



Increasing rice farmer incomes in Africa: BMGF Strategy

6th January 2013



During 2012, BMGF developed a strategy to increase incomes for small rice farmers in Ghana, Nigeria, Tanzania and Burkina Faso

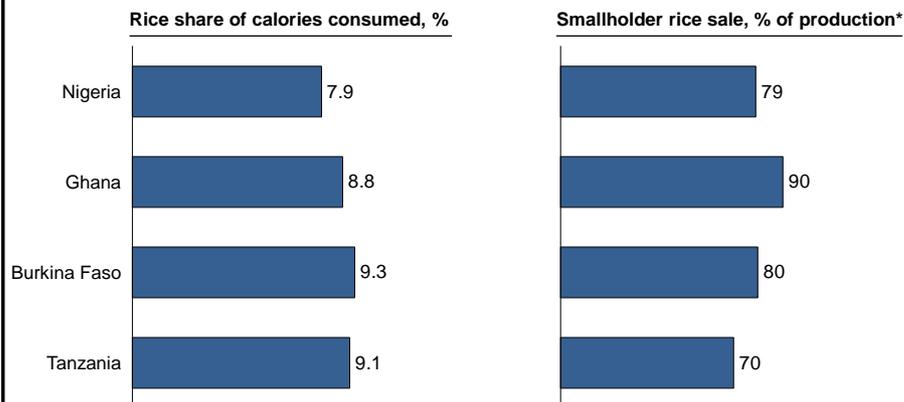
- The Bill & Melinda Gates Foundation identified **rice** as a **priority crop**
- The Foundation carried out **value chain analyses** of in each of its **focus countries** in Africa (Ghana, Nigeria, Mali, Tanzania, Burkina Faso, Ethiopia and Uganda) and selected **Ghana, Nigeria, Tanzania and Burkina Faso** as its priority countries for the rice value chain
- The Foundation developed a **strategy for each country**, spanning activities in Research & Development, Markets & Access, and Policy



Source: BMGF

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Rice is an important smallholder crop in SSA, with over 30m farmers growing it, typically for sale for its higher value, and providing ~9% of calories consumed



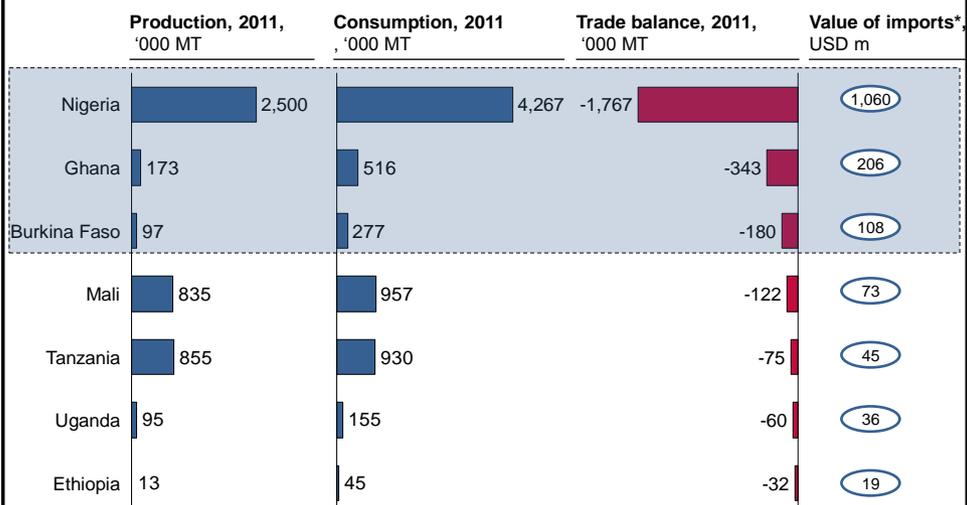
- There are 30.4m smallholders growing rice across SSA, 66% in West Africa
- Women are greatly involved in rice farming (carrying out the more labor intensive aspect of rice farming (e.g., planting, weeding and threshing) and make up almost all of rice parboilers
- Rice is even more important in urban centres: urban consumers spend ~40% of their income on food, with rice making up 33% of caloric intake - reducing its price can significantly improve their livelihoods
- Rice is a staple crop for all of the countries but is considered a cash crop by most of the farmers

* For smallholders producing rice on >1 Ha
Source: FAOSTAT, Ghana Living Standards Survey 2008, Rice Data Systems in Nigeria, BMGF Value Chain Studies

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Significant undersupply in Nigeria, Ghana and Burkina, three of BMGF's focus countries in SSA, create an opportunity to help smallholder production substitute imports



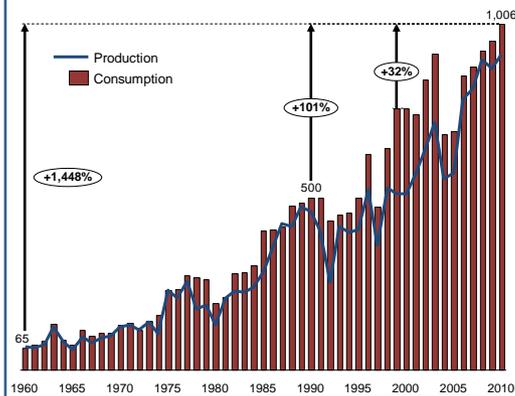
* Assumes global rice price of USD 600 per MT
Source: FAOSTAT, USDA

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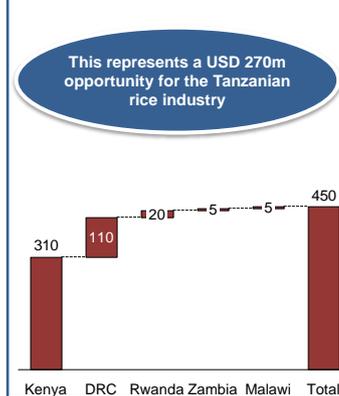
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In addition, Tanzania's rapid production growth creates an opportunity to export rice to neighbouring rice deficit countries

Tanzanian milled rice production and consumption 1960 – 2010 ['000, MT]



Import of milled rice by Tanzania's neighbors, 2011 ['000 MT]

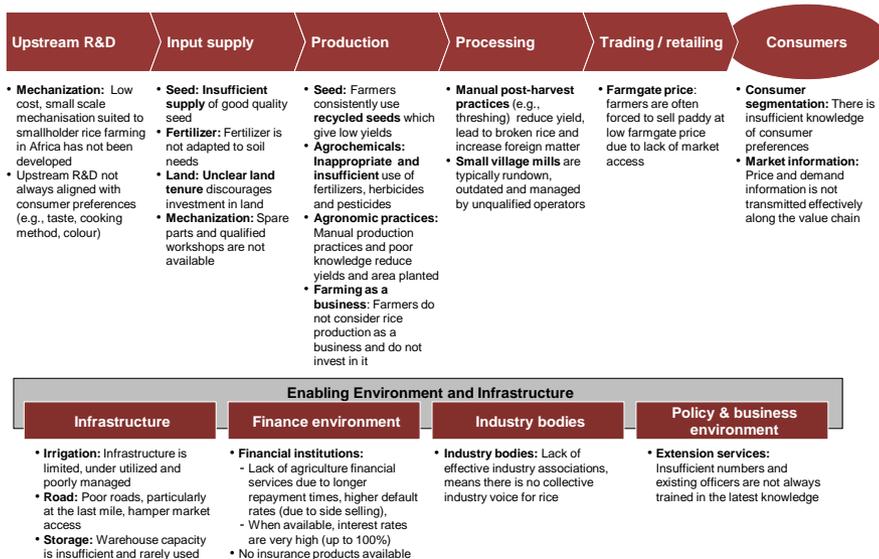


Source: BMGF Rice Value Chain Analysis

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

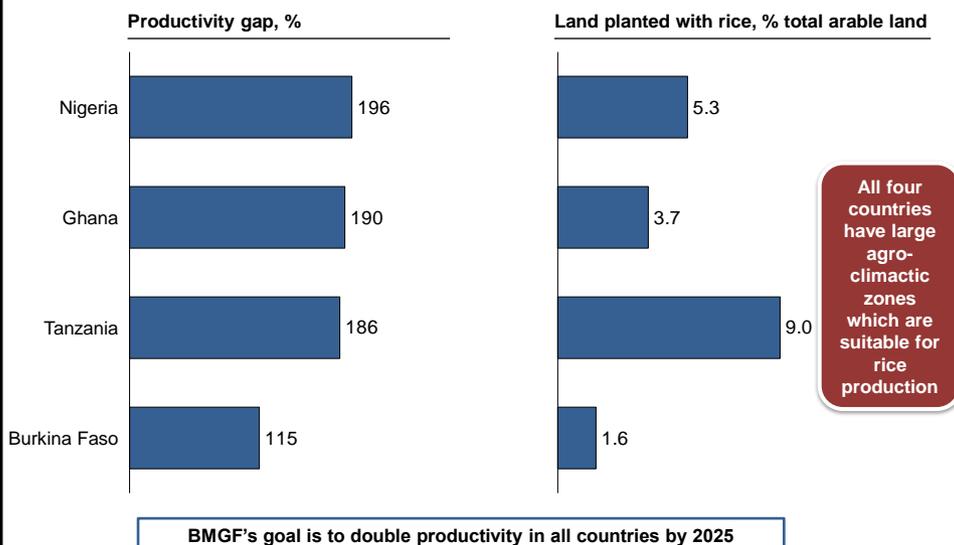
Challenges along the value chain shared by Nigeria, Ghana, Burkina Faso, Tanzania



Source: BMGF Rice Value Chain Analysis

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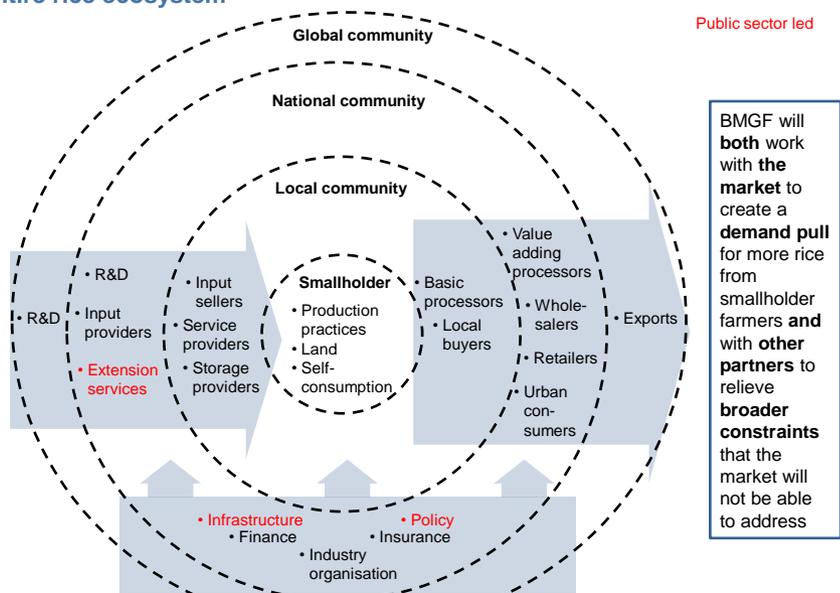
These challenges have led to yield gaps >100% in all countries and have restricted to area planted with rice to <9% of all arable land



Source: FAOSTAT, Chris Gingerich

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To help smallholders take advantage of these opportunities, we must support the entire rice ecosystem

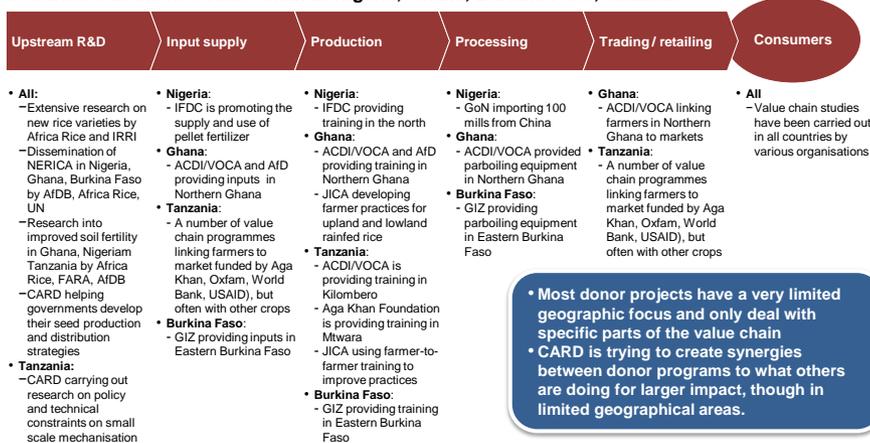


Source: BMGF

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

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

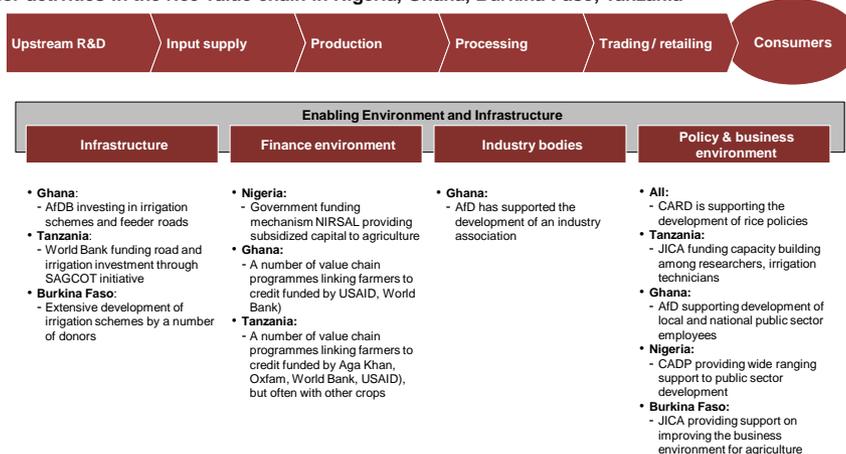


Source: Rice IVCT

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

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

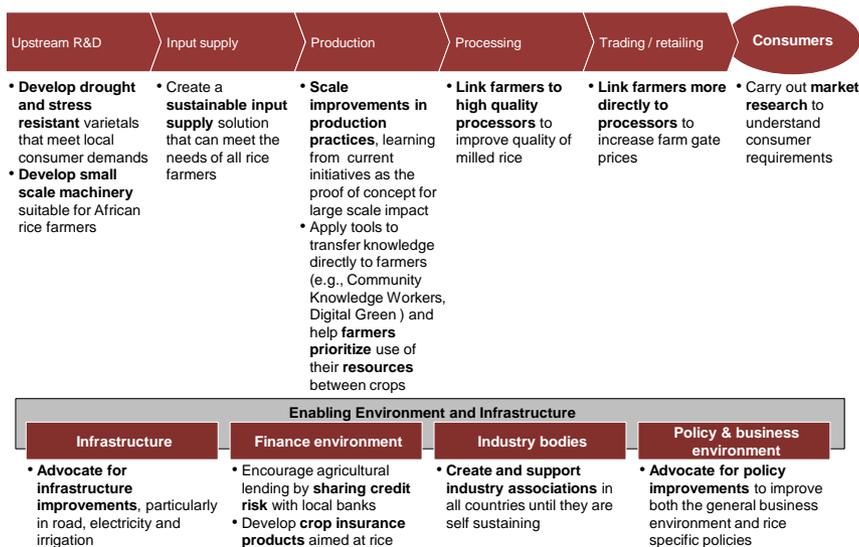


Source: Rice IVCT

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

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

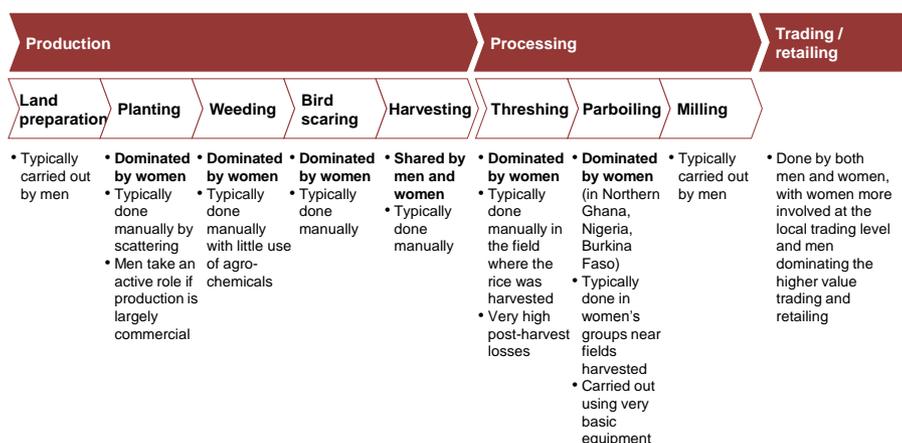


Source: Team analysis

DRAFT 11

Women play a significant role in the production and processing of rice in all of our focus countries

Women's role in rice production



Source: BMGF Rice IVCT

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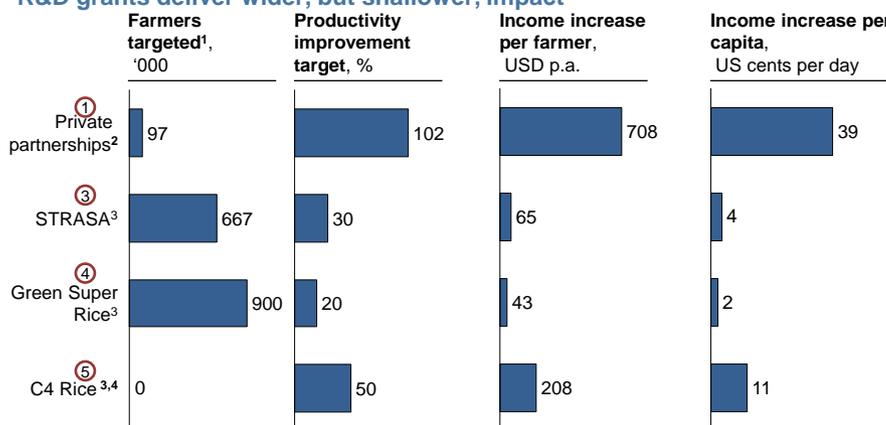
The help our partner countries achieve their potential, the enabling environment and markets will be our focus over the short term while working on breakthrough technologies in parallel and over the longer term

	Value chain elements	Goal	Example activities
Build the foundation	<ul style="list-style-type: none"> • Policy & business environment • Industry bodies • Infrastructure 	<ul style="list-style-type: none"> • To create an environment in which both smallholder and commercial industry participants can succeed 	<ul style="list-style-type: none"> • Adjust policies that distort the industry and restrict private sector participation • Create industry associations to present a unified view to policymakers and researchers • Advocate for improvements in road infrastructure to link producers to consumers • Encourage Brazil to influence change, using its experience with policy reform to improve agriculture as a case study
Develop the market	<ul style="list-style-type: none"> • Input supply • Production • Processing • Trading / retailing • Consumers • Finance environment 	<ul style="list-style-type: none"> • To address key market failures which hold back the industry today 	<ul style="list-style-type: none"> • Provide agronomic training to producers • Link producers to input suppliers • Link producers to consumers • Provide credit guarantees to facilitate financing • Use Brazilian technology to fortify rice during processing
Transform the industry	<ul style="list-style-type: none"> • Upstream R&D 	<ul style="list-style-type: none"> • To identify breakthrough technologies that will fundamentally shift the industry in the long term 	<ul style="list-style-type: none"> • Identify stress resistant varieties that lead to a step change in yields • Develop new small scale machinery that leads to a step change in the area planted with rice • Develop new agronomic practices that lead to a step change in yields

Source: BMGF

DRAFT 13

Private partnerships give deeper impact for a smaller number of farmers while R&D grants deliver wider, but shallower, impact



- Business models developed and replicated in the private partnership approaches can be replicated and scaled beyond the numbers of farmers directly reached by our programs.
- Impact of non-rice specific initiatives have not been measured as the benefit to rice cannot be isolated
- There will be additional spill over benefits to other farmers (e.g., improved agricultural practices among farmers not in our grants); these are not valued
- Excludes impact of crowding-in investment from successful Private Partnership grants

¹ Over 10 years for R&D grants and 5-7 years for Private Partnerships, Nigeria, Ghana, Tanzania and Burkina Faso only

² From first grant only: Avnash, GADCO, Mtenda, KPL, Notore, Stallion

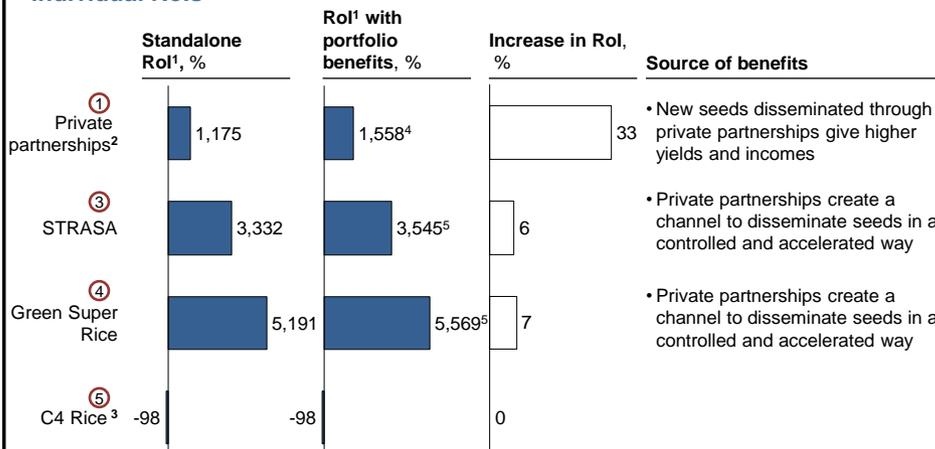
³ Assumes 100% adoption of new seed, not adjusted for the benefit from previous investment by other funders

⁴ C4 Rice is not expected to reach the market within 10 years

Source: Rice IVCT

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Portfolio benefits mean that the aggregate RoI is 22% higher than the sum of individual RoIs



- Aggregate portfolio RoI is 22% higher than the sum of the standalone RoI's
- Additional portfolio benefits, not measured, include improved information to R&D, improved evidence to support Policy and more sustained dissemination of new technology

¹ Over 10 years
² Avnash, GADCO, Mtenda, KPL, Notore, Stallion
³ C4 Rice is not expected to reach the market within 10 years
⁴ Assumes 10% increase in yield through adoption of new seeds
⁵ Assumes a 10% acceleration in adoption of new seeds
 Source: Rice IVCT

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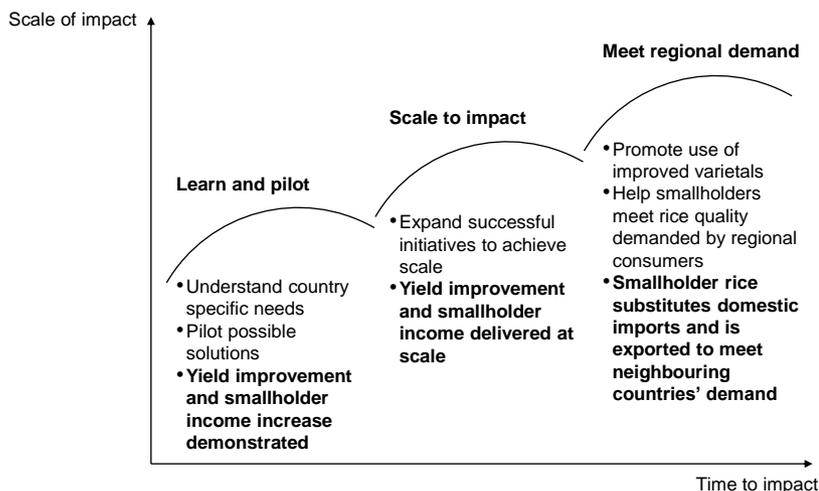
A few private partnership models to test in supporting smallholders include block farms, nucleus farms, outgrower schemes, and more to discover...

	Description	Advantages	Disadvantages
Block farming 	<ul style="list-style-type: none"> • Commercial processor prepares land and provides irrigation • Small farmers are allocated 1-6 Ha each to cultivate with rice • Commercial processor provides all inputs and mechanisation and guarantees market • Small farmers pay a fee / share of production for services • Commercial processor may also produce on a portion of the land 	<ul style="list-style-type: none"> • Small farmers get all required inputs and services, increasing yields and quality • Small farmers receive training which they can apply on their own land • Commercial processor gets a guaranteed crop for processing 	<ul style="list-style-type: none"> • Land is owned by commercial processor, so there is no guarantee of continued access for small farmers • Very high cost of development
Nucleus farming 	<ul style="list-style-type: none"> • Large nucleus farmer (independent of processor) grows rice on 50 – 200 Ha of land • Processor contracts nucleus farmer to provide inputs, training and services to small neighbouring farmers • Commercial processor finances the support and provides a guaranteed market for the rice 	<ul style="list-style-type: none"> • Small farmers grow on their own land, ensuring continuity • Small farmers receive support, inputs and a guaranteed market 	<ul style="list-style-type: none"> • Processor cannot control quality of support provided by nucleus farmer • Nucleus farmer is incentivised to prioritise own production over supporting small farmers
Outgrower farming 	<ul style="list-style-type: none"> • Processor works directly with surrounding small farmers, providing inputs, training, services and a guaranteed market • Small farmers produce on their own land in line with processor's training and requirements 	<ul style="list-style-type: none"> • Small farmers grow on their own land, ensuring continuity • Small farmers receive support, inputs and a guaranteed market 	<ul style="list-style-type: none"> • Small farmers can often be a long distance from processor, increasing costs • Processor is distracted from core business

Source: BMGF Rice IVCT

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We will first develop our knowledge through pilots, and only then help to scale up the industry and, in the long term, drive to full import substitution and even exports



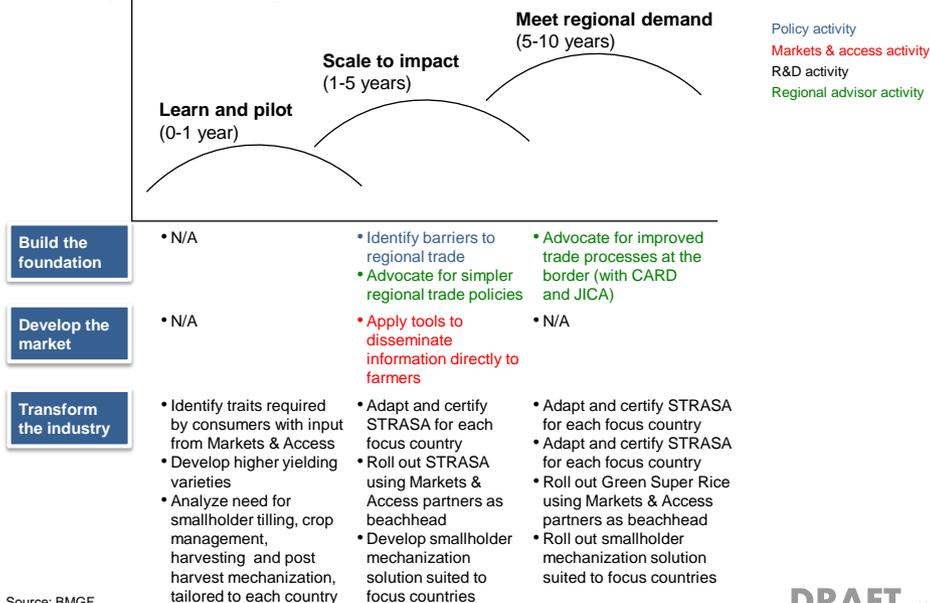
As all countries start at a different level of development and develop at different rates, they will move through these phases at different speeds

Source: BMGF

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Activities common to all four countries will work towards transforming the industry

Cross-cutting horizons of change



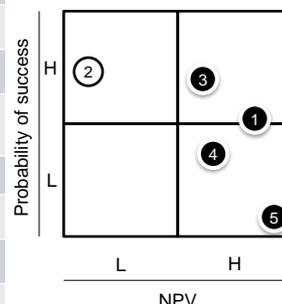
Source: BMGF

DRAFT 18

We are investing in a balance of high risk-high return grants and others that deliver impact more quickly with less risk

Grant	Description
1 Private sector partnered outgrower production	<ul style="list-style-type: none"> • Smallholder production under contract with private sector players who provide inputs, training and markets • Partnerships with GADCO & Avnash in Ghana, KPL & Mtenda in Tanzania and Notore & Stallion in Nigeria • Single grant with sub-grants for each partnership
2 Supporting the Nigerian MoA	<ul style="list-style-type: none"> • Supporting the MoA with resource to identify and address policy issues
3 STRASA	<ul style="list-style-type: none"> • Development and dissemination of rice varieties tolerant of abiotic stresses in Asia and SSA – IN PROGRESS
4 Green Super Rice	<ul style="list-style-type: none"> • Development and dissemination of 'Green Super Rice' cultivars that are resource use efficient and resistant to multiple abiotic and biotic stresses – IN PROGRESS
5 C4 Rice	<ul style="list-style-type: none"> • Introduction of C4 photosynthetic pathway to rice – IN PROGRESS
6 Golden Rice	<ul style="list-style-type: none"> • Development of Vitamin A fortified rice to combat micronutrient deficiencies – IN PROGRESS
7 Productivity gap analysis	<ul style="list-style-type: none"> • Improved yield and productivity gaps estimates for priority crops – IN PROGRESS
8 Crop constrain analysis	<ul style="list-style-type: none"> • Constraints analysis for crops (abiotic/biotic, and value chain, and levers for action) – IN PROGRESS
9 Post Harvest losses	<ul style="list-style-type: none"> • Measuring post-harvest losses in cereals – IN PROGRESS
10 DIVA	<ul style="list-style-type: none"> • Measuring and Assessing the Impacts of the Diffusion of Improved Crop Varieties in Africa – IN PROGRESS

- ⊗ Exclusive to rice
- ⊗ Not exclusive to rice



NOTES: NPV based on increase in smallholder income from rice less the investments made by BMGF and partner; NPV estimates ONLY include impact in focus countries – impact in South Asia will be significantly higher; NPV estimates based on price of \$600 / MT; NPV based on impact in next 10 years, except for C4 Rice which is much longer term; analysis based on impact on rice ONLY
Source: BMGF Rice IVCT

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While there are a number of risks to this strategy, we will work to mitigate them

Risk	Mitigating action
Lack of capacity among scientists and R&D institutions will slow introduction and adaptation of development of existing varieties from outside	<ul style="list-style-type: none"> • Train scientists and technicians • Develop mentorship programs to support ongoing development of researchers
New varieties do not reach farmers	<ul style="list-style-type: none"> • Support seed companies and agro-dealers with access to finance and TA to accelerate multiplication and delivery
New varieties don't meet consumer requirements	<ul style="list-style-type: none"> • Use participatory methods to identify traits required • Base variety selection on consumer preferences and feedback from Markets & Access
Extension systems are not able to disseminate information on new varieties, techniques to farmers	<ul style="list-style-type: none"> • Work through private sector organizations to disseminate information • Build dissemination into R&D grants • Develop farmer segmentation model to identify optimal dissemination path • Work with governments to develop capacity of extension systems
Governments will not be open to change policies (e.g., export restrictions)	<ul style="list-style-type: none"> • Work with partners to collect data and advocate for improved rice policies • Willing to stop working in a country if policy and business environments are not satisfactory
Private sector is too weak to work through	<ul style="list-style-type: none"> • Use industry associations to develop the private sector • Be rigorous in our partner selection
Production growth in Myanmar depresses rice prices to a level where local producers are not competitive	<ul style="list-style-type: none"> • Monitor developments in Myanmar • Be willing to stop promoting rice production if it is not economical for smallholders to produce it
Farmers become dependent on private sector partners	<ul style="list-style-type: none"> • Create tools and methodologies for disseminating knowledge and inputs which can operate independently of private sector players • Partner with reputable private players committed to farmers' welfare • Support development of farmer organizations to negotiate with industry partners
Our work overlaps with AGRA's work on rice	<ul style="list-style-type: none"> • Adjust implementation plan based on the outcomes of AGRA's strategic review • Actively work with AGRA grants to apply their solutions to our grantees (e.g., on soil health)
Creation of outgrower schemes and nucleus farms leads to farmer displacement and social conflict	<ul style="list-style-type: none"> • Focus on areas of unutilized or fallow land, and avoid cultivating areas containing homes • Actively work with local communities, and closely with chiefs, to minimize displacement and to integrate new farming models into current social systems if desired.

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