



Project

“Development of efficient and inclusive rice value chains in selected African countries” (GCP/RAF/500/JPN)

Workshop Report:

Leveraging small and medium rice millers for rural transformation and investment in the rice sector in Africa

May 28th to 30th, 2019, Dar es Salam, Tanzania

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ACRONYMS

CARD	:	Coalition for African Rice Development
CIPriSSA	:	Continental Investment Plan for accelerating Rice Self-Sufficiency in Africa
CIRAD	:	Centre de coopération Internationale en Recherche Agronomique pour le Développement
FAO	:	Food and Agriculture Organization
IRRI	:	International Rice Research Institute
JICA	:	Japan International Cooperation Agency
MAFF	:	Ministry of Agriculture, Forestry and Fisheries
NAIP	:	National Agriculture Investment Plan
NRDS	:	National Rice Development Strategy
RVC-RC	:	Rice Value Chain - Ressource Center
SME	:	Small and Medium Enterprise

EXECUTIVE SUMMARY

In the framework of the FAO project entitled “Development of efficient and inclusive rice value chains in selected African countries”, a three-day workshop was organized by AfricaRice, FAO and Rice Council of Tanzania, in Dar es Salam, Tanzania, from May 28th to 30th, 2019. Participants were representatives of 9 countries (Benin, Cameroon, Cote d’Ivoire, Kenya, Mali, Nigeria, Senegal, Tanzania and Uganda). A total of 48 participants attended this three-day workshop including representatives of ministries of agriculture, FAO, AfricaRice, Rice Council of Tanzania, rice producers, millers, other relevant stakeholders and development partners including IRRI, CARD and JICA.

This report represents a summary of the different session’s activities conducted during the workshop and the main areas of discussion.

The opening speech highlights the increasing importance of rice worldwide and especially in Africa. Its consumption is increasing faster than any other staple in the world. Since the 2008 food crisis, there has been growing investment in rice crop production in Africa; however, the focus on production alone will not contribute to achieving food security, nutrition and environmental objectives. Investment in the middle segment of the rice value chain, characterized by post farm activities such as transport, storage and processing is important not only to achieve the objective of self-sufficiency and food security but also rural transformation, which is one of the main drivers of economic and social development in developing countries

Small and medium-sized enterprises can in fact be a driving force for development and offer rural communities a way out of hunger and misery, but only if they manage to have access to the resources they need. Sub-Saharan Africa, in particular, has more than 60% of its agricultural workforce, which accounts for 50% of total income. It is therefore clear that investment in agriculture is not only a driver for development but also a great business opportunity.

Following the opening speech, main sessions highlighted (i) results of two investment studies on rice value chains in Africa, (ii) methodology and results of the pilot studies conducted in three countries (Senegal, Kenya and Tanzania) on rice value chain upgrading, (iii) round table discussion on of NAIPS/NRDS; and (iv) two group working sessions on developing a framework aimed at fostering public-private-partnerships for milling sector investment.

The main findings and results from presentations and discussions are as follows:

Chain branding and quality is compromised due to fragmented competition among millers along the chain.

A lack of investment dominates the development of small and medium sized millers resulting in their ability to compete with larger companies. In addition, the companies appraised in the project also face competition from artisanal millers, belonging to the informal sector, who can escape

administrative, bureaucratic and financial controls. The quality of rice from artisanal mills is also of an inferior quality compromising overall chain efforts to develop a national brand that can compete with imports.

The owners of appraised SMEs are however, not family subsistence micro-enterprises, but growth oriented entrepreneurs that presuppose a medium and long-term vision. They require investment capital, and know-how, to develop their business project, based on their perceived need to exploit a market and their business know-how.

In Kenya, for example, weaker demand for domestic rice is due to an inferior quality compared to imports. On the other hand, investments to create a high-quality national brand in Senegal has seen an improvement in the market's preference for domestically grown rice.

Financing and investments

In the project countries, food companies operating in the rural economy requiring investment, typically source funding from the owner's own capital or financing from family and friends, sometimes helped by donor-funded initiatives. The lack of financing adapted to the specific needs of SMEs and difficulties in accessing medium and long-term loans are the main obstacles to development, as well as constraints of high collateral requirements, unfavorable interest rates and complex procedures. The National Agricultural Investment Plan (NAIP) and the National Rice Development Strategy (NRDS) contain initiatives to facilitate access to finance for smallholder farmers, but the customization of financial products for mid-scale milling operators is also required. Creating a conducive environment for millers to invest in vertical farming may also support sector upgrading. Senegal and Nigeria were highlighted as examples to emulate in this respect.

