possible
- "Get rice right in Ghana" and then expand to other crops (soy rotation) and other locations

Smallholder Initiative

Market Driven Infrastructure (MDI) smallholder program launching 2012

- Plans to "share end market economics with SH for 3X income in 2-3 years" by SH accessing premium branded rice market. Base price plus later revenue share premium
- Pilot of 80 farmers in 2012 on GADCO land as simulation; hope to expand to rainfed SH on surrounding land 2013
- 50 year land lease based on revenue share model where Gadco pays % of revenue rather than per hectare lease. Funds go to community account for infrastructure investment

Strategy/Feedback Relevant to BMGF

- Important to match type of rice produced to consumer demand
- Values industry alliance idea, particularly to drive policy, certifications, & standards
- Very interested in innovating smallholder model but no track record to date

Source: Company presentation; http://gadcompany.com; interviews; news articles. * This is not an endorsement.

POTENTIAL COMMERCIAL INNOVATION PARTNER NIGERIA: OLAM

★ Nasarawa
★ Benue

Operations began:	2005 Nigeria
Location:	Benue & Nasarawa State
Funding/partners:	USAID in Benue

Commercial Model

- 2005 leased 18MT/hr mill in Benue state, Nigeria and bought paddy from smallholders; since ended
- Late 2011 announced plans for 6,000 ha "greenfield, fully integrated, mechanized and irrigated paddy farming and rice milling facility" in Nasarawa state; will farm 1000 ha in 2012
- Proposing **Ghana** project with MCC but no firm plans

Smallholder Initiative

- Benue state project partnered with USAID in 2006 for 10,000 farmer smallholder training and OLAM operating a mill it leased
- Successful in improving SH yield from 1.25 T/ha to 3.25 T/ha (model farms 3-6 T/ha)
- However high cost of production and significant side selling impeded commercial success; OLAM has ended project
- Plans to initially develop new Nasarawa farm as company only, but will later consider outgrowers on OLAM land as part of nucleus estate

Strategy/Feedback Relevant to BMGF

- As strategic partner of BMGF, may be opportunity to innovate, however OLAM skeptical from Benue State experience
- At broader level for industry, cites need for financing and crop insurance

Source: http://www.olamonline.com; interviews; news articles * This is not an endorsement.

POTENTIAL INNOVATION PARTNER NIGERIA: 100 STATE OF THE ART MILLS IN NIGERIA WITH CHINESE FINANCIAL ASSISTANCE

Nigeria: FEC Approves 100 Rice Mills Nationwide

1 MARCH 2012

The Federal Executive Council (FEC) yesterday approved the ***setting up of 100 large scale integrated rice mills*** across the country in the next 12 to 18 months.

Minister of Agriculture, Dr. Akinwumi Adeshina, disclosed this after the council meeting presided over by President Goodluck Jonathan at the State House.

Adeshina said the decision was taken in line with the Federal Government's fiscal policy of achieving self-sufficiency in rice production by 2015.

Adeshina said a team of Federal Government delegation to China led by the Minister of Finance Ngozi Okonjo-Iweala and four other cabinet ministers including himself had sealed a deal with the Chinese government on the setting up of the rice mills.

"Those mills will mill 2.1 million metric tonnes of rice Thai grade quality. This will allow Nigeria, for the first time in its history, to have the full milling capacity for all the rice that it currently imports."

He said millions of jobs will be created for Nigerians and Nigeria will be able to end the menace of continually being dependent on imported rice.

According to Adeshina, with increased population, rice consumption in Nigeria will rise from its present 5 million metric tons to at least 35 million metric tons by the year 2050.

This investment is of interest to BMGF:

- **Excellent leveraging opportunity in the rice processing capacity building area**
- **Practical opportunity for impactful collaboration with China in Africa**
- **Testing ground for convening and sector voice building in Nigeria**

Source: AllAfrica.com news service * This is not an endorsement

POTENTIAL COMMERCIAL INNOVATION PARTNER TANZANIA: AGRICA

AGRICA

★ Agrica in Kilombero Valley

Operations began:	2008
Location:	Mngeta in Kilombero Valley
Funding/partners:	Norfund, Capricorn (Jeff Skoll), African Agricultural Capital, USAID

Commercial Model

- 4,700 ha
- 95% rain-fed currently, but increasing pivot irrigation
- Goal of 6-8% ROI and profitable exit ~2017
- Mill, 2K ton cleaning & drying
- Branded aromatic product

Smallholder Initiative

- System for Rice Intensification (SRI) is intensive rain fed production system from India
- 250 families in 2011—4,300 by 2016
- Farmers on own land
- Increase yield 2 T/ha to 8 T/ha (one crop/yr)
- Microcredit alliance with Youth Self (YOSEFO)
- Will support 3 additional mills
- Pay farmer market price at harvest + second payment after milling

Strategy/Feedback Relevant to BMGF

- Need for SH financing & crop insurance
- 75% import tariff is high but local aromatic Tanzanian rice is preferred

Source: http://www.agrica.com; interviews; news articles

POTENTIAL COMMERCIAL INNOVATION PARTNER BURKINA FASO: PRIVATE SECTOR INVESTORS IN BAGRE GROWTH POLE PROJECT

Description of the Bagre Growth Pole Project

The objective of the Bagre Growth Pole Project for Burkina Faso is to contribute to increased economic activity in the project area, resulting in an increase in private investment, employment generation and agricultural production. There are three components to the project.

Component	Objective
Improve institutional capacity for better zone management and investment climate in the project area	Improve zone management and business environment and reduce costs and risks of doing business
Development of critical infrastructure	Complete public infrastructure in the project area and promote agricultural development. Finance missing infrastructure to complement investments (15,000 hectares of irrigation, access roads to irrigated area)
Development of critical services and direct support to smallholders and SME	Promote the provision of critical services for the private sector through partial financing of technical assistance and capacity building, stimulate development of smallholder SME to improve their capacity to respond to markets and increase their competitiveness

This project is of interest to BMGF:

- **Leveraging opportunity with World Bank and private sector rice production and processing partners**
- **High priority project in Burkina Faso with high irrigation potential**

★ Bagre

Source: Abstract World Bank – Bagré Growth Pole Project * This is not an endorsement.

APPENDIX

ANNEX 1 – PRECAUTIONARY NOTE REGARDING QUALITY OF RICE DATA

"All rice statistics are suspect. They change from one source to another, from one viewpoint to another. Governments massage their figures to present whatever case is being argued at the moment. The people who provide the figures have positions to keep up and protect. Different countries define their terms differently or count in different units. But published figures are still useful, as long as we regard them as no more than approximate." Sri Owen, The Rice Book 1993

- Nineteen years later the situation has not improved. While we have better access to more sources and longer time series, there are frustrating inconsistencies between series even if the units are now more standardised.
- Ideally, one data source would be used throughout, but no such universal, or markedly better, source exists. The following slides use several data sources, in particular FAOSTAT (http://faostat.fao.org/default.aspx), USDA (http://www.fas.usda.gov/psdonline/) and COMTRADE (most easily accessed though the WITS website http://wits.worldbank.org/wits/). The sources of data for analysis are noted accordingly.
- Import data for many African countries is at best incomplete, whereas the customs data of suppliers in the Far East is generally consistent. We have used export data as a better guide to foreign trade than imports, but ultimately have relied on USDA estimates as the best guide to scale.
- This is a first scoping exercise, and the data should be viewed in that light. Deeper analysis and triangulation is needed. In particular, experience has shown that the **production data is frequently excessively optimistic** and this impacts, in turn, calculated yield data and consumption estimates.

The Researchers – Stephanie Diakité, Peter Jaeger, Peter White, and Davon Cook

ANNEX 2 – ASSUMPTIONS OF POTENTIAL SMALLHOLDER RURAL ECONOMY INCREASE

		Scenarios		
Metric	**Unit**	**Low**	**Medium**	**High**
Rice import to 7 BMGF focus countries	000 tonne	2,580	2,580	2,580
Equivalent paddy import	000 tonne	4,000	4,000	4,000
Assume local production replaces X% of imports	**%**	**10%**	**20%**	**30%**
Smallholder produces Y% of that replacement	%	50%	50%	50%
Resulting increase smallholder volume	000 tonne	200	400	600
Price	USD/tonne	275	275	275
Value of smallholder rural economy increase via rice	**million USD**	**55**	**110**	**165**

ANNEX 3 - RICE BACKGROUND 1 - TERMINOLOGY

- The rice grain is the seed of a cultivated grass.
- After the rice is cut in the field it is threshed to separate the seed from the straw. The natural seed is protected by a tough covering, the husk, and in this condition it is known as **paddy** or **rough** rice.
- Initial milling of the rice removes the husk to leave **brown rice.** Here, a seed coat, the **bran**, still covers the seed.
- Full milling removes the bran and leaves the white, translucent grains that are the **white rice** or **milled rice** of trade.
- The milling process is harsh, and if the grains are too dry they break easily. Generally, consumers prefer whole rice grains, referred to as **head rice**, but there are markets that demand **broken rice** (e.g. Senegal) depending on the degree of breakage.
- The trade recognises rice grades according to the percentage of broken in the blend which reduce the value.
- Where rice is cultivated at high temperature (e.g. northern Ghana), or harvested at a low moisture content, the grains may be **parboiled**, which involves soaking the paddy in water and then steaming, before drying and milling. This not only reduces the number of breakages but also results in a more nutritious rice that is preferred in some markets, for example Nigeria.

Source: Author's Expertise

ANNEX 4 - RICE BACKGROUND 2 - SPECIES AND VARIETIES

- Two of the twenty species of rice are cultivated:
  - *Oryza sativa* is widespread and typically Asian
  - *Oryza glaberrrima* is restricted to Africa
- Plant breeders in Africa have developed a hybrid, called **NERICA** (New Rice for Africa), that combines the productivity of *O.sativa* with the robust characteristics of *O.glaberrima*.
- The many different varieties of *O.sativa* fall into two groups:
  - **Indica** has a long grain, typically tropical rice
  - **Japonica** is a round grain rice of more temperate climates
- **Indica** varieties dominate the World market
- Fragrant, or aromatic, rices are **Indica** type. They fetch premium prices for the perfumed fragrance and flavour; **Basmati, Patna** and **Thai Hom Mali** (Thai Jasmine) are examples.
- Certain markets in West Africa (e.g. Ghana and Senegal) show a strong preference for fragrant rice. New varieties (e.g. Jasmine 85 from the USA) are being introduced and tested.

Source: Author's Expertise

ANNEX 5 - TECHNOLOGICAL ADVANCEMENT OPPORTUNITIES FOR RICE DEVELOPMENT IN SSA

Stakeholders unilaterally recommend BMGF continue its seed work

	Short Term	Medium Term	Long Term
Improved Varieties	• Hybrids • Stress Tolerant Varieties	• New generation stress tolerant varieties • Varieties for conservation agriculture	• C4 Rice • Biotech (drought, heat, salinity, Nitrogen use efficiency)
Improved Rice Systems	• Agronomy (Site specific nutrient management, alternate wetting and drying) • Conservation Agriculture • Mechanization	• Ecological intensification & diversification of production systems • New generation IPM	• Ecological intensification and diversification of production systems
Improved Value Chains	• Post-harvest technology	• Grain quality and speciality rices	• New products/byproducts from rice

Source: IRRI – International Rice Research Institute

ANNEX 6 – DOCUMENTARY SOURCES

STATISTICS AND DATA

- Food and Agriculture Organization, historical rice statistics, http://www.faostat.fao.org
- FAO Aquastat Statistics, http://www.fao.org/nr/water/aquastat/main/index.stm
- FAO Global Information and Early Warning System (GIEWS) – 2011/2012 Cereal Supply and Demand Balance for 2011/2012 marketing year (April/March), GIEWS, 2012
- FAO, GIWS Price Tool, 2012
- MUNDI INDEX, historical rice statistics http://www.indexmundi.com/
- ORYZA Database, ORYZA, 2011
- USDA, historical rice statistics http://www.usda.gov/

VARIOUS NATIONAL REPORTS AND STUDIES

- National Rice Development Strategies, CARD Country Profiles – Burkina Faso, Ethiopia, Ghana, Mali, Nigeria, Tanzania, Uganda http://www.riceforafrica.org
- State of the World Population 2011, UNFPA, http://www.foweb.unfpa.org/SWP2011/reports/EN-SWOP2011-FINAL.pdf
- Various national reports, statistics, maps, and graphics from MOA sites of BMGF focus countries Burkina Faso http://www.agriculture.gov.bf, Ethiopia http://www.eap.gov.et, Ghana http://www.mofa.gov.gh, Mali http://www.maliagriculture.org, Nigeria http://www.nigeria.gov.ng/NR/exeras/FA95, Tanzania http://www/agriculture.go.tz, Uganda http://www/agriculture.go.ug

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ANNEX 7 – REVIEW OF STAKEHOLDERS CONSULTED DURING THE STUDY

African Mulitilateral Rice Development Organization
- Africa Rice, Ghana Office Rice and Market Specialists

Private Sector Interviewees
- Dominion Farms, Kenya/Nigeria
- Tilda, Uganda
- Agrica, Tanzania
- Stallion, Ghana
- ETG, East Africa Regional
- GDCM, Mali
- Nint, Ethiopia
- Finatrade, Ghana and West Africa
- OLAM, West Africa Regional
- NOVEL, Ghana and West Africa
- Ets Boureima, Burkina Faso

High Level Survey Respondents
- David Neven, Marketing Economist, Food and Agriculture Organization
- Marjatta Eilitta, USAID 21 West African Country Agriculture and Trade Program Chief of Party
- Yusuke Haneishi, JICA, CARD Representative Uganda
- Paa Kwesi Forson, Ghana Rice Inter-professional Organization Representative

Ghana Stakeholder Forum Participants
- DIZENGOFF, Rice Production Input Supplier
- FINATRADE, Rice Importer
- ATP, WATH – USAID Agriculture and Trade Development Projects
- IFPRI, Research Institution
- NOVEL, Rice Importer
- OLAM, Rice Importer
- Ghana Rice Inter Profession, Producer Group
- WIENCO, Rice Trader
- YARA, Rice Production Input Supplier
- AGRIMAT, Rice Production Input Supplier
- Monitor Group, Consultant
- Premium Food, Cereals Buyer

Other Conversations
- Sophia Kaduma, Special Assistant to the Secretary for Agricultural Development, Tanzania

ANNEX 8 – MINI SURVEY OF EXISTING NATIONAL RICE SECTOR DEVELOPMENT ORGANIZATIONS IN BMGF COUNTRIES

	Burkina Faso	Ghana	Mali	Nigeria	Ethiopia	Tanzania	Uganda
Principal Rice Grower's Association	L'Union Nationale des Producteurs de Riz de Burkina Faso (UNPR-B)	Ghana Rice Inter-professional Body (GRIB)	Plateforme Nationale des Producteurs de Riz du Mali (PNPR-M)	Rice Farmer's Association of Nigeria (RIFAN)	Ethiopian Horitculture Producer Export Association (EHPEA) is setting the rice export agenda	Tanzania Rice Partnership (TARIPA) Sub-national organizations such as the Association of Kilombero High Quality Rice Growers	Sub-national organizations
Principal Rice Processor's Association	Association des Transformateurs de Céréales du Burkina Faso (ATC/B)	Subset or affiliate ofof GRIB	Fédération Naionale des Transformateurs des Produits Agroalimentaires (FENATRA)	Subset and/or affiliate of RIFAN		Sub-national organizations	Sub-national organizations

Source: NRDS Focus Countries, MOA websites Focus Countries, CARD data, EU VC analysis Tanzania; an empty square indicates that information was not available

COUNTRY SPECIFIC DATA,

AS AVAILABLE

- Center for Africa Rice Development (CARD) Profiles
- Production Maps
- Value Chains

BURKINA FASO

Country Profile Related to Rice: Burkina Faso

Total area (2010): 274,200 km²

Population (2010): US$16.5 million

Population density (2010): 60.2 persons/km²

Population growth rate (2010): 3%

('97-07 average):

Poverty rate: 46.4%

GDP: US$8.8 billion (2010)

GDP per capita: US$536 (2010)

GDP composition by sector

Agriculture: 34.1%

Industry: 23.2%

Services: 42.7%

Agric. Population rate(2010): 90%

Responsible Ministry: Ministere de l'Agriculture de l'Hydaulique et des Ressources Halieutiques

Research Institute: Institute de l'Environnement et de Recherches Agricole

Agricultural Policy Paper: Strategie Nationale de Developpement de la Riziculture

Domestic supply of staple food: N/A

Domestic supply of rice (2005): 246 (1,000 ton)

Percentage of rice in a stable food: N/A

Self-sufficiency ration of staple food: N/A

Self-sufficieny ratio of rice: N/A

Import value of staple food: N/A

Import value of rice (2007): US$12,199,000

Production, Import and Food Aid of Rice Production, Import and Food aid: 1,000 ton

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Area harvested (1,000ha)	46	38	40	58	47	48	50	53	44	41	95	109
Yield (ton/ha)	1.98	2.50	2.58	1.91	1.94	2.04	1.50	1.77	2.59	1.68	2.05	1.96
Production as paddy	91	95	103	111	91	98	75	94	114	69	195	214
Import (milled rice equiv.)	146	218	179	211	221	158	194	212	125	130	100	N/A
Food aid in rice (milled)	16,923	16,204	7,564	19,234	6,798	12,904	14,459	16,392	11,972	N/A	N/A	N/A

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Domestic supply quantity	135	137	169	155	205	142	152	199	298	261	273	246
Food	197	160	248	243	207	274	239	263	282	213	236	266
Consumption per capita	20.0	15.8	23.9	22.7	18.8	24.1	20.4	21.8	22.6	16.6	17.8	19.3

Note: 1,000 ton for Domestic suppy quantity and Food; kg/year for consumption per capita

Source: CARD

BURKINA FASO

National Rice Development Strategy:

1. Projection of Rice Production Area: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

Year	Rainfed			Lowland			Irrigated			Total		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2009	12000	1.1	13,200	47,000	2.5	117,500	12,500	8.4	104,500	71,500	3.3	235,200
2015	32000	1.5	48,000	82,000	3.5	287,000	17,500	10.0	174,300	131,500	3.9	509,300
2018	62000	2.5	155,000	110,000	4.0	440,000	19,500	12.7	247,065	191,500	4.4	842,065

2. Need in human resources for research and outreach

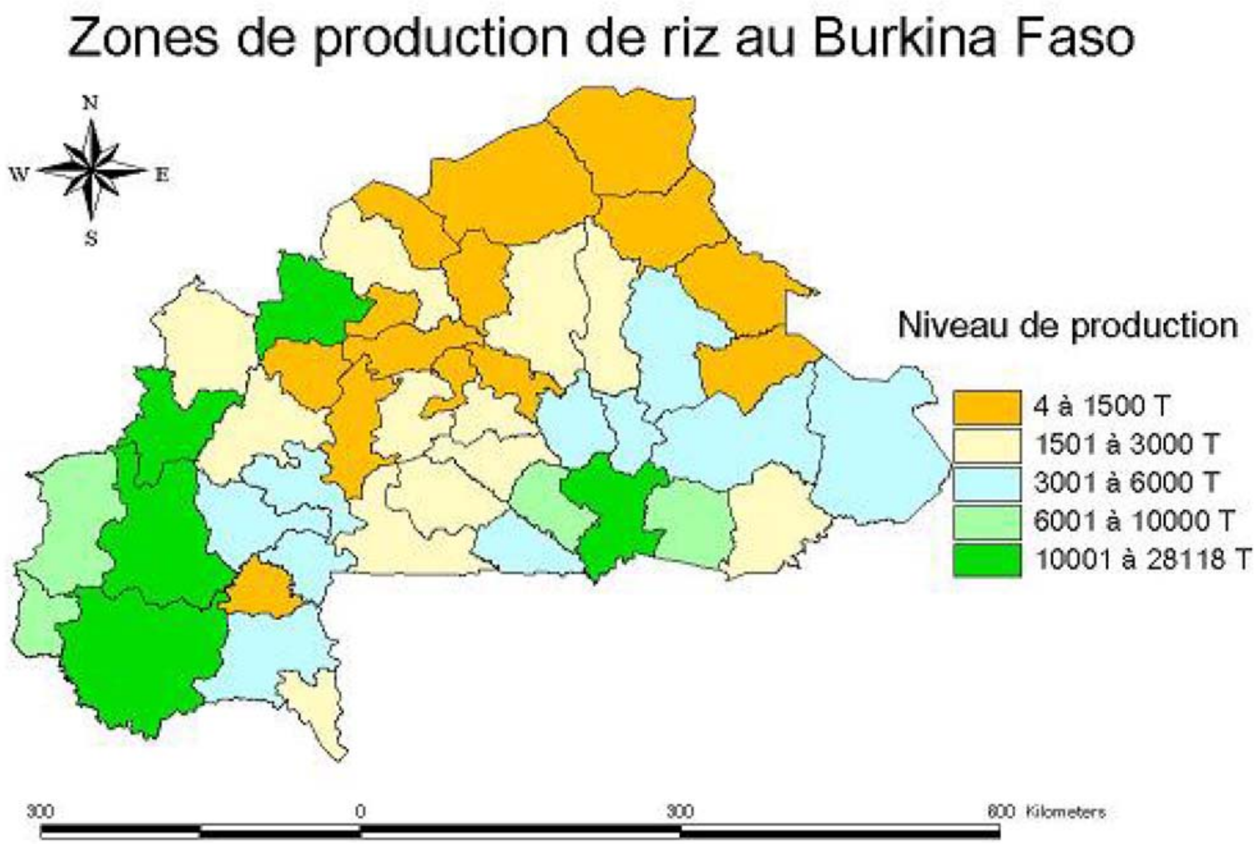
Year	Researchers with MSc/PhD			Research Technicians			Extension Officers			Total		
	Rice Specialists			Rice Specialists			Rice Specialists			Rice Specialists		
	full time	part time	Total	full time	part time	Total	full time	part time	Total	full time	part time	Total
2008	14	9	23	17	2	19	10	200	210	41	211	252
2013	19	9	28	22	15	37	60	300	360	101	324	425
2018	23	9	32	23	15	38	100	500	600	146	524	670

3. Strategy for Rice Production Increase

Sub-sector	Strategy
Seeds	Certified seeds of improved varieties will be produced and distributed. This will be accompanied by training and sesitisation of producers in regulations and use of improved seeds. Enterpreneurship in improved seed production will be encouraged.
Fertilizer	A fertilizer production facility will be established and distrubutors recruited to make the fertilizer available to producers. Fertilizers will be tax free and subsidised if necessary
Irrigation	New irrigation systems will be developed. However, given the hight assocated costs, producers will be encouraged to practise more rain water conservation techniques in lowland areas for the cultivation of rice.
Agr. Equipment	Subsidies will be provided for the importation of rice production and proessing equipment. Equipment for grinding straw and producing compost will be introduced or developed.
Research	Human capacity will be developed and more material for scientific research procured to reinforce the national research network in the area of innovations in rice farming and introduction of high yielding varieties to respond to consumer needs.
Structuring	The SNDR will be implemented by an Executive Committee, which will receive technical inputs for the Interministerial Technical Committee and a Steering Committee will be responsible for the overall direction and control of the strategy by setting strategic objectives.
Credit	Land ownership laws will be enforces to allow rice producers to use their land to secure financing. Micro finance insitutions will be encouraged to partner with government to extend credit to proeuders in the rice sector.
Post-harvest	Train stakeholder in post-harvest handling to ensure high quality rice both in paddy and milled form.
Environment	Environmental impact assessments will be conducted before any major action. It is critical to ensure mitigation measures in order to prevent environmental problems.
Other	More human capacity will be developed to popularise rice production. Farmer organisations and associated bodies will be strengthened to provide training in the use of rice farming and processing equipment

Source: CARD

BURKINA FASO RICE PRODUCTION ZONES



Source: MOA Burkina Faso

GHANA

Country Profile Related to Rice: Ghana	
Total area (2005): 238,540km^2	**Responsible Ministry:** Ministry of Food and Agriculture
Population (2005): 23,461,523	
Population density: 98person/km^2	**Research institute:** Crop Research Institute (CRI) & Soil Research Institute (SRI)
Population growth rate('97-'07 average.):2.2%	**Agr. Policy Paper:** Food and Agriculture Sector Development Policy II (FASDEP II)
Poverty rate (1990-2005 latest): 44.8%	
GDP (2007): 15,245,550,592US$	**Domestic supply of staple food (2003):** 7,452.4(1,000 ton)
GDP per capita (2005): 485US$	**Domestic supply of rice (2003):** 490.4(1,000 ton)
GDP composition by sector (2006):	**Percentage of rice in a staple food (2003):** 6.6%
Agriculture: 37.3%	**Self-sufficiency ratio of staple food (2003):** 146.1%
Industry: 25.3%	**Self sufficiency ratio of rice (2003):** 32.5%
Services: 37.5%	**Import value of staple food (2006):** 261,784,000US$
Agric. population rate (2006): 54.8%	**Import value of rice (2006):** 95,225,000US$

Production, Import and Food Aid of Rice Production, Import and Food aid: 1,000 ton

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area harvested (1,000ha)	130.4	105.3	115.2	136.0	122.8	117.0	119.4	120.0	125.0	120.0
Yield (ton/ha)	1.5	2.0	2.2	2.0	2.3	2.0	2.0	2.4	2.0	2.0
Production as paddy	193.6	209.8	248.7	274.6	280.0	238.8	241.8	287.0	250.0	242.0
Import (milled rice equiv.)	78.0	69.1	167.0	368.1	314.3	755.0	448.0	484.5	264.7	n.a.
Food aid in rice (milled)	2.3	9.8	10.8	11.8	15.5	7.4	-	1.6	0.4	n.a.

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Domestic supply quantity	342.9	294.9	205.5	171.8	186.2	241.3	336.0	565.9	517.1	490.4
Food	315.0	265.5	174.9	142.5	157.7	211.0	301.3	521.2	474.7	453.3
Consumption per capita	18.1	14.8	9.5	7.6	8.2	10.7	15.0	25.3	22.5	21.0

Note:1,000 ton for Domestic supply quantity and Food; kg/year for consumption per capita

Source: CARD

GHANA

National Rice Development Strategy:

1. Projection of Rice Production Area: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

Year	Upland			Rainfed lowland			Irrigated lowland			Total		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2008	7	1.5	11	92	2.5	230	19	4.0	76	118	2.7	316
2013	30	2.2	66	150	3.0	450	25	5.0	125	205	3.1	641
2018	45	2.5	113	300	3.5	1,050	30	6.0	180	375	3.6	1,343

2. Need in human resources for research and outreach

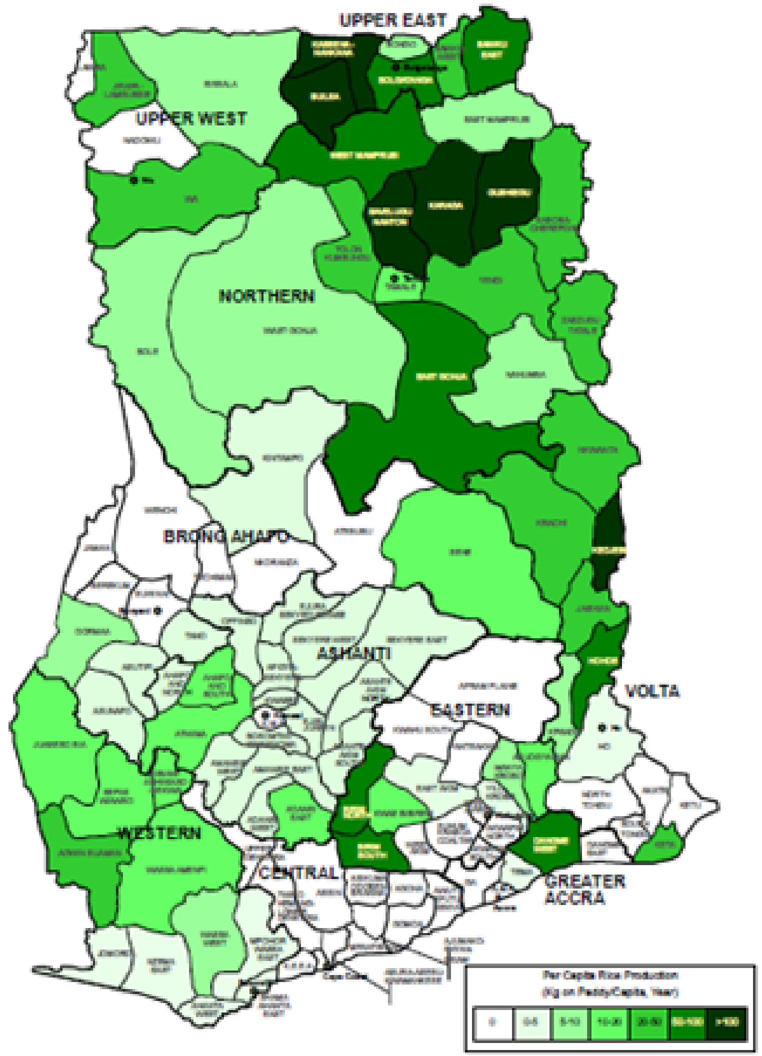
Year	Researchers with MSc/PhD			Research Technicians			Extension Officers		
	Rice Specialists		Total	Rice Specialists		Total	Rice Specialists		Total
	full time	part time		full time	part time		full time	part time	
2008	28	20	48	15	9	24	70	2,230	2,300
2013	50	5	55	100	10	110	1,640	2,430	4,070
2018	55	5	60	120	10	130	3,000	2,630	5,630

3. Strategy

Sub-sector	Strategy
Seeds	Breeder and foundation seed production by public institutions and certified seed by private sector and farmer seed growers, genetic resource development and maintenance
Fertilizer	From import to increased local blending, haulage and storage facilities nantionwide, repackaging to small packages, fundamental policy change for distribution to and affordability by smallholders
Irrigation	Rehabilitation of exiting schemes and development of gravity-controlled schemes, development of simple and low cost water control structure (dykes, bunding, catchment protection, drainage) by mobilized farmers
Agr. Equipment	Government's facilitation for easy and timely access to improved agricultural equipment, encouraging private sectors including public-private partnership ventures to play a greater role, adaptation and fabrication of equipment for small and medium scale operators along the value chain
Research	Technology development and dissemination along the rice value chain, improved variety development, soil fertility and soil-borne disease management technology, rice-based cropping system development, soil testing for appropritate soil amendments
Structuring	Capacity building of farmers and farmers communities for irrigation scheme maintenance, agricultural equipment operation; training of extension agents, researchers and private sectors, mobilization, linkaging and training of key actors (small holder producers, processors, traders)
Credit	Identification of credit sources for farmers and perboilers (through microfinance institutions), traders and processors, current and past credit implementation to be reviewed for suitable adoption,
Post-harvest	Minimizing postpharvest loss and improvement of rice quality by improved rice mill, merketing by enhancement of prefered consumption of local rice, warehouse construction for storage of milled rice, rice marketing credit lines, improvement of access to producing areas and marketing centers
Environment	Study into land suitability, land use and delineation for rice-based crooping
Other	N/A

Source: CARD

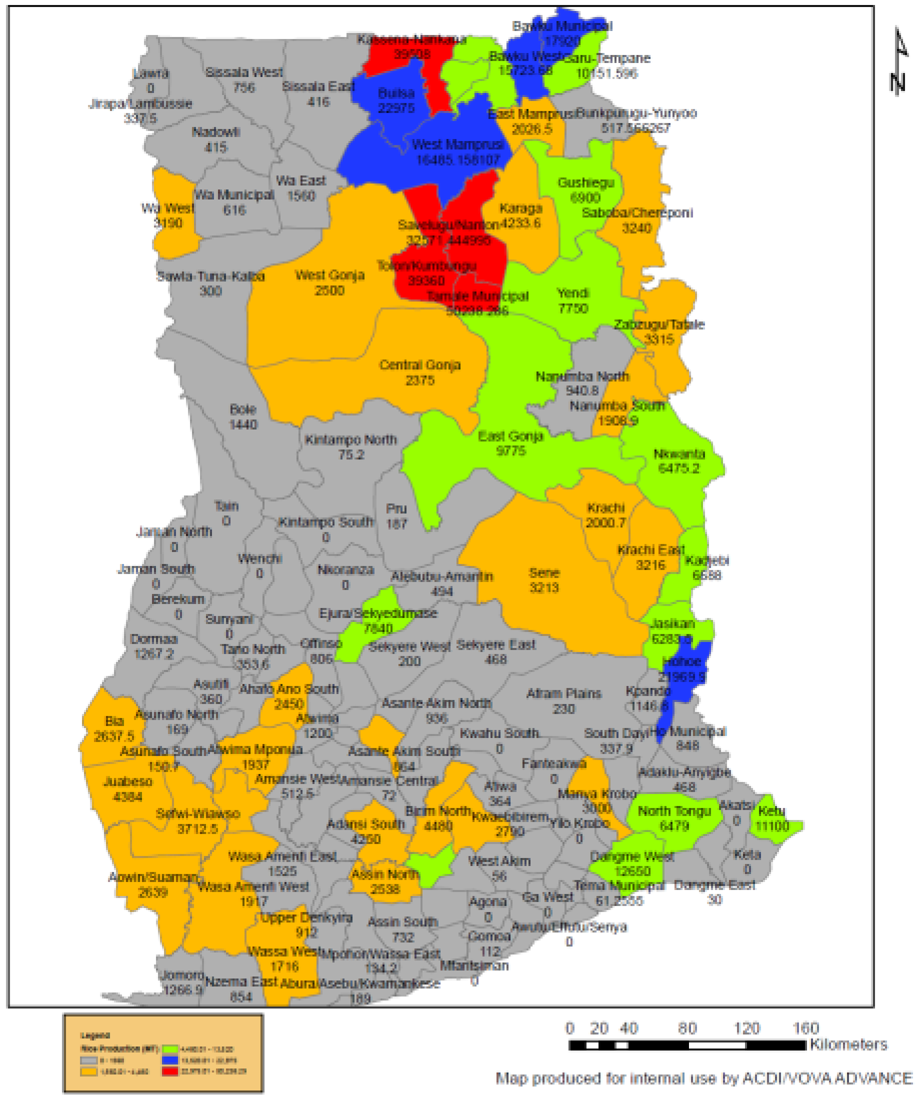
GHANA PADDY RICE PRODUCTION BY DISTRICT (2000)



Source: Production of Major Crops 2000 Ministry of Food and Agriculture, Ghana from Population and Housing Census 2000 (Ghana Statistical Service)

GHANA PADDY RICE PRODUCTION BY DISTRICT (2010)

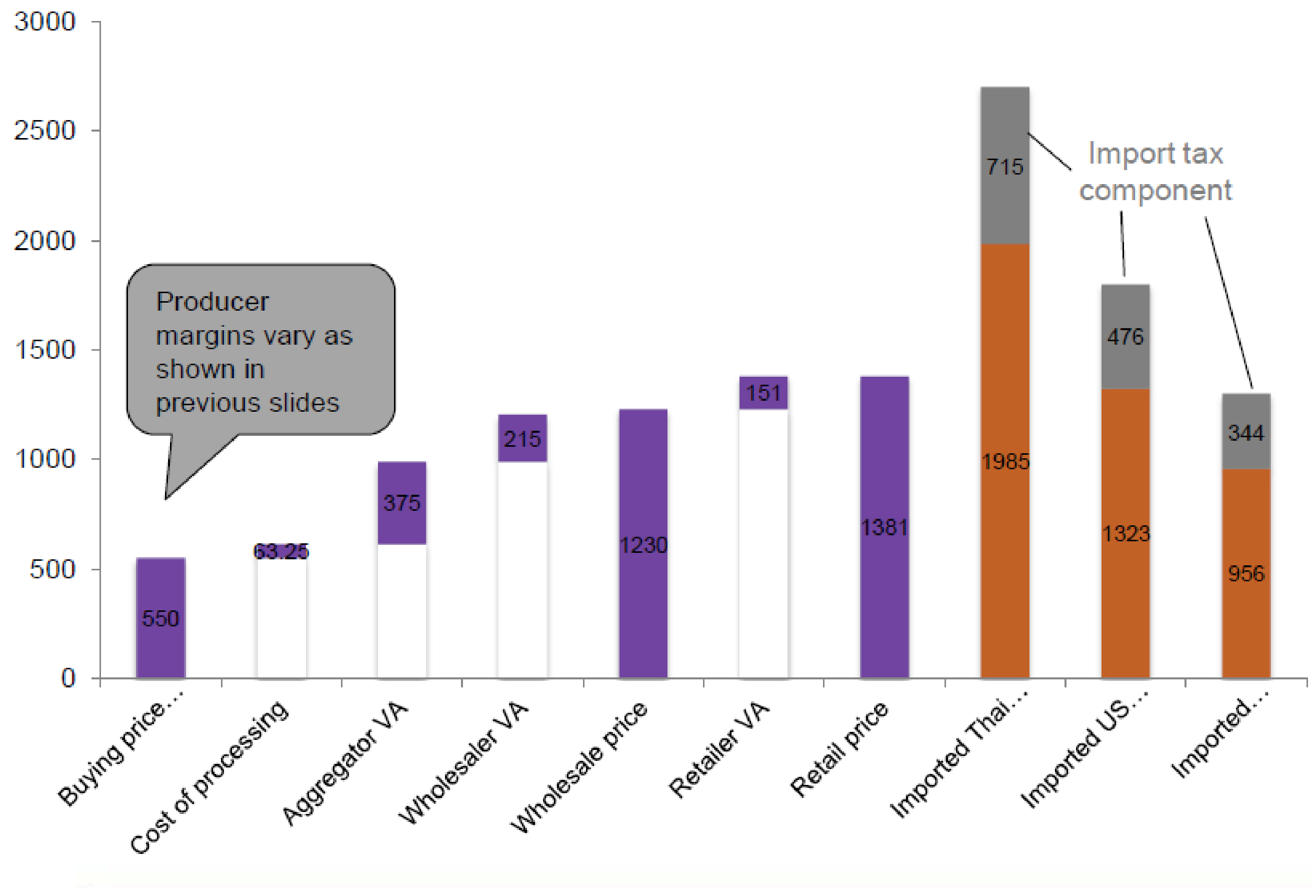
2010 RICE PRODUCTION IN GHANA



Source: ACDI/VOCA Internal document; permission granted by Advance project

GHANA RICE VALUE CHAIN

Ghanaian rice cost structure and import parity per kg of <u>milled rice</u>* (GHC / T)



Source: TNS analysis, ADVANCE program work
Imported rice prices from USDA study

Source: Extracted from "Ghana Rice Production Assessment Dec 2011" PowerPoint presentation by TechnoServe

GHANA RICE VALUE CHAIN

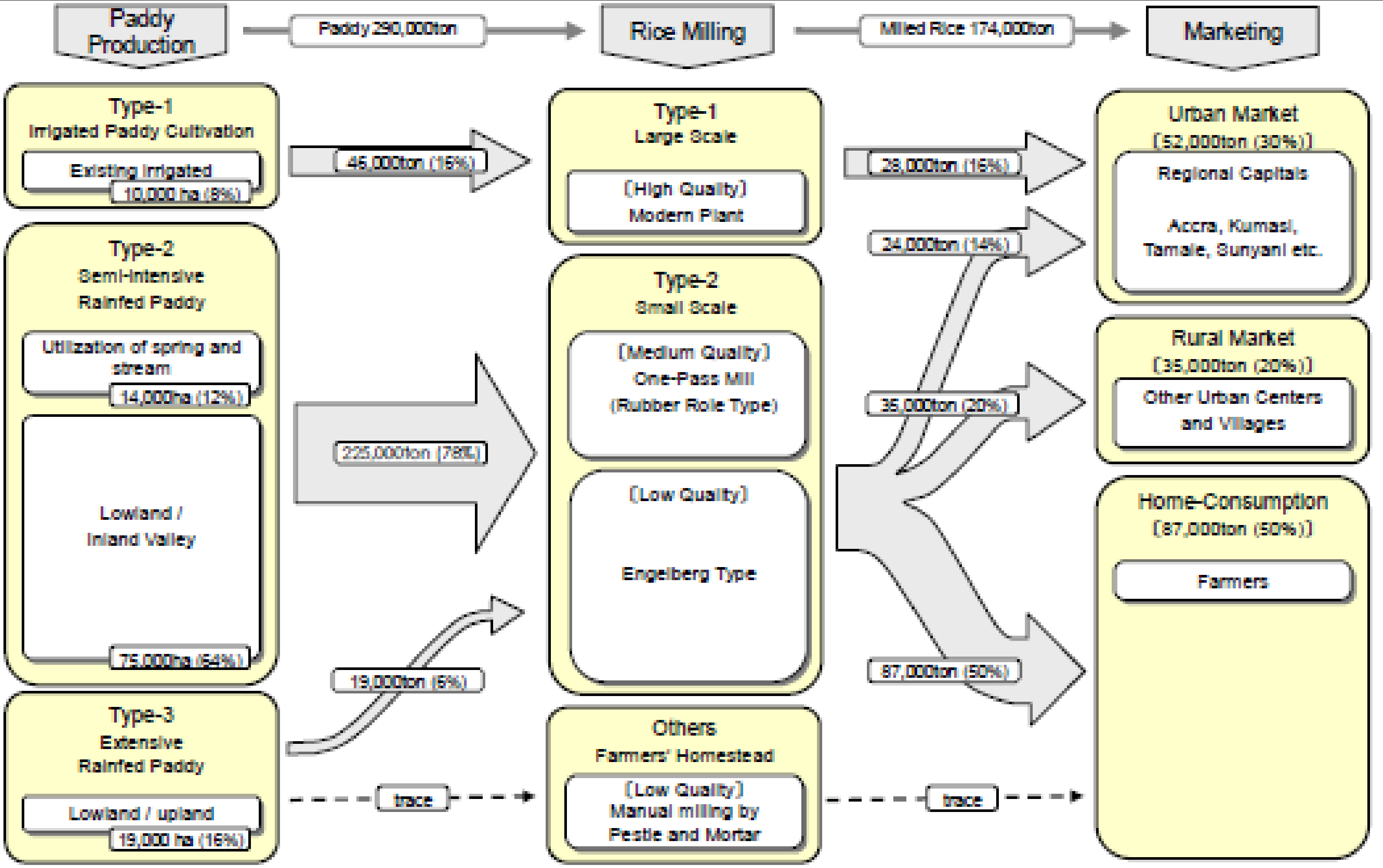


Figure 6 Present Generalized Rice Distribution Flow

Source: Extracted from "The Study on the Promotion of Domestic Rice in the Republic of Ghana Final Report March 2008"
Prepared for Ministry of Food and Agriculture and Japan International Cooperation Agency (JICA) by Nippon Koei Co. Ltd

MALI

Country Profile Related to Rice: Mali	
Total area (2005): 1,240,190km^2	**Responsible Ministry:** Ministère de l'Agriculture
Population (2005): 12,334,168	**Research institute:** Institut d'Economie Rurale (IER)
Population density: 10person/km^2	
Population growth rate: 3.0%	**Agr. Policy Paper:** Le Programme de Développement Economique et Social (PDES); La Loi d'Orientation Agricole (LOA)
('97-'07 average.):	
Poverty rate (1990-2005 latest): 36.1% **GDP(2007):** 6,862,520,320US\$ **GDP per capita (2005):** 392US\$	**Domestic supply of staple food (2003):** 2,779.3(1,000 ton) **Domestic supply of rice (2003):** 737.1(1,000 ton)
GDP composition by sector (2001):	**Percentage of rice in a staple food (2003):** 26.5%
Agriculture: 45.0% **Industry:** 17.0% **Services:** 38.0% **Agric. population rate (2006):** 53.8%	**Self-sufficiency ratio of staple food (2003):** 102.6% **Self sufficiency ratio of rice (2003):** 84.9% **Import value of staple food (2006):** 157,978,000US\$ **Import value of rice (2006):** 45,506,000US\$

Production, Import and Food Aid of RiceProduction, Import and Food aid: 1,000 ton

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area harvested (1,000ha)	326.4	325.1	352.7	468.2	360.4	405.6	451.0	414.0	412.5	377.0
Yield (ton/ha)	2.2	2.2	2.1	2.0	2.0	2.3	1.6	2.3	2.6	2.5
Production as paddy	717.9	727.1	742.6	940.9	710.4	931.9	718.1	945.8	1,053.2	955.3
Import (milled rice equiv.)	90.2	82.4	51.9	79.0	202.8	186.6	105.1	272.1	174.2	n.a.
Food aid in rice (milled)	-	-	0.5	-	-	-	5.9	12.9	11.8	n.a.

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Domestic supply quantity	304.0	358.5	486.5	435.5	538.0	575.6	592.3	594.0	557.3	737.1
Food	263.5	315.3	436.5	387.7	485.6	519.8	525.9	528.1	498.0	664.2
Consumption per capita	31.0	36.1	48.7	42.1	51.3	53.4	52.6	51.3	47.0	60.8

Note: 1,000 ton for Domestic supply quantity and Food; kg/year for consumption per capita

Source: CARD

MALI

National Rice Development Strategy:

1. Projection of Rice ProductionArea: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

Year	Upland			Rainfed			Irrigated			Total		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2008	138	3.0	414	14.2	2	28.4	125	6.5	809	277	4.5	1,251
2013	184	3.6	662	17.0	3	42.5	166	7.8	1,295	367	5.4	2,000
2018	245	4.1	994	20.4	3	63.9	220	8.8	1,943	486	6.2	3,000

2. Need in human resources for research and outreach

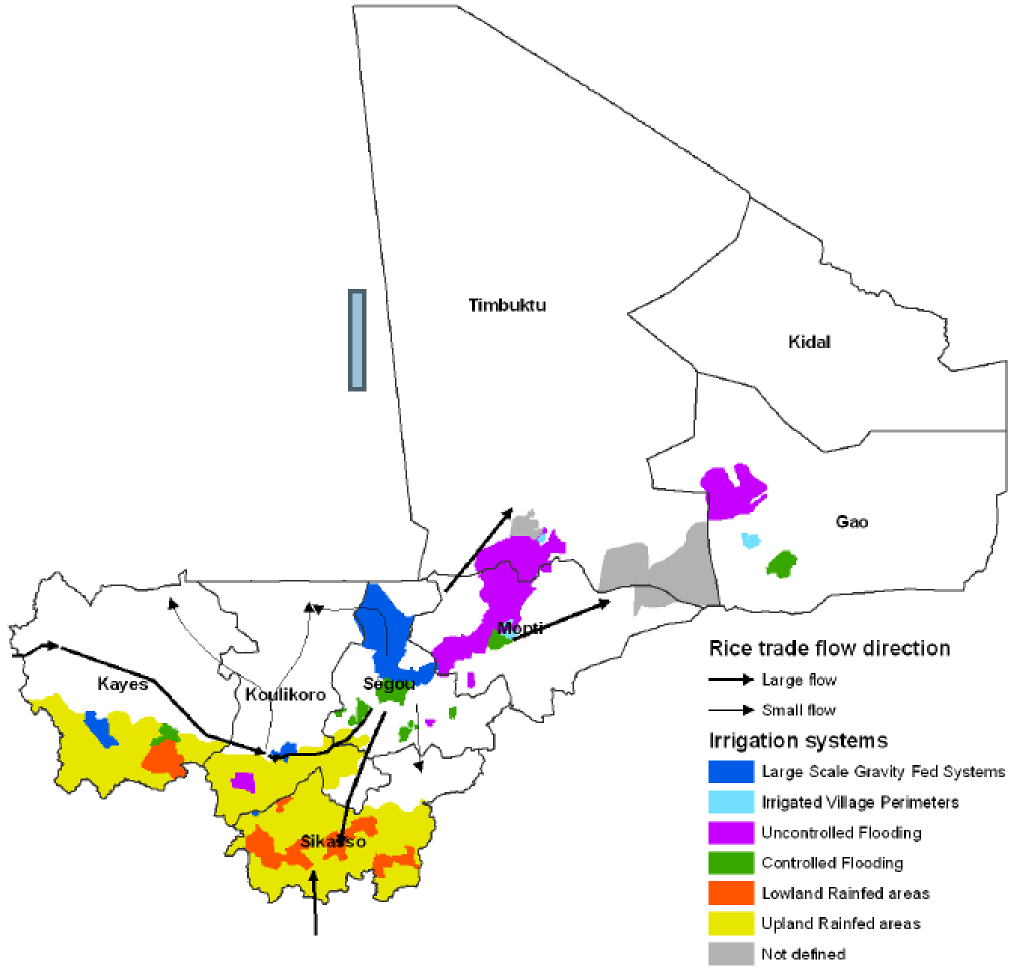
Year	Researchers with Masters/PhD			Agricultural Technicians			Extension officers
	Total	Permanent staff (rice growing)	Contractual (rice growing)	Total	Permanent staff (rice growing)	Contractual (rice growing)	
2008	234	12	3	207	17	3	402
2013	253	14	5	212	19	5	1,200
2018	273	17	7	217	21	7	1,700

3. Strategy for Rice Production Increase

Sub-sector	**Strategy**
Seeds (National seed policy)	- Foundation seed to be produced by IER and multiplied by contract farmers. - Privatization of the production and distribution of certified seeds
Phytogenetic resources	- Preserve and maintenance of genetic resources for new variety development - Construction of infrastructure (cold rooms) - Human resources development in seed technologies - Adoption of bills, decrees, and technical regulations
Fertilizers	Provision of credit for inputs by organized producers (existing) through a network of saving and credit banks.
Post harvest & marketing	Enhance competitiveness of local rice by improving storage, processing with consistent support of research institutions and development of processing sector
Irrigation &water control	National Strategy for Irrigation Development (SNDI) in 1999. More involvement of private sector for investment and beneficiaries for development
Strengthening of research and extension	Development of improved varieties (short growth duration) and crop production techniques; Dissemination of developed techniques
Agricultural loan	A national fund for agricultural development, disaster fund, guarantee fund.

Source: CARD

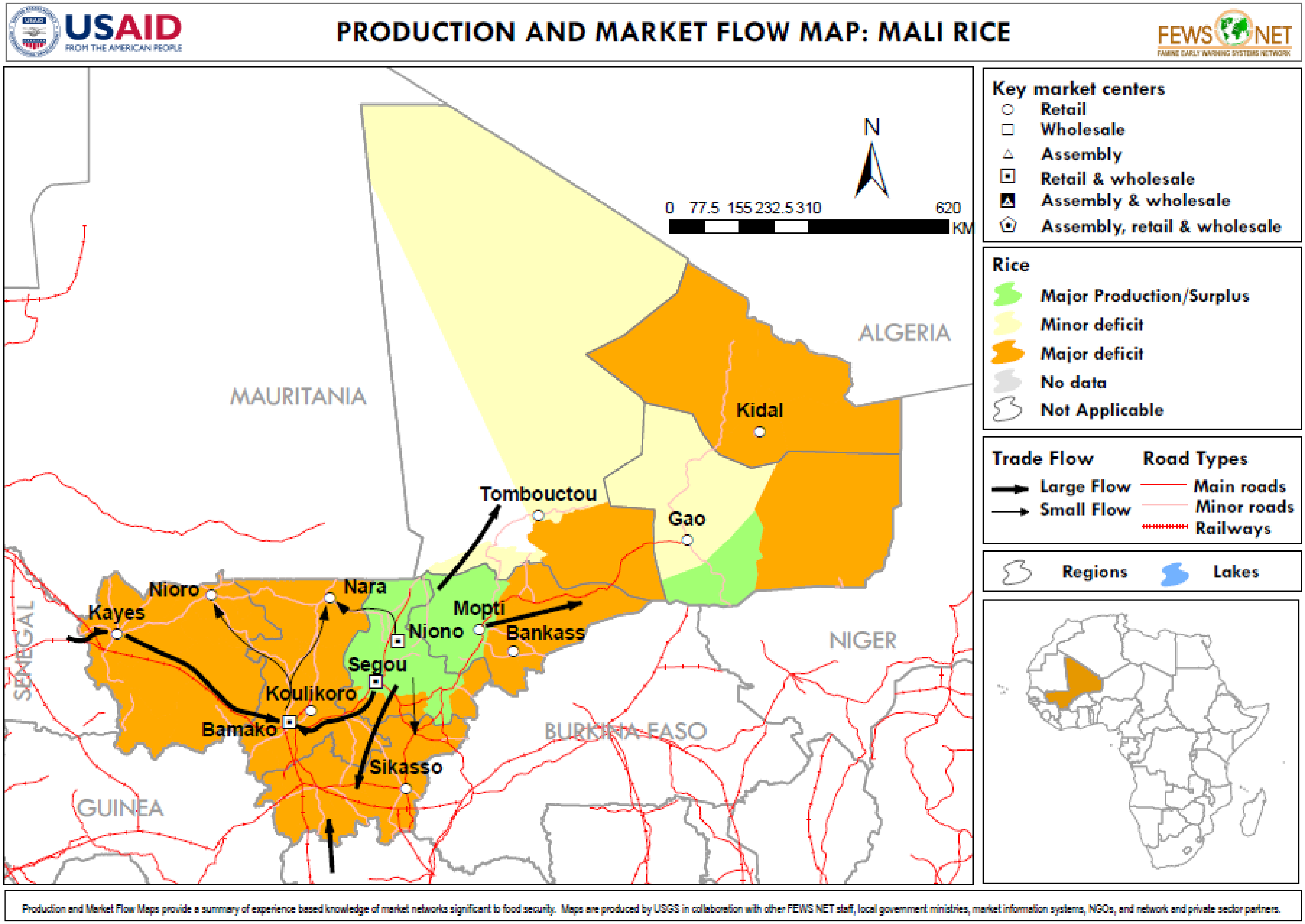
MALI RICE PRODUCTION AREAS TARGETED BY THE NATIONAL RICE DEVELOPMENT STRATEGY(2009)



Source: FEWSNET and Ministry of Agriculture

Source: Extracted from "USAID's "Attachment III to the Global Food Security Response West Africa Rice Value Chain Analysis", which cited Famine Early Warning System & Ministry of Agriculture

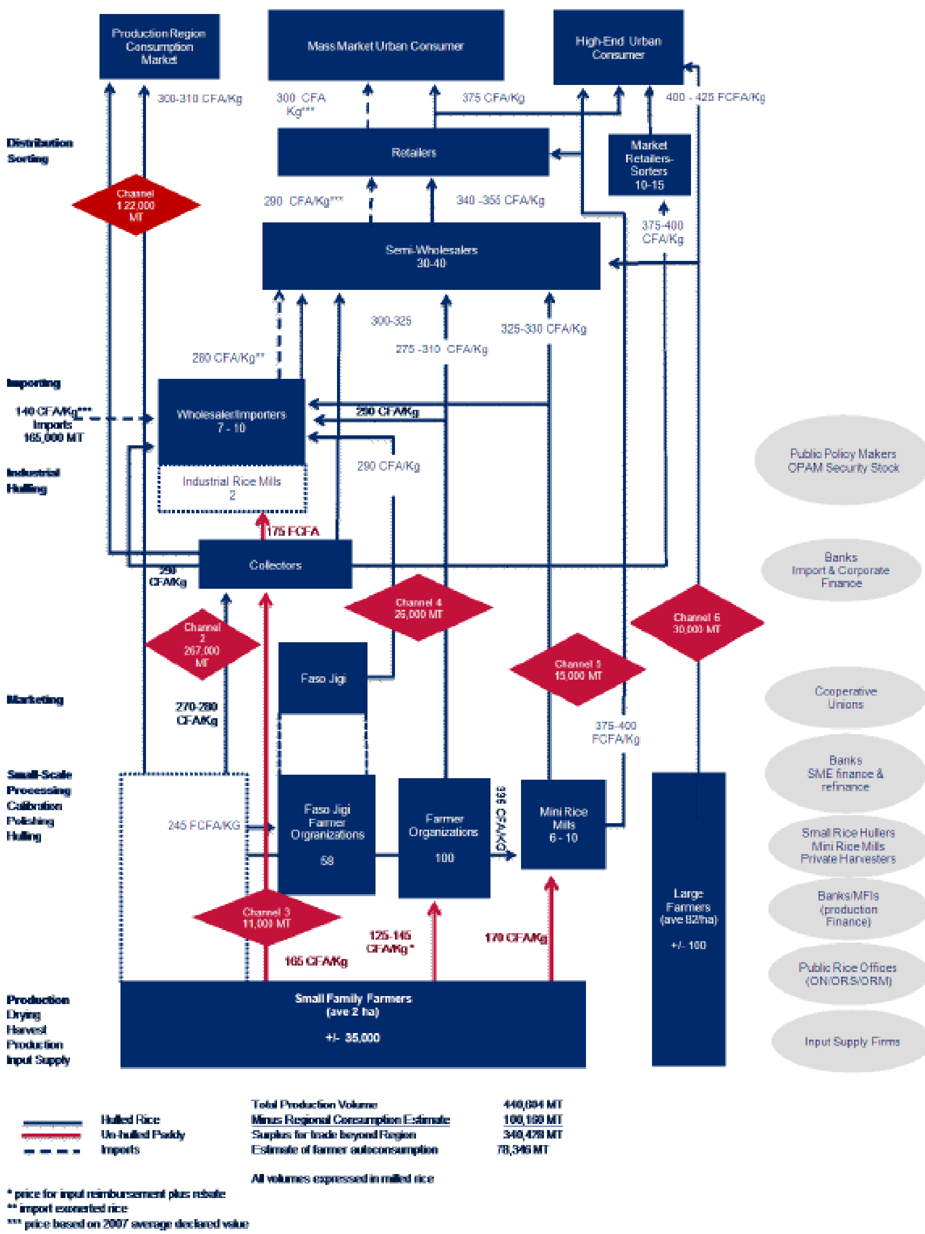
MALI RICE PRODUCTION AND TRADE FLOW MAP



Source: Famine Early Warning System

MALI RICE VAL

Figure 2: Rice Value Chain Map—Segou Region , 2008/09 Campaign



Source: Extracted from “Global Food Security Response Attachment III Mali Rice Study Aug 2009” micro REPORT #158 prepared for USAID by ACDI/VOCA

NIGERIA

Country Profile Related to Rice: Nigeria	
Total area (2005): 923,770km²	Responsible Ministry:Federal Ministry of Agriculture and Water Resources
Population (2005): 147,982,941	
Population density: 160person/km²	Research institute:National Cereals Research Institute (NCRI)
Population growth rate: 2.5%	
('97-'07 average.):	Agr. Policy Paper:National Food Security Programme
Poverty rate (1990-2005 latest): 70.8% **GDP(200?):** 165,690,064,896US\$ **GDP per capita (2005):** 752US\$	Domestic supply of staple food (2003):43,619.9(1,000 ton) Domestic supply of rice (2003):3,853.9(1,000 ton)
GDP composition by sector (2008):	Percentage of rice in a staple food (2003):8.8%
Agriculture: 18.0% **Industry:** 50.9% **Services:** 31.1% **Agric. population rate (2006):** 28.1%	Self-sufficiency ratio of staple food (2003):152.2% Self sufficiency ratio of rice (2003)58.4% Import value of staple food (2006)1,610,064,000US\$ Import value of rice (2006)295,585,000US\$

Production, Import and Food Aid of Rice Production, Import and Food aid: 1,000 ton

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area harvested (1,000ha)	2,044.0	2,191.0	2,199.0	2,117.0	2,185.0	2,210.0	2,348.0	2,494.0	2,725.0	3,000.0
Yield (ton/ha)	1.6	1.5	1.5	1.3	1.3	1.4	1.4	1.4	1.5	1.6
Production as paddy	3,275.0	3,277.0	3,298.0	2,752.0	2,928.0	3,116.0	3,334.0	3,567.0	4,042.0	4,677.4
Import (milled rice equiv.)	594.1	812.5	785.8	1,770.1	1,236.4	1,600.7	1,397.1	1,174.1	974.7	n.a.
Food aid in rice (milled)	-	-	-	-	12.5	-	10.5	-	-	n.a.

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Domestic supply quantity	1,969.9	2,248.5	2,428.9	2,880.9	2,780.3	3,000.7	2,993.3	3,597.6	3,321.7	3,853.9
Food	1,749.2	1,997.6	2,155.6	2,591.3	2,487.5	2,703.2	2,695.7	3,283.8	2,978.2	3,485.7
Consumption per capita	16.5	18.3	19.2	22.5	21.0	22.2	21.6	25.6	22.7	25.9

Note: 1,000 ton for Domestic supply quantity and Food; kg/year for consumption per capita

National Rice Development Strategy:

1. Projection of Rice ProductionArea: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

Year	Upland			Rainfed lowland			Irrigated lowland			Total		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2008	937	0.71	661	1,655	1.39	2,294	531	1.98	1,051	3,123	1.28	4,005
2013	985	1.01	991	2,151	1.60	3,441	685	2.30	1,575	3,821	1.57	6,008
2018	944	1.40	1,322	2,294	2.00	4,589	840	2.50	2,100	4,079	1.96	8,011

Source: CARD

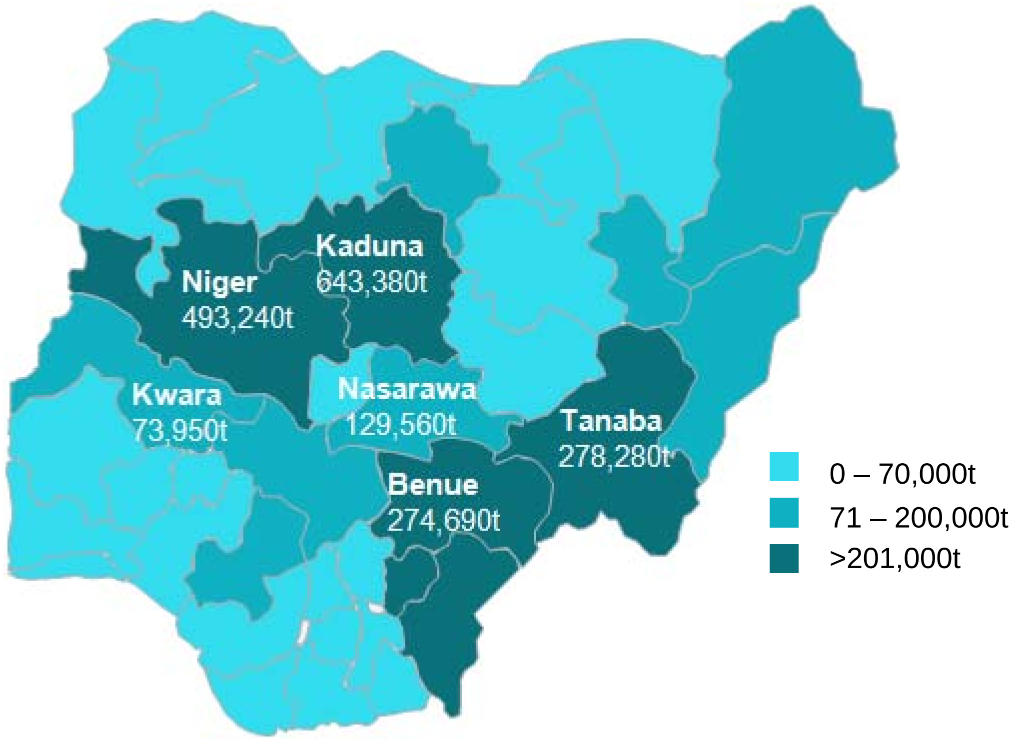
NIGERIA

2. Need in human resources for research and outreach											
Year	Researchers MSc/PhD			Research Technicians			Extension Officers				
	Rice Specialists		Total	Rice Specialists		Total	Rice Specialists		Facilitators (short)		Total
	full time	part time		full time	part time		full time short term	part time long term	local	overseas	
2008	20	10	30	15	-	15	17,760	740	116	40	18,656
2013	25	15	40	20	10	30	17,760	888	116	40	18,656
2018	30	20	50	25	15	40	8,880	518	58	20	9,476

3. Strategy	
Sub-sector	**Strategy**
Seeds	Development of new varieties, use of hybrid rice, seed production & distribution by public institutional support and through community based seed systems (CBSS) , private investors involvement
Fertilizer	Government's subsidy for chemical fertilizers, private sector-driven marketing & distribution and infrastructure development, increase of local production, quality control framework
Irrigation	Rehabilitation/modernaization of existing irrigation schemes, development of small to medium scale diversion schemes, training for sustainable water management, ultimate ownership of beneficiary communities or cooperative societies (Water Users Association)
Agr. Equipment	Low to medium scale farm machinery through all works from land preparation, crop management and harvest, incentives for demand and supply for mechanization
Research	Development of appropriate post-harvest technology, genetic resource conservation, development new varieties and participatry varietal selection (PVS), integrated rice management technology, low-cost water control measures
Structuring	Strengthening of linkages between research, extension, farmers and the seed system; capacity building of extension agents, farmers associations, processors,etc., reduction of extension agent/farmer from 1/10000 to 1/1000; adoption of farmers' participatry technology dissemination methods
Credit	Sourcing dedicated credit fund to the smallholder farmers by the Government, use of taxes levied on imported rice be channeled to support rice production and processing
Post-harvest	Deployment of a large number of harvesting and post-harvest processing facilities (mills) with trained farmers and processors; Enhancning market infrastructure, packaging size, grading and strict quality control, martket information, publicity of locally produced and processed rice
Environment	Proper environmental impact assessment (EIA) before embarking on any medium to large scale irrigation projects
Other	Value addition to local rice, promotion of commercial rice production through Public-Provate Partnerships (PPP), better policy environment for rice sector development

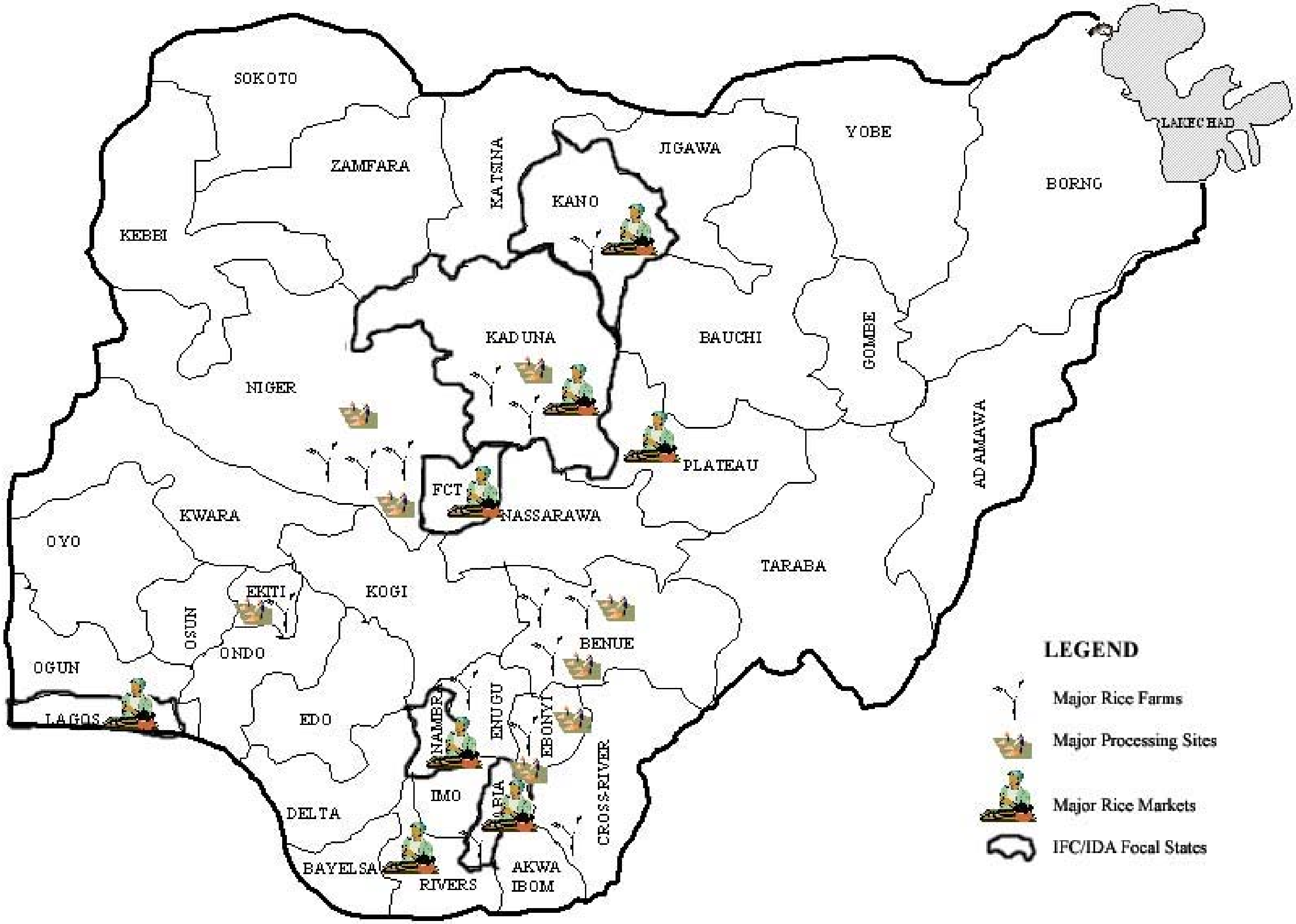
Source: CARD

NIGERIA PADDY RICE PRODUCTION BY STATE (2006)



Source: Extracted from "Investment Case: Rice Processing for Import Substitution Dec 2010" prepared for Alliance for Green Revolution in Africa (AGRA) by Monitor Company Group L.P.

NIGERIA RICE MAP



Source: Daramola, B (2005)

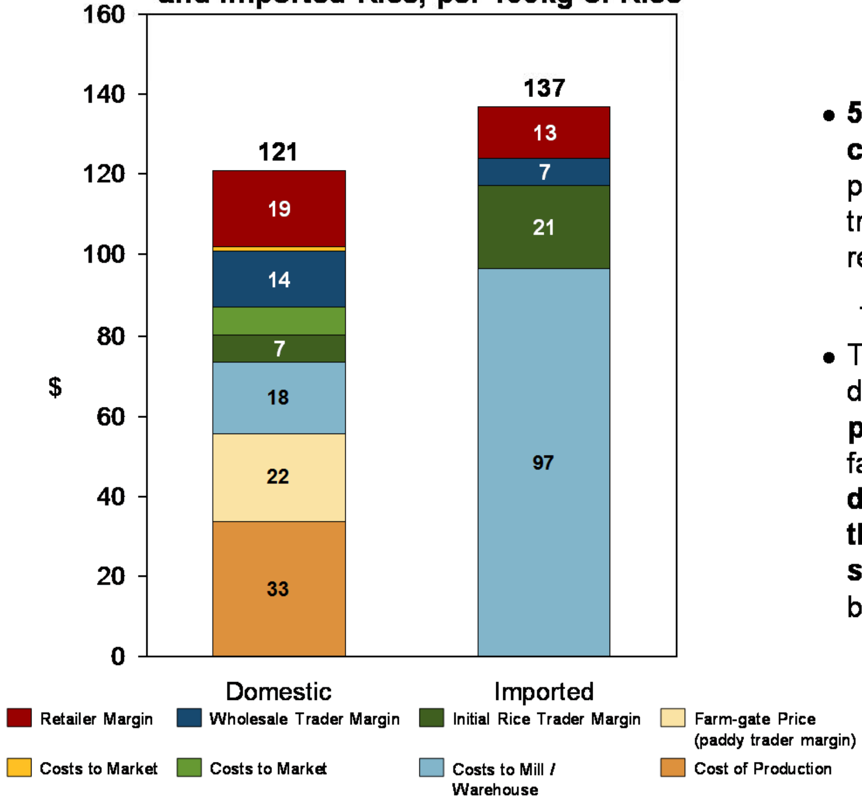
NIGERIA RICE VALUE CHAIN

Confidential

4 In the domestic rice industry, estimated at $2bn, gross profit trader margins account for over half of the industry's value

A major cause of the inefficiency and lack of competitiveness of the domestic rice value chain is the number of intermediaries in the production, processing, handling and marketing of rice

Margins ($) Comparing Domestic and Imported Rice, per 100kg of Rice



- **54% of end value for domestic rice is comprised of trader margins** (initial paddy trader / grower, paddy to rice trader, rice wholesaler, and rice retailer),
  - Compared to **29% for imported rice**
- The **point of greatest margin** in the domestic rice value chain is the **initial paddy trader**, who purchases it at the farm gate at harvest; a **critical determinant is whether farmers have the operating capital to afford storage** and can thus capture greater benefits

Source: GFSR Nigeria Rice Study

X03-NAI-Rice VC Analysis v06 re-112010-RE 25

Source: Extracted from "Investment Case: Rice Processing for Import Substitution Dec 2010" prepared for Alliance for Green Revolution in Africa (AGRA) by Monitor Company Group L.P.

ETHIOPIA

Country Profile Related to Rice: Ethiopia

Total area (2010): 1,104,300 km²	**Responsible Ministry:** Ministry of Agriculture and Rural Development
Population: 82.9 million (2010) **Population density:** 82 persons/km²	**Research Institute:** Ethiopian Institute of Agricultural Research & National Agricultural Research Organization
Population growth rate: 2.1 (2010) **('97-07 average):**	**Agricultural Policy Paper:** National Rice Research and Development Strategy of Ethiopia
Poverty rate: 38.9% (2005) **GDP:** US$29.7 billion (2010)	**Domestic supply of staple food:**
GDP per capita: US$358 (2010)	**Domestic supply of rice (2005):** 44 (1,000 ton)
GDP composition by sector	**Percentage of rice in a stable food:**
Agriculture: 41%	**Self-sufficiency ration of staple food:**
Industry: 13%	**Self-sufficieny ratio of rice:**
Services: 46%	**Import value of staple food:**
Agric. Population rate(2010): 85%	**Import value of rice (2006):** US$13,640,000

Production, Import and Food Aid of Rice Production, Import and Food aid: 1,000 ton

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Area harvested (1,000ha)	7.00	7.50	8.20	8.36	7.70	7.20	6.50	6.24	18.53	49.96	90.45	155.89
Yield (ton/ha)	1.86	1.87	1.83	1.84	1.82	1.81	1.85	1.80	2.31	2.25	3.16	3.20
Production as paddy	13,000	14,000	15,000	15,410	14,000	13,000	12,000	11,240	42,825	112,302	285,577	498,332
Import (milled rice equiv.)	5.49	9.10	2.70	4.71	10.78	20.44	17.45	17.41	30.00	44.41	N/A	N/A
Food aid in rice (milled)	572	1,140	630	891	579	560	2,861	5,930	490	N/A	N/A	N/A

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Domestic supply quantity	17	9	10	12	14	18	13	15	20	29	44	44
Food	17	9	9	12	14	18	13	15	20	29	44	44
Consumption per capita	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.4	0.4	0.4

Note: 1,000 ton for Domestic suppy quantity and Food; kg/year for consumption per capita

Source: CARD

ETHIOPIA

National Rice Development Strategy:

1. Projection of Rice Production Area: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

Year	Upland (rainfed)			Rainfed lowland			Irrigated			Total		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2009	43855	2.70001	118,409	85,251	3.2	272,802	26,780	4.0	107,120	155,886	9.9	498,331
2014	104030	3.19999	332,895	281,846	4.0	1,127,385	77,728	5.5	427,504	463,604	12.7	1,887,784
2019	163011	3.5	570,538	442,833	5.0	2,214,165	167,660	7.0	1,173,620	773,504	15.5	3,958,323

2. Need in human resources for research and outreach

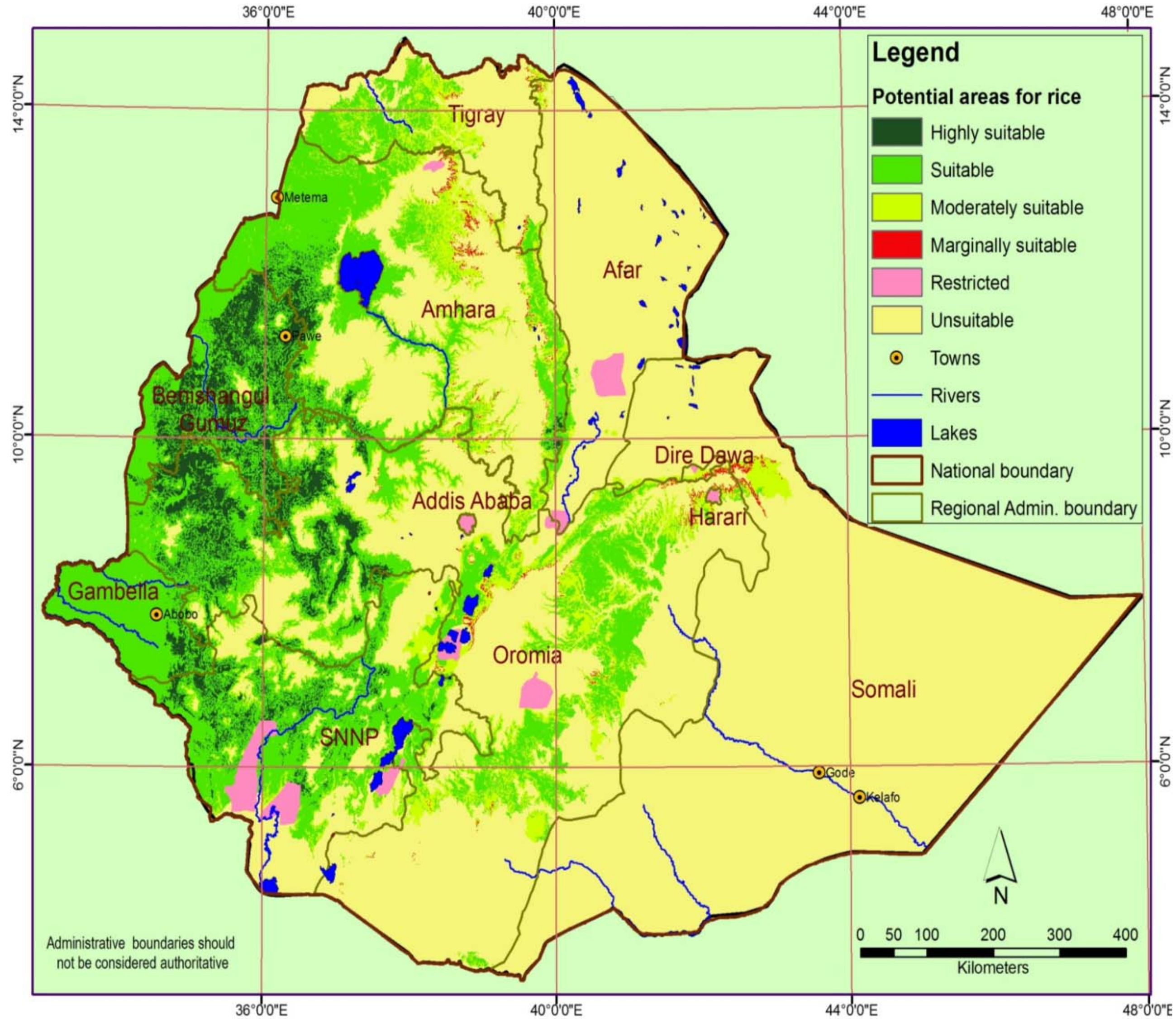
Year	Researchers with MSc/PhD			Research Technicians			Rice Seed Technologists			Extension Officers		
	Rice Specialists			Rice Specialists			Rice Specialists			Rice Specialists		
	full time	part time	Total	full time	part time	Total	full time	part time	Total	full time	part time	Total
2009	6	17	23	4	8	12	-	7	7	-	160	160
2014	18	51	69	12	24	36	-	15	15	-	488	488
2019	48	136	184	36	65	101	-	25	25	-	1326	1326

3. Strategy for Rice Production Increase

Sub-sector	Strategy
Seeds	Improved seeds would increase agricultural productivity. In line with this the strategy is to produce basic and certified rice seeds and strengthen the capacityof public and private seed companies to engage in rice seed production as well as support on farm seed production and create awareness on available seeds of rice varieties to farmers
Fertilizer	It is expected that the importation and distribution will continue smoothly making sure that fertilizer will be supplied to rice producers through donor support to the government of Ethiopia
Irrigation	Existing irrigation schemes will be rehabilitated while new irrigation schemes will be developed. Communities in lowlands will be encouraged to paticipate in development of simple and low cost rainwater control structures. Current rice growing practices as well as the presence of gravity-fed water, participation by local populations and the level of development of the private sector will inform the development of new irrigation schemes
Agr. Equipment	The NRRDSE will promote both large scale and micro enterprisis for effective management of agricultural equipment maintenance through capacity development of farmers in technical issues, business management and entrepreneruship.
Research	Both the federal EIAR and Regional Research Institutes will continue to be the major facilitators and catalysts for breeder and pre-basic seed production. The certification of seed will be overseen by the Animal and Plant Health quarantine and Inspection Directorate of the MoARD and Quality Control and Inspection Laboratories
Structuring	NRRDSE will be implemented by the MoARD in collaboration with the different directorates within the ministry and the Ethiopian Institute of EIAR , and by Regional Bureaus of Agriculture and Rural Development (BoARD) and regional agricultural/ pastoral/agro-pastoral research institutes
Credit	Mechanisms will be designed to link primary formal and informal private and public financial institutions in improving access to finance to rice sector actors
Post-harvest	More efficient and affordable small scale technologies for handling, drying, storing, and milling rice at the village level is essential to reduce post production losses. This will be backed by the establishment of wider links in the rice trade with the Ethiopipian Comodity Exchange to compete in regional and world market
Environment	Partnership with national and international research insitutes will ensure regular supply of new technologies for a sustainable and competitive sector
Other	N/A

Source: CARD

ETHIOPIA RICE SUITABILITY MAP—POTENTIAL GROWING REGIONS (NOT ACTUAL)



Source: MOA Ethiopia

TANZANIA

Country Profile Related to Rice: Tanzania	
Total area (2005): 947,300km^2 **Population (2005):** 40,432,163	**Responsible Ministry:** Ministry of Agriculture, Food Security and Cooperatives (MAFC)
Population density: 43person/km^2 **Population growth rate:** 2.5%	**Research institute:** Kilombero Agricultural Training and Research Institute (KATRIN)
('97-'07 average.):	**Agr. Policy Paper:** Agricultural Sector Development Strategy (ASDS)
Poverty rate (1990-2005 latest): 57.8% **GDP(2007):** 16,180,884,480US$ **GDP per capita (2005):** 316US$	**Domestic supply of staple food (2003):** 7,548.5(1,000 ton) **Domestic supply of rice (2003):** 631.1(1,000 ton)
GDP composition by sector (2008):	**Percentage of rice in a staple food (2003):** 8.4%
Agriculture: 27.0% **Industry:** 22.7% **Services:** 50.3% **Agric. population rate (2006):** 75.2%	**Self-sufficiency ratio of staple food (2003):** 104.8% **Self sufficiency ratio of rice (2003):** 68.7% **Import value of staple food (2006):** 326,564,000US$ **Import value of rice (2006):** 22,498,000US$

Production, Import and Food Aid of RiceProduction, Import and Food aid: 1,000 ton

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area harvested (1,000ha)	654.5	473.9	516.9	401.1	325.9	545.5	583.3	600.0	650.0	665.0
Yield (ton/ha)	1.3	1.6	1.5	2.2	3.0	2.0	1.5	1.6	1.9	1.9
Production as paddy	849.1	778.4	782.3	868.0	985.0	1,097.0	902.0	957.0	1,206.0	1,240.0
Import (milled rice equiv.)	182.6	85.6	191.6	139.0	76.5	189.2	194.3	75.0	94.2	n.a.
Food aid in rice (milled)	14.9	15.2	16.9	21.9	-	20.1	8.8	11.5	-	n.a.

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Domestic supply quantity	471.3	474.4	482.6	542.7	595.5	625.2	678.2	608.6	586.2	631.1
Food	425.8	427.8	431.5	494.0	533.3	569.2	620.4	560.1	535.3	582.6
Consumption per capita	14.7	14.3	14.0	15.7	16.5	17.2	18.3	16.1	15.0	15.9

Note: 1,000 ton for Domestic supply quantity and Food; kg/year for consumption per capita

National Rice Development Strategy:

1. Projection of Rice ProductionArea: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

	Upland			Rainfed lowland			Irrigated lowland			Total		
Year	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2008	136	0.5	68	490	1.0	490	54	2.5	135	680	1.0	693
2013	140	1.0	140	427	1.5	641	134	3.0	402	701	1.7	1,183
2018	150	1.6	240	372	2.0	744	214	3.8	813	736	2.4	1,797

Source: CARD

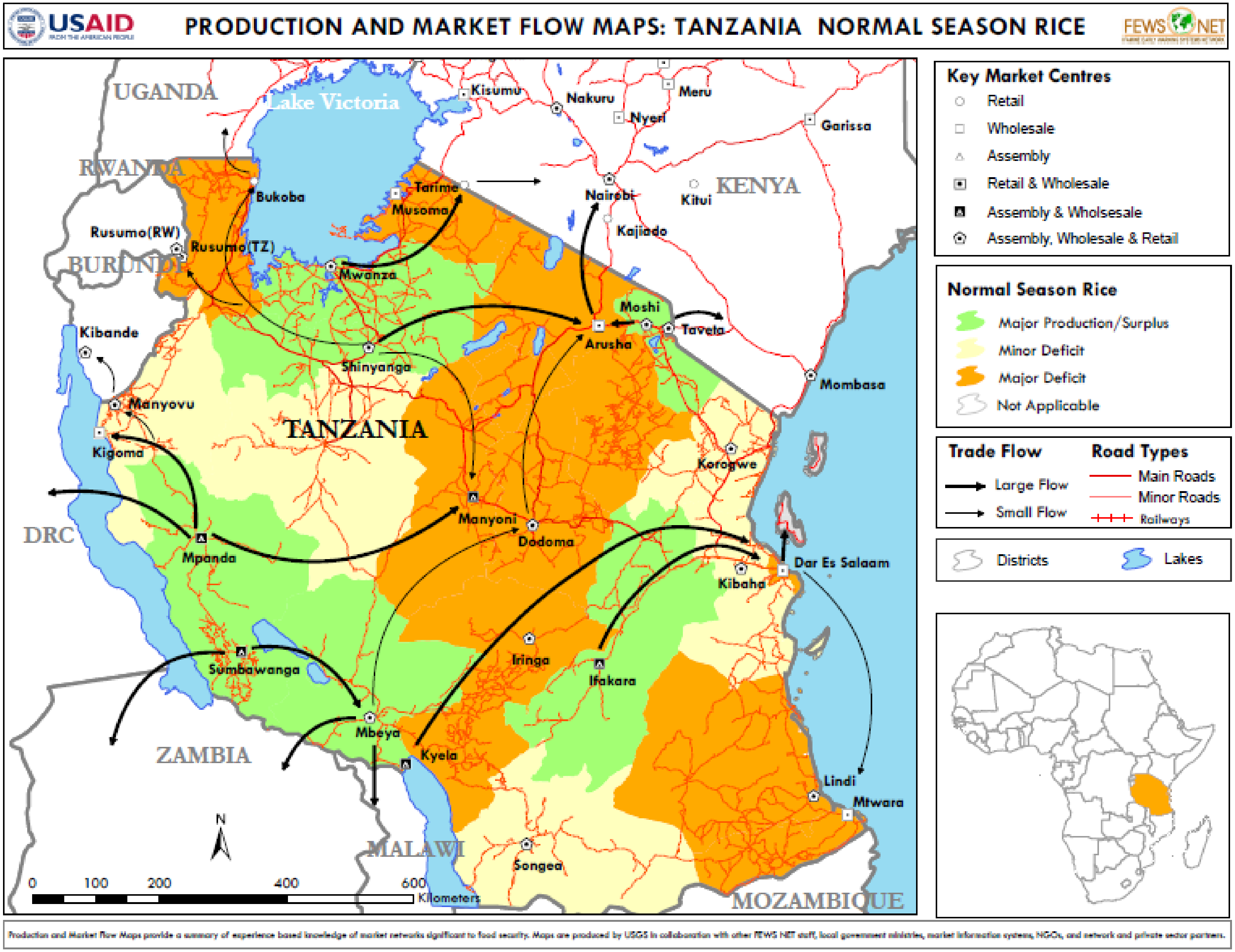
TANZANIA

2. Need in human resources for research and outreach									
	Researchers with MSc/PhD			Research Technicians			Extension Officers		
	Rice Specialists			Rice Specialists			Rice Specialists		
Year	full time	part time	Total	full time	part time	Total	full time	part time	Total
2008	20	16	36	8	2	10	500	3,371	3,871
2013	25	15	40	10	5	15	1,000	10,703	11,703
2018	30	11	41	15	5	20	2,000	13,082	15,082

3. Strategy	
Sub-sector	**Strategy**
Seeds	(i) production of basic and certified rice seeds; (ii) strengthening rice seeds distribution network in the country; (iii) supporting on-farm seed production; (iv) creating awareness on available seeds of rice varieties to farmers; and (v) strengthening the capacity of public and private seed companies.
Fertilizer	(i) strengthening the capacity of agro-dealers to access input credits and agribusiness skills; (ii) ensuring proper use of inputs for increased rice production and productivity; and (iii) producing and distributing of agricultural inputs vouchers
Irrigation	(i) rehabilitation of traditional irrigation schemes; (ii) construction of new irrigation schemes; and (iii) construction of rain-water harvesting and storage structures.
Agr. Equipment	- Promoting the use of medium size tractors, power tillers, transplanters, reapers, threshers. - (i) promoting agro-processing of paddy and value addition technologies; (ii) strengthening capacity of post-harvest and rural based agro industries; (ii) enhancing access to and use of improved post harvest, rural travel and transport, processing, storage and marketing technologies; and (v) facilitating private sector investment in medium scale processing of rice products.
Marketing	(i) warehouse receipt systems that ensures producers get better price of their produce, earn more and have reliable sources of food and income; (ii) establish strong, self supporting producer groups in which members support each other to produce, process, package and market their rice; (iii) build producer's knowledge, skills, and confidence to improve their bargaining power; and (iv) establish wider links in the rice trade so as to be able to compete in regional and world market.
Research	(a) Genetic resources conservation and use, (b) Soil health and soil fertility management, (c) Crop management and protection options, (d) Advisory services-extension, NGOs and agri-business
Credit	(i) Encouragement fo farmers to form groups and associations to strengthen their bargaining power and accessibility to credits. (ii) Support of establishing contract farming scheme as one way of alleviating the lack of formal farm credit among the smallholder farmers as well as providing access to extension services, farm inputs and product markets. (iii) scaling up ag

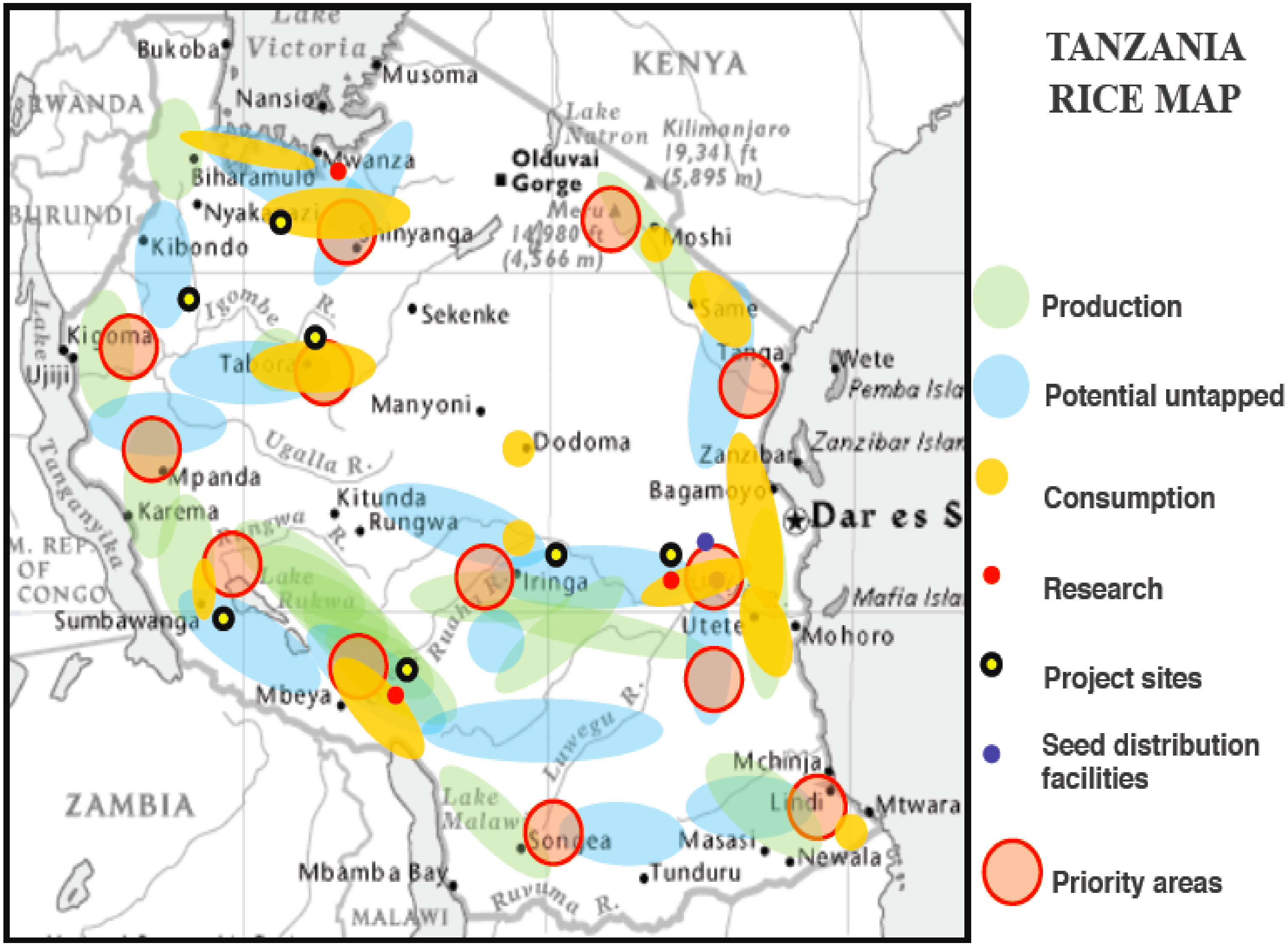
Source: CARD

TANZANIA RICE PRODUCTION AND TRADE FLOW MAP

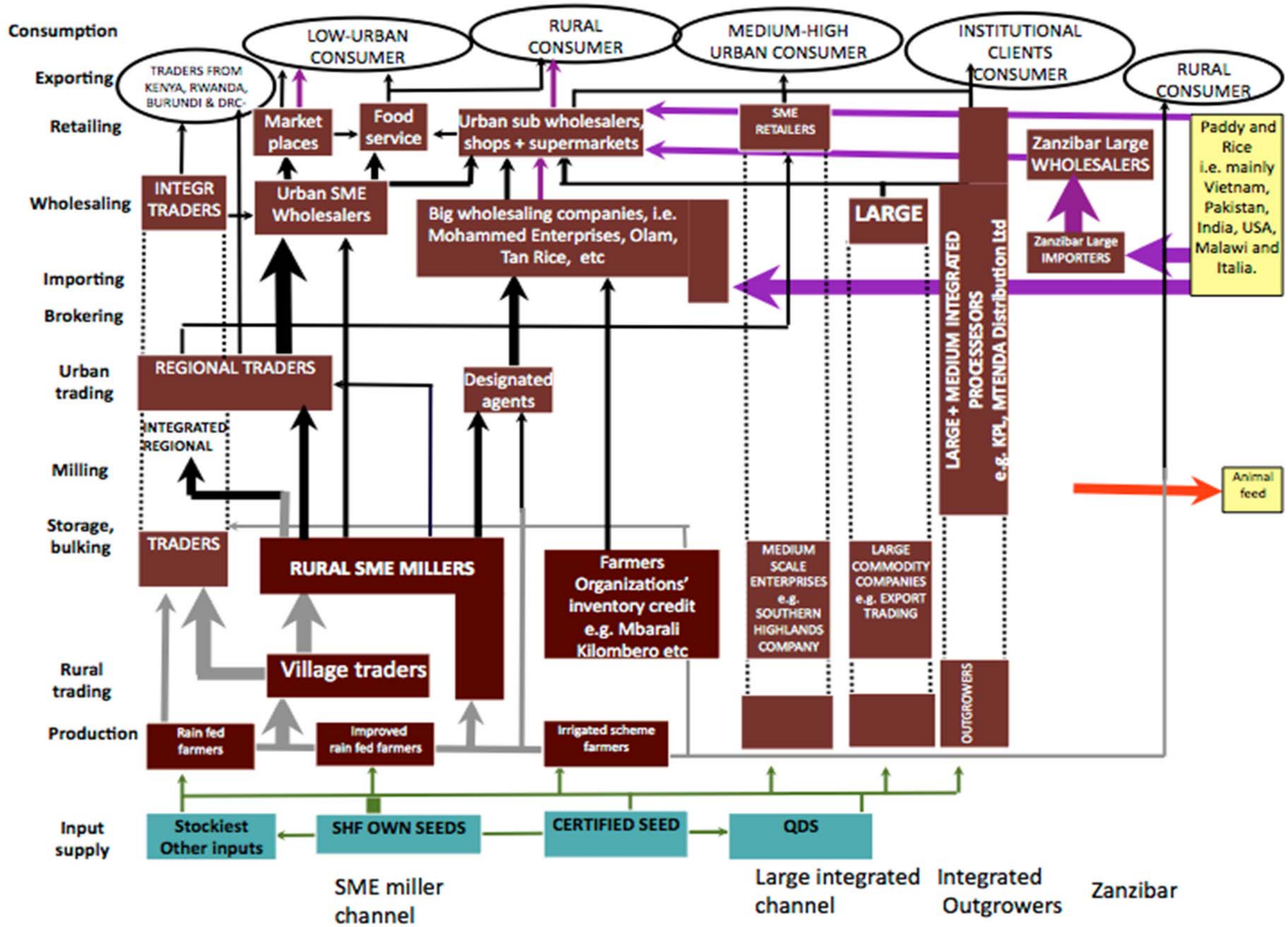


Source: Famine Early Warning System

TANZANIA RICE MAP



TANZANIA RICE VALUE CHAIN



Source: Extracted from "Staples Value Chain *Nafaka* activity Value Chain Assessment July 29 2011" prepared for USAID by ACDI/VOCA

UGANDA

Country Profile Related to Rice: Uganda	
Total area (2005): 241,040km² **Population (2005):** 30,930,082	**Responsible Ministry:** Ministry of Agriculture, Animal Industry and Fisheries
Population density: 128person/km² **Population growth rate:** 3.2%	**Research institute:** National Agricultural Research Organization (NARO)
('97-'07 average.):	**Agr. Policy Paper:** Uganda National Rice Development Strategy (UNRDS) 1st DRAFT
Poverty rate (1990-2005 latest):.. **GDP (200?):** 11,214,478,336US$ **GDP per capita (2005):** 303US$	**Domestic supply of staple food (2003):** 7,424.1(1,000 ton) **Domestic supply of rice (2003):** 120.2(1,000 ton)
GDP composition by sector (2008):	**Share of rice in total staple food supply (2003):** 1.6%
Agriculture: 29.0% **Industry:** 24.8% **Services:** 46.2% **Agric. population rate (2006):** 75.8%	**Self-sufficiency ratio of staple food (2003):** 169.3% **Self sufficiency ratio of rice (2003):** 60.5% **Import value of staple food (2006):** 296,425,000US$ **Import value of rice (2006):** 14,800,000US$

Production, Import and Food Aid of Rice Production **Import and Food aid: 1,000 ton**

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Area harvested (1,000ha)	64.0	68.0	72.0	76.0	80.0	86.0	93.0	102.0	113.0	119.0
Yield (ton/ha)	1.4	1.4	1.5	1.5	1.5	1.5	1.3	1.5	1.4	1.4
Production as paddy	90.0	95.0	109.0	114.0	120.0	132.0	121.0	153.0	154.0	162.0
Import (milled rice equiv.)	53.7	39.7	51.3	22.2	43.0	48.9	62.0	66.5	50.9	n.a.
Food aid in rice (milled)	2.7	1.0	1.7	0.6	0.2	3.3	1.6	4.2	4.2	n.a.

Supply of Rice and Consumption

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Domestic supply quantity	59.5	59.8	67.3	84.2	92.3	123.5	122.9	97.7	122.3	120.2
Food	53.2	53.3	60.5	77.3	84.6	115.4	114.1	88.5	112.6	110.3
Consumption per capita	2.6	2.5	2.8	3.4	3.6	4.8	4.6	3.5	4.3	4.1

Note: 1,000 ton for Domestic supply quantity and Food; kg/year for consumption per capita

National Rice Development Strategy:

1. Projection of Rice ProductionArea: 1,000 ha; Yield: ton/ha; Prod. (production): 1,000 ton

Year	Upland			Rainfed lowland			Irrigated lowland			Total		
	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.	Area	Yield	Prod.
2008	40	1.5-2	26	110	1.5-2	72	65	1.8-2.3	42	215	1.5-2	140
2013	70	1.5-2	46	175	1.5-2	114	115	1.8-2.3	72	360	1.5-2	231

Source: CARD

2. Need in human resources for research and outreach

Year	Researchers with MSc/PhD			Research Technicians			Extension Officers		
	Rice Specialists		Total	Rice Specialists		Total	Rice Specialists		Total
	full time	part time		full time	part time		full time	part time	
2008	3	7	10	3	7	10	-	30	30
2013	6	14	20	6	14	20	-	60	60
2018	9	21	30	9	21	30	-	90	90

3. Strategy

Sub-sector	Strategy
Seeds	Genetic resources developed and maintained, Capacity building in seed production and certification
Fertilizer	Development of policy on fertilizer, Improvement of farmers' access to fertilizers, Ensuring required quality of fertilizer before dissemination, Reducing cost of fertilizer
Irrigation	Refurbishment of current irrigation infrastructure, Set up new irrigation infrastructure, Collaboration between water use and management stakeholders
Agr. Equipment	Acquisition of agricultural machinery and equipment for land preparation, agronomy, irrigation and post harvest, Efficient utilization and maintenance of machinery and equipment
Research	Increase and improve research and technology generation, Increase access and adoption of knowledge and technologies
Structuring	Reinforce policy dialogue, Capacity building for agricultural officers and farmers, Improve facilities in rice development institutions, Strengthen institutional linkages and participation of stakeholders
Credit	Improve Policies on agricultural finance
Postharvest	Capacity building for agricultural officers, technicians, artisans and farmers, Adoption of better postharvest handling and processing techniques and equipment, Ensure adequate supply of rice to rice mills, Branding and identifying market niche that give high prices
Land tennure	Reforms in land tenure and property ownership

Source: CARD

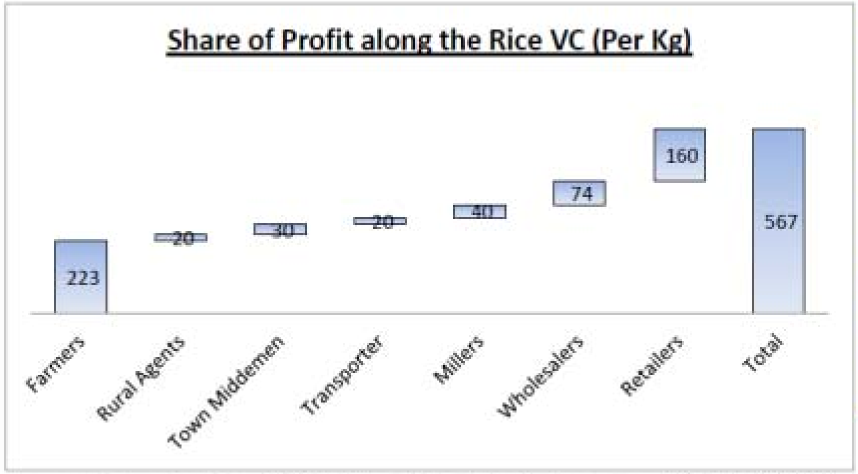
UGANDA RICE VALUE CHAIN

Gross Margin Analysis across the wider value chain.

Indicative Gross Margins for Rice- A case of the Acholi Region

Category of participant	Cost price	Handling and transport charges	Selling price	Margin	
				Shs/kg	% of cost
Farmer (paddy)	377	-	600	223	59
Rural Agents (paddy)	600	30	650	20	3
Town middle men (paddy)	650	50	730	30	5
Transporter (paddy)	-	30	780	20	-
Millers (paddy/milled)	780	60	880	40	5
Wholesalers (milled)	1,408[1]	-	1,482	74	5
Retailers (milled) – Gulu and Kampala	1,482	58	1,700	160	10

Source: MAAIF Value Chain, Lango and Acholi (2009)



Source: Extracted from MAAIF Rice Value Chain, Lango and Acholi (2009)

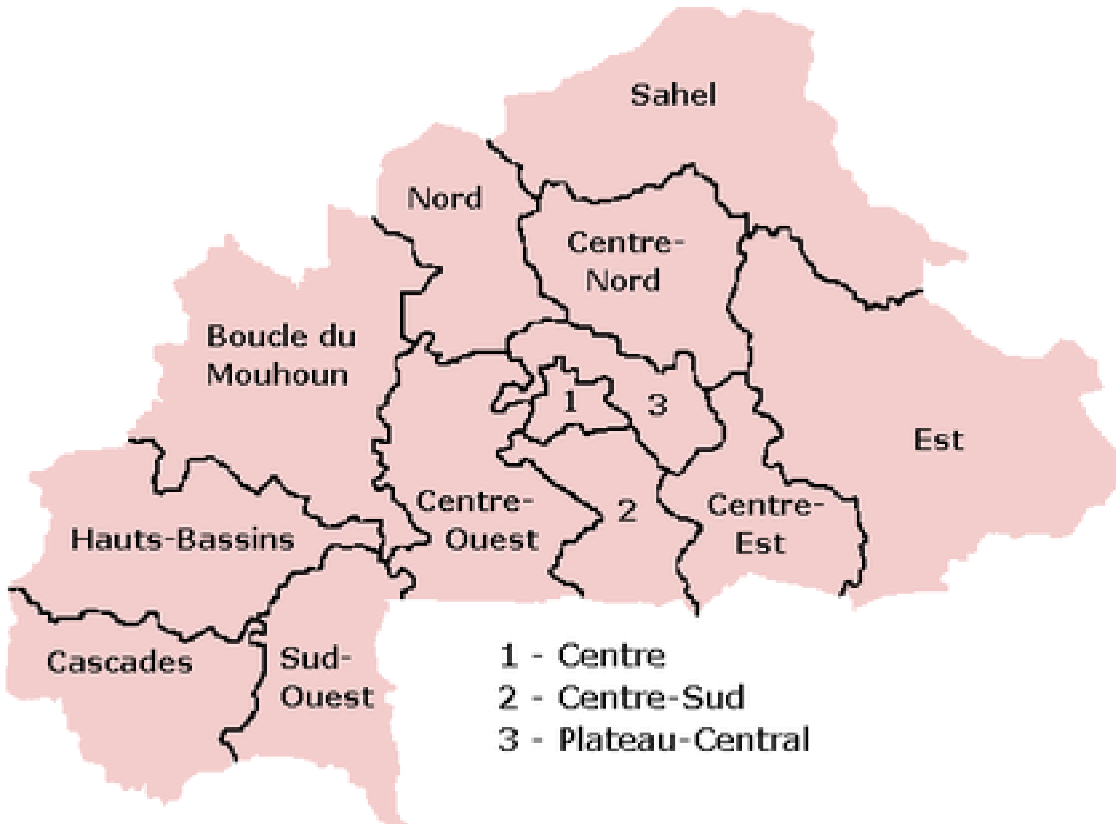
This data, extracted from the MAAIF 2009 Value Chain report, provided the most recent gross margins analysis data.

From the analysis, it would appear that the farmers are the biggest beneficiaries of all the value chain actors. At about shs 223 per kilo, they earn the highest margins followed by retail at shs 160. In spite of this, farmers do complain about poor returns, and this could be attributed to the average smallholder farm size of about 0.75 acres (0.3ha) (MAAIF, 2009) which would deliver a gross income of just over Ushs 350,000 per annum (0.3 x 1,092,000). This translates to about shs 1,000 per day as household income, which is below the poverty line.

Source: Extracted from "Subsector Analysis Report : Rice(Grain & Seed) Jan 2012" prepared for Trias (www.triasngo.be) by SMJR Consult. Extract is based on 2008 data presented in ""Rice Value Chain Study in Acholi and Lango Sub-Regions June 2009" prepared for Ministry of Agriculture, Animal Industry and Fisheries by Plan for Modernisation of Agriculture (PMA) Secretariat

MAPS INDICATING ADMINISTRATIVE REGIONS/DISTRICTS IN FOCUS COUNTRIES

REGIONS BURKINA FASO

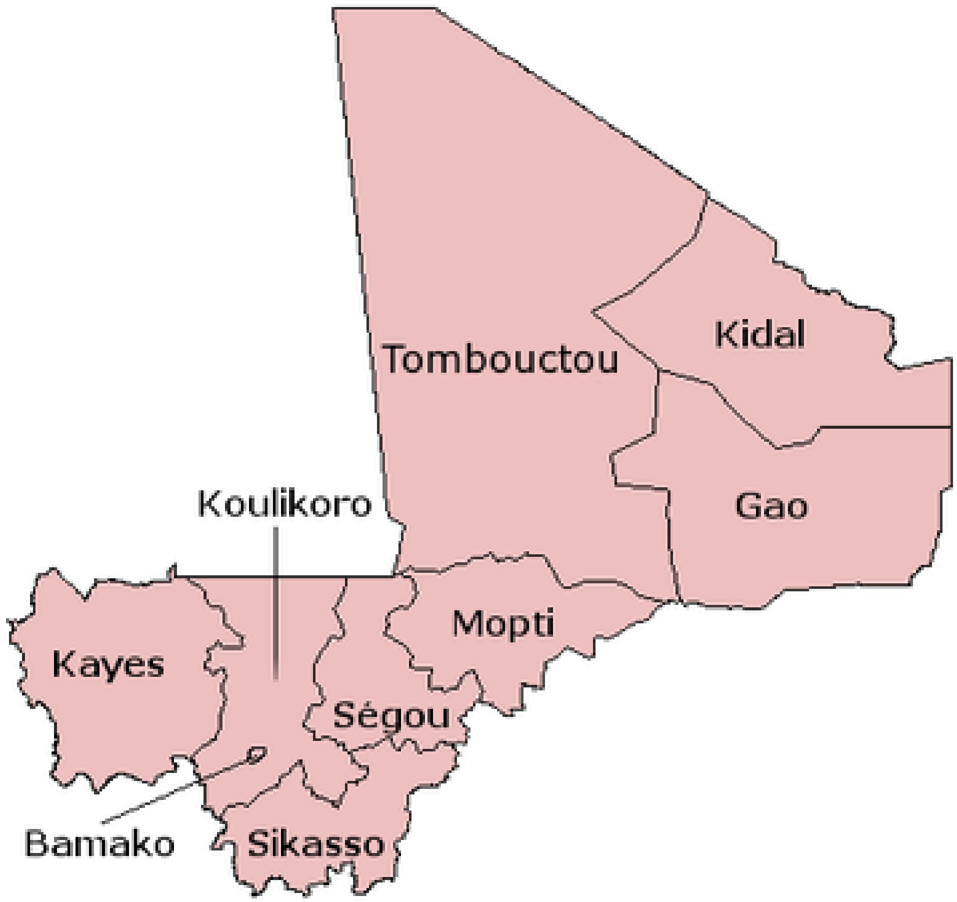


Source: Wikipedia

REGIONS GHANA

Source: Wikipedia

REGIONS MALI



Source: Wikipedia

REGIONS NIGERIA

Source: Wikipedia

REGIONS ETHIOPIA

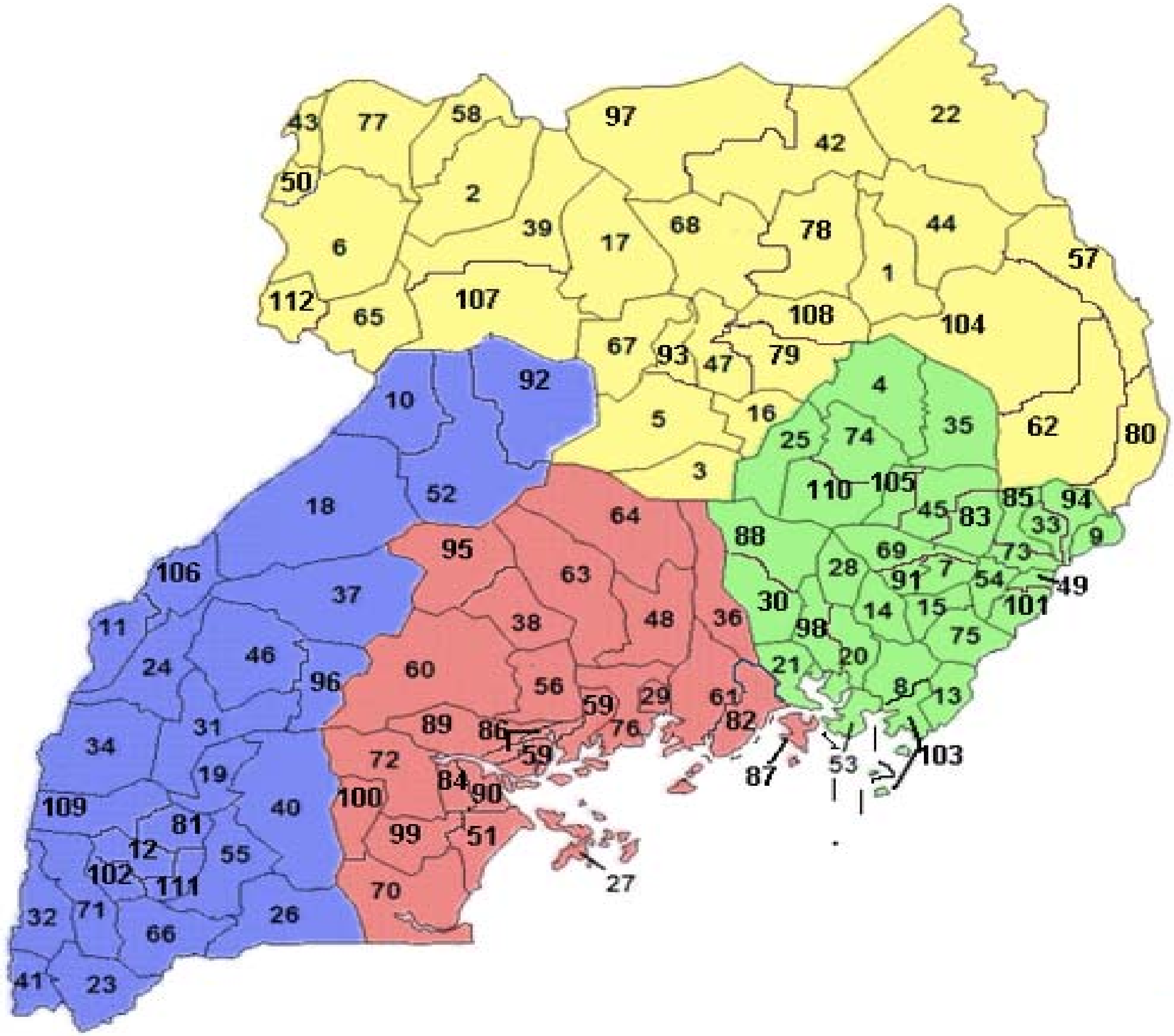
1. *Addis Ababa*
2. Afar
3. Amhara
4. Benishangul-Gumuz
5. *Dire Dawa*
6. Gambela
7. Harari
8. Oromia
9. Somali
10. Southern Nations, Nationalities, and People's Region
11. Tigray

Source: Wikipedia

REGIONS TANZANIA

Source: Wikipedia

REGIONS UGANDA



Source: Wikipedia

RICE POLICY EXTRACTS

REGIONAL RICE POLICY EXCERPTS

POLICY MAKER	Policy Extracts
SECOND AFRICA RICE CONGRESS, 2010	Africa's rice farmers need to be involved in the definition and implementation of policies that modernize rice farming, lessen the burden on women, and turn it into a viable agri-business, attractive to young people.
	National and foreign investments are needed to unlock Africa's tremendous rice potential, while ensuring that this leads to win-win situations for all of Africa's rice farmers and consumers
	Sustainable intensification and diversification of rice-based production systems are necessary to meet the demand of Africa(s population
NRDS Burkina Faso, Ghana, Mali, Nigeria, Tanzania, Uganda	Six of seven BMGF focus countries include policy, strategy for import replacement. Ethiopia places emphasis on export in consideration that rice is not included in basic staple food definitions.

Source: Minutes 2nd Africa Rice Congress, NRDS

NATIONAL RICE STRATEGIES

Country	NRDS Production Objectives	NRDS Processing Objectives	NRDS Import Substitution Objectives
Burkina Faso	- Improve knowledge of potential production areas - Rehabilitate existing irrigation schemes - Promote soil and water conservation - Enhance the use of mechanization in rice production - Encourage the use of certified improved seeds - Disseminate information of new technologies for rice production - Train stakeholders in financial and organizational management	- Rehabilitate or construct communal facilities for post-harvest handling in rice producing areas - Support the private sector to undertake processing, storage, transport and marketing of rice - Support the establishment of a distribution network for locally produced rice - Promote value addition in rice-based products	Increased local production will reduce this figure and result in foreign exchange savings and poverty reduction.
Ethiopia	- Strengthening the institutional framework and policy development - strengthening research, technology dissemination and capacity building - promotion of seed production, multiplication and dissemination of certified seed - improving fertilizer marketing and distribution, and sustainable soil management - promotion of irrigation and investment in water control technologies	- promotion of the R&D of pre- and post harvest technologies - supporting maintenance of agricultural equipment - strengthening agricultural finance and credit	In 2010, it was expected that if the target increase in the level of production continued, the country will export from the large-scale private commercial farms
Ghana	- Public research institutions produce seeds and supervise private sector breeding of certified seeds - Encourage private sector to engage in fertilizer production to complement supply under AfDB fertilizer facility - Establish quality control and testing facilities for fertilizer - Develop new irrigation schemes and rehabilitate existing schemes	- Improvement of existing mills - Provision of storage facilities for paddy/milled rice - Introduction of standard rice mills - Improvement in road infrastructure to rice producing and processing areas	Under FASDEP 2, which is Ghana's sector development policy guideline for 2008 – 2010, the target is a reduction in rice imports by 30% through increasing production levels to 370,000 tons per annum to ensure food security and import substitution

Source: National Rice Development Strategy

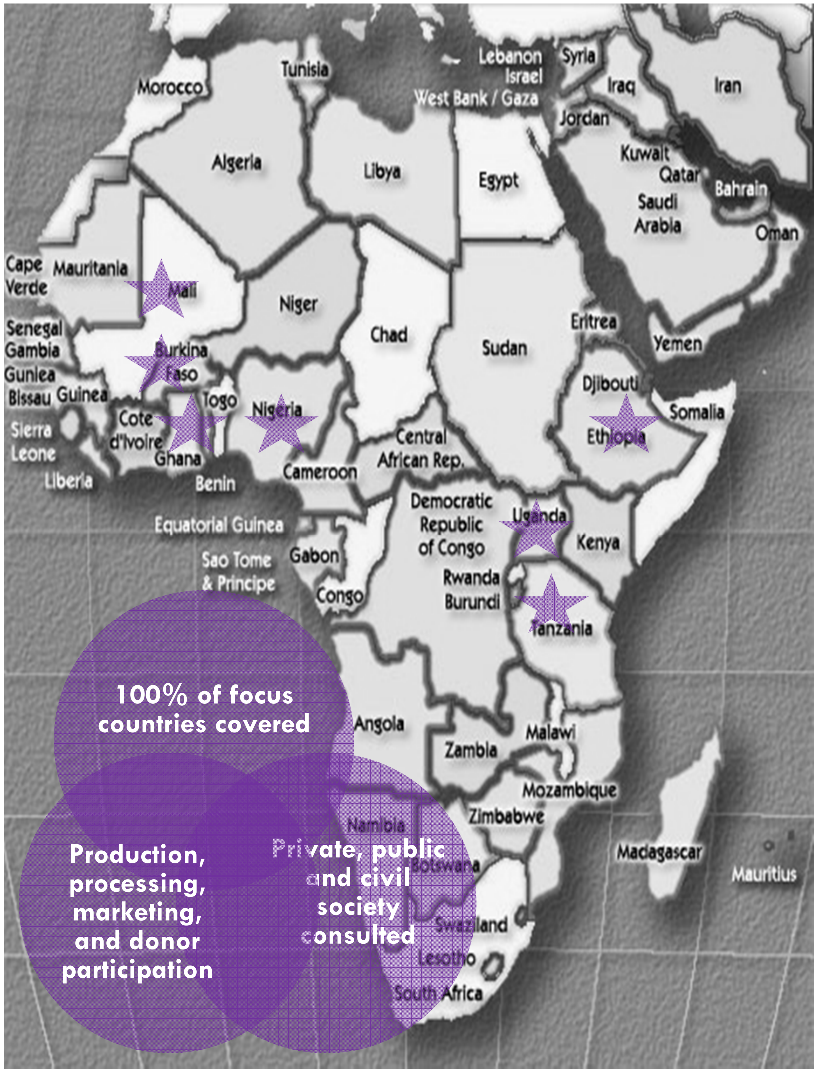
NATIONAL RICE STRATEGIES, continued

Country	Production	Processing	Import Substitution
Mali	- 40% subsidy on fertilizer to farmers in 2008/2009 - 60% subsidy on seed for rain fed rice - Development of new areas with easily accessible water sources - Development of rain fed production with high yielding varieties - Intensification of both natural and controlled swap rice cultivation - Facilitation of credit to producers	- Government pre-financed 1.5 billion FCFA ($3 million) worth of rice processing equipment for producers	Increased local production will result in significant foreign exchange savings especially as local rice is appreciated in the country.
Nigeria	- 50% subsidy on certified seed sold to farmers - 25% subsidy on fertilizer for farmers - Promotion of private investment in all stages of rice value chain - Promotion of NERICA and other improved rice seeds - Formulation of system for regulating the industry - Promotion training and trade in agro-chemicals - Establish new irrigation schemes and rehabilitate existing schemes	- Rice processing intervention fund - Rice development levy on imported rice to develop domestic production and processing - Zero tariff on imported processing equipment - Provision of processing equipment to farmer groups and cooperatives	- Nigeria is second only to The Philippines in rice imports. Therefore increased local production will lead to significant foreign exchange savings through import substitution - Access external funds like the World Bank's Import Substitution Facility
Tanzania	- Improved accessibility of improved varieties and seed systems - Fertilizer marketing and distribution - Irrigation and investment in water control technologies - access to and maintenance of agricultural machinery and equipment - access to credit/ agricultural finance	- promote agro-processing of paddy and value addition technologies - strengthen capacity of post-harvest and rural based agro-industries - facilitate private sector investment in medium scale processing of rice products	- Low production costs can help save $26 million per annum in foreign exchange through import substitution. Surplus production can be sold to regional neighbours taking advantage of the 75% CET on rice imports for the East Africa region.
Uganda	- Improve production and dissemination of certified rice seed - Increase sustainable utilisation of water and fertilizers - Improve agricultural finance to rice production - Enhance mechanization, research, technology dissemination and capacity building in rice sub-sector	- AEATREC study on processig underway - On-going training of AEATREC technical staff - Continuous training of rice millers in modern and extension staff in post harvest handling and processing of rice - Adoption and adaption of motorized and pedal threshers for local conditions	Rice production would provide an import substitution of about $150 million worth of rice every year to Uganda if it can double its production.

Source: National Rice Development Strategy

EXCERPT OF INTERVIEW SUMMARY DELIVERED PREVIOUSLY ON MARCH 13, 2012

List of interviews



Interviewee	Location of operations	Production--commercial	Production--smallholder outreach	Miller	Distributor	Transport (x-border)	Retail Brand	NGO/Development	Government
Dominion Farms	Kenya and Nigeria	X	X	X	X		X	**EMAIL SURVEYS** – FAO, USAID, JICA, Ghana Rice Interprofessional Body	
Tilda	Uganda	X	X	X	X		X		
Agrica	Tanzania	X	X	X	X		X		
Stallion	Ghana				X		X		
ETG	Regional				X		X		
GDCM	Mali				X	X	X		
Nint	Ethiopia	X	X						
Finatrade	Ghana, sub-region				X		X		
Olam	Regional	X	X	X	X		X		
Novel	GH, sub-region				X				
Ets. Boureima	Burkina				X	X			

Summary of interview findings—value chain

- **Value Chain - General**
  - * Industry is not vertically integrated. Three different VC: 1) Land prep through distribution (production/processing), 2) Trading and distribution through wholesalers, 3) Marketing and retailing, including new supermarkets. ***Suggested that Gates Foundation (BMGF) to help accelerate linkage of the full chain.***
  - Within production, fundamental differences between rain fed and irrigated larger scale farms (commercial), with rain fed better suited to independent smallholder farming, but one cycle. Infrastructure demands lower, but considering intervention histories, the question remains whether impact can be significant and sustainable with rain fed smallholders [Agrica]. ***Suggested that BMGF reflect on supporting scale up models with positive "rural economy" impact.***
  - Supporting industry is a process [Finatrade]. ***Suggested that a rational approach based on following principles may be promising: kick start and build critical mass with larger commercial farms, incorporate at start or during ongoing stages outgrower programs based on blocks; then ramp up support to independent small holders to raise production based on inputs from a strong local production industry.***
  - Each sub-chain distinct and with own needs (e.g., alliances) [Nint]. Desire among larger, established traders to backwards integrate (investment in larger scale production and processing). Lack of stats and data an impediment. ***Suggested that BMGF create a dynamic repository of investment useful data.***

* Finding from experience, research thus far, or multiple interviewees.

Summary of interview findings—value chain (continued)

- Do governments really want to increase local production if this resulted in lower imports and critical tariff revenues [Novel]? ***Suggested BMGF to assist governments understand trade-offs.***
- Development vs. food sovereignty is an important distinction to be made [FAO].
- Aggregation is critical for small holder production and market access [ETG, Stallion]. ***Suggested BMGF to support aggregation and warehousing .***
- Identifying the driver in each of the intervention economies is an important step: private sector and government needs are different [Olam,Finatrade]. PS is more receptive to BMGF inputs, government requires policy reform assistance. From PS perspective, rice production may not be as profitable as other crops. To engage PS, BMGF must retain clear perspective of PS ROI.
- The sustainability of production protections, import tariffs, and import subsidies is questionable, particularly if Government wants to fully engage PS in driving increased domestic rice production/processing [Novel].
- * More developed countries in SSA are going through a retailing revolution with supermarket implantations. Linkage to this end-link is important. It needs to be accomplished in an integrated manner [Stallion].

* Finding from experience, research thus far, or multiple interviewees.

Summary of interview findings—ag finance

- **Core Enabling Hypothesis Area 1 - Ag-Finance**
  - * Most often cited need, along the full VC. Insufficiently includes ST/MT/LT financing, as well as financial services (e.g., weather insurance, guarantees and other risk reduction products to drive financing). ***Suggested BMGF to provide and catalyze funding.***
  - Smallholders (SH) with urgent family needs (school fees) forced to pre-sale crop at deep discounts [Agrica]. ***Suggested BMGF support financial services partners to refine, fund and dispense SH financing ("warrantage") to have immediate impact on income.***
  - Commercial banks best vehicle for channeling donor funds as they know market and borrowers [GDCM]. ***Suggested BMGF to facilitate ag financing capacity building in CFI (international, pan African and local).***
  - The access to finance core challenge is to mobilize and direct all available financing (equity, commercial, donor, etc.) in a coordinated manner [Finatrade]. ***Suggested BMGF act as a catalyst for rice « super-fund ».***

* Finding from experience, research thus far, or multiple interviewees.

Summary of interview findings—training

- **Core Enabling Hypothesis Area 2 - Training, R&D, Inputs (Farming and Processing Capacity Building)**
  - Second most cited need – especially by producers. Runs from "basic" ag, to "culturize"(at Agrica, why making profits is not unholy), to SH book-keeping to "business practices [Agrica]. ***Suggested BMGF to up-scale SH and mid-management training.***
  - USAID and GIZ (farmer business training programs) mentioned as examples, but need to ramp-up [Agrica, Olam]. ***Suggest BMGF consider support.***
  - * Seed situation is getting better, but need for site-specific seed, requiring R&D. ***Suggested BMGF to continue to promote seed development and weed research.***
  - Producers express dire concerns over weed abatement and bird control [Nint]. ***Suggested BMGF research support.***
  - Governments too slow and bureaucratic in approving new inputs [Nint].
  - Donors share a common philosophy, but different agendas interfere with delivery, coordination and cause user confusion [Finatrade]. ***Suggested BMGF drive coordination/harmonization/performance.***
  - * The core concept is knowledge management and dissemination.
  - * In addition to production and processing improvements, there are significant needs for training, R&D and inputs in other areas including transport and all-in logistics [Boureima], environment, sustainability, social responsibility and gender.

* Finding from experience, research thus far, or multiple interviewees.

Summary of interview findings—industry alliance

- **Core Enabling Hypothesis Area 3 - Industry Alliance**
  - Interesting reactions and differences between owners who often say that it is not needed or already exists and technicians who want to expand their knowledge [Tilda, Nint].
  - *   Practitioners often not looking along full VC but their own links. More can be done to appreciate influence of a broader and more regionally diverse alliance.
  - *   General agreement that more needs to be done to sensitize governments to sector's needs and track enforcement, but private sector advocacy by an industry alliance not fully understood or appreciated in this area. ***Suggested BMGF leverage its convening power.***
  - Effectiveness of alliance enhanced if combined with members' key strategic interests and practical needs such as: sourcing of finance, through banks or dedicated funds, quality/certification/branding/labeling services. This may be key to success of alliance strategy [Finatrade].
  - *   ***Suggested BMGF to further examine benefits and tailor role of regional alliances, emphasizing tech transfer and funding through a progressive development program, beginning with countries having experienced alliance success in other sectors/areas.***
  - *   Sustained driver of continuous quantitative and qualitative improvements in rice sector frequently cited by interviewees. Here also, there is not clear understanding of potential role of industry alliance as a private sector driver of such.