Considering nutrition as part of the rice milling business model

Discussions revealed that considering the nutritional aspects of rice can contribute to a more diversified and value-added commodity. Parboiling rice, for instance, has increase nutritional value, as does brown rice. However these products require changes in the processing operations and their nutritional value is not understood by the market. Improving the nutritional and qualitative aspects of production and, at the same time, educating the consumer about healthier rice product options can contribute to the development of the milling sector through the creation of diversified market opportunities. Quality assurance practices for improved food safety and nutritional value can be integrated into the drying and milling processes, but it requires numerous and costly controls and investment in modern equipment. SMEs are willing to invest in these aspects, however only after having verified the existence of a substantial demand and market responds.

Building more cross-sectoral collaboration into the NRDS, including for instance Ministry of Health and Trade, with improved private sector engagement, can support the sector with the development of safer and more nutritious rice products capable of competing with imports.

Both public and private sectors have a role to play in strengthening in-country milling sector investment

Millers primarily operate in the rural towns close to production. However infrastructural constraints, in particular related to energy and clean water and the slow growth of small rural towns impedes the growth of enterprises and their potential contribution to growth and employment. Senegal provided examples of good practice policy initiatives that have contributed to the growth of the rice sector in rural areas.

Weak rural infrastructure also means that inbound and outbound logistics are more costly for the firms, with costs related to inbound logistics often passed back to the farmer or small trader.

Limited access to investment products also means that millers have limited options to improve firm level infrastructure such as warehouses, facilities, or feeder roads around their factories.

1. Introduction

Rice is a commodity with growing importance for food security in Sub-Saharan Africa (SSA) with consumption increasing faster than any other major staple. It is the single most important source of dietary energy in West Africa and the third most important for Africa as a whole. Since the 2008 food crisis there has been growing investment in rice crop production in the region. The increased focus on agriculture production alone however will not deliver on food security and nutrition objectives, nor will it produce the results required for rural communities to move out of poverty.

A large part of the domestic rice demand is captured by importers while domestic supply remains largely limited to subsistence or local informal markets. In many developing countries agri-food industries, comprised of mostly micro, small, and medium food processors, have been a key catalyst in making the transition from agriculture-based systems to diversified economies possible. The vital role of Small and Medium Enterprises (SME) in providing rural employment and market linkages for smallholders is often underestimated. Lack of investment in the middle segment of the rice value chain, characterized by post farm activities such as transport, storage and processing- has broad rural development implications. Small and medium enterprises are an important source of supply to traditional markets, innovation, and service provision to larger buyers, and key for food and nutrition security.

Through FAO's Government Cooperative Program (GCP), the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) is supporting the SSA countries Tanzania, Senegal and Kenya to improve the understanding on the role of rice millers in rural transformation, in particular on smallholder farmers' linkages, employment generation, commercialization of rice, rice value chain upgrading, food safety and nutrition. The output of the project is intended to provide guidance for public sector policy making and private sector investment to rice value chains in Africa. The main objective of the project entitled "Development of efficient and inclusive rice value chains in selected African countries", is to address the knowledge gap in the middle segment of the rice value chain for selected Coalition for African Rice Development (CARD) countries (Kenya, Tanzania and Senegal) based on analysis. The results will lead to guidance on a) the public sector on policy, legal and investment frameworks needed to upgrade the role of SMEs in linking smallholders to rice value chains in Africa and b) to the private sector on responsible and inclusive domestic and foreign investment mechanisms in food value chains. To contribute to this objective, a three-day workshop was organized by AfricaRice, FAO and Rice Council of Tanzania (RCT), in Dar es Salam, Tanzania, from May 28th to 30th, 2019.

2. Workshop objective

The three-day workshop aimed to build understanding on the role and needs, including the investment needs, of rice millers to accelerate rural transformation. Further the workshop aimed

to facilitate the development of actions plans in order to advance the rice processing sector for rice value chain upgrading in Africa.

3. Workshop approach

To increase impact and experience sharing, participants were invited from 9 countries (Benin, Cameroon, Cote d'Ivoire, Kenya, Mali, Nigeria, Senegal, Tanzania and Uganda). The agenda (see annex 1) has been designed to create a space for sharing research results with relevant stakeholders and experts from both public and private sector and inviting them to actively exchange knowledge and expertise, considering policy options and strategies. The participants formed working teams to exchange knowledge and perspectives between public and private sector on targeted investment approaches, leverage points for increased efficiency in agribusiness value chains and the creation of an enabling, sustainable and innovative business environment and foster cross-fertilization. To guide the discussion, results of the 3 pilot studies and additional research on investment framework for development of the milling sector of the rice value chain were presented. To foster cross-sectional planning and policy formulation, participants were invited to develop an action plan strategy to contribute to future iterations of national rice development strategies.

4. Participants

The three-day workshop was organized by AfricaRice from May 28th to 30th, 2019 and participants were representatives of 9 countries (Benin, Cameroon, Cote d'Ivoire, Kenya, Mali, Nigeria, Senegal, Tanzania and Uganda). Participants were from private and public sectors. A total of 48 participants attended this workshop (see list of participants in annex 2) including representatives of ministries of agriculture, FAO, AfricaRice, Rice Council of Tanzania, rice producers, millers, other relevant stakeholders and development partner including IRRI, CARD and JICA (Photo 1).



Photo 1. Workshop group photo

5. Workshop sessions

Workshop activities were organized in 5 main sessions.

5.1. Session 1: Rice sector development - a regional focus

Two activities were conducted during this session: opening ceremony and presentation of results of two studies on investments and upgrading of rice value chain in Africa.

5.1.1. Opening ceremony: setting up the space for fruitful discussions on rice value chain upgrading

The opening ceremony included three speeches: Welcome address by Winnie Bashagi, representative of RCT, goodwill message by Dr Aminou Arouna of AfricaRice and opening speech by Kafeero Fred, the representative of FAO Tanzania (Picture 1). The different speeches highlighted the increasing importance of rice worldwide and especially in Africa. Its consumption is increasing faster than any other staple in the world. Since 2008 food crisis there has been growing investment in rice crop production in Africa however the focus on production alone will not deliver from food security, nutrition and environmental objectives. Investment in the middle segment of the rice value chain, characterized by post farm activities such as transport, storage and processing is important not only to achieve the objective of self-sufficiency and food security but also rural transformation. The opening ceremony ended with an introduction to the objective and targets of the second phase of CARD initiative. This introduction was made by Yusuke Haneishi, the General Coordinator of the CARD. In this presentation, he mentioned that the member countries have increased to 32 countries (compare to 23 original member countries from 1st phase) including 9 new countries: Angola, Burundi, Chad, Congo, Gabon, Guinea Bissau, Malawi, Niger and Sudan. He also informed that the objective of the CARD II is to double rice production (from 28 Million MT to 56 Million MT) in 12 years (from 2019 to 2030).



Photo 2: Image of the opening ceremony

5.1.2. Presentation on results of two studies on investments and upgrading of rice value chain in Africa

Assessing the need of investments in the sector is important for the rice value chain upgrading

To settle the scene of the workshop, two introductory presentations were given on (i) rice investment plans in Africa and (ii) upgrading rice value chain in West Africa. The first presentation was given by Dr Arouna Aminou, Impact assessment Economist of AfricaRice (Photo 3). This presentation highlighted the models of Continental Investment Plan for accelerating Rice self-sufficiency, CIPRiSSA)¹ and Rice Value Chain Resource Center (RVC-RC) developed by AfricaRice. CIPRiSSA model proposed by AfricaRice and partners is an analytical framework to evaluate the amount of investment required to achieve self-sufficiency by 2025. The model is developed based on both the scientific methodology from a research point of view and also from a stakeholder point of view to identify investment costs. Results of this methodology show six main domains needing investment such as fertilizer, seed, equipment, markets and upgrading, capacity building and irrigation. The second model is the RVC-RC which is a framework focused on the rice smallholder farmer's professionalization to provide high rice quality to consumer by developing sustainable business entities. The smallholder farmer is at the centre of this model. The aim of the RVC-RC is to transform subsistence farming system into business.

¹ To access the report of CIPRiSSA: <http://www.africarice.org/publications/ciprissa.pdf>



Photo 3: CIPRISSA presentation

Most investments are needed for rice value upgrading in coastal countries compared to landlocked countries

The second presentation was given by the representative of IRRI, Dr Matty Demont (Photo 4). Presentation showed results of different surveys. Two major lessons learnt were presented: (i) West African rice has increasing difficulties competing against imported rice; and (ii) Import-based coastal countries with a seaport close to a major consumption zone (capital) and remote from rice cultural heritage need to allocate more resources to rice value chain upgrading.



Photo 4: Image of room during the presentation of upgrading rice value chain in West Africa

5.2. Session 2: Round table – Presentation of NAIPS/ NRDS and relation with the domestic rice sector in SSA

The round table members were the representatives of the ministry of agriculture of each country (Photo 5). It was moderated by Mrs. Winnie of RCT. The round table session commenced with the presentation of the National Agriculture Investment Plan (NAIP) and the National Rice Development Strategy (NRDS) of the nine participant countries. Each member of the round table was invited to present the vision and constraints of their respective NAIPS and NRDS and to emphasize on how the NRDS strategy fits into NAIPS.



Photo 5: Round table on countries' NAIP and NRDS presentation

5.2.1. *NAIP and NRDS are oriented more towards increase of production*

Following the presentation of round table members, main objectives of NAIP are to accelerate agricultural transformation in different countries and in alignment with the Comprehensive Africa Agriculture Development Program (CAADP) and the United Nations Sustainable Development Goals (SDGs). The NAIPs represent an investment plan to achieve the agricultural production objective. On the other hand, NRDS are designed to achieve the objective of rice self-sufficiency and food security. In summary, NAIPs and NRDS objectives concern different segments of the rice value chain as follows:

Production-level

Specifically, main objectives are to:

- Increase production
- Increase cultivated areas
- Improve crop management practice, post-harvest activities
- Improve farm operations, strengthening seed systems

In term of policy and structural organization: the objective is to promote private sector investment, improve government and enable sustainable structure of rice value chain. Specific objectives are to:

- Promote private sector and SMEs
- Enhance good quality services, governance and private sector investment
- Improve the structure of the value chain,
- Improve governance
- Improve public and private capacities of institutions
- Build strong collaborations, between national and international or regional institutions

In the area of financial procedures and SME support: the aim is to improve founding mechanisms and support processing and marketing for rice sector improvement.

Specific objectives are to:

- Improve founding mechanisms and insurance
- Support professionalization, support processing and marketing.

5.2.2. Lack of investment is the main challenge in NAIP/ NRDS implementation

In different countries, the implementation of NAIP/NRDS faces several challenges and the main ones are:

- Lack of finance
- Deficit of infrastructure
- Import influence
- Lack of processing capacity
- High cost of inputs
- Lack of labour
- Lack of equipment

Following the speech of the round table member, a session on questions and answers (QA) was opened. The discussion points were related to: black market and smuggling of imported rice from Benin to Nigeria; the fact that Kenya has agreement with Pakistan to export coffee and tea in return to importing rice; base on the fact that Nigeria seems to be doing well in local rice production, participants were asked for the recommendations that can be implemented in their own country. The Nigerian participant explained that the Federal ministry of finance has introduced a payment of premium on imported rice which is allocated to local rice production. During the QA, it was also noted that SME millers find frustrating that they cannot take part in paddy aggregation policy. They all share markets with large players, and = cannot get as good rates (5% of interest) as the big ones. Indeed, small SME are charged up to 20% of interest rate. In general, lack of investment is the main challenges in NAIP/ NRDS implementation in different countries.

5.3.Session 3: Presentation of project methodology and results of three pilot studies

This session introduced the methodology and results of the pilot studies conducted in the framework of the project. The pilot studies were conducted in three countries (Senegal, Tanzania and Kenya) using the same business-level methodology.

5.3.1. Methodology

The project coordinator, Kelly Siobhan, presented the qualitative methodology. The main objective of the study was to assess the business model in three 3 pilot countries using Porter's framework focusing on following areas: (i) human resources, (ii) management, (iii) finance, (iv) processing and packaging, (v) inbound and outbound logistics, (vi) marketing and sales. The methodology was applied in three countries and three processors in each country making a total of 9 cases studies. Overview of the results of the 9 cases studies in the three countries were also presented. The qualitative studies were complemented by a micro-level analysis in each country using World Bank's Enterprise Surveys.

5.3.2. Presentation of results of the pilot studies

Using the business model assessment framework, the SME millers' activities and business environment were analyzed in Tanzania, Kenya and Senegal and the findings and recommendations were shared. Following are the key findings in each country:

Case study of Tanzania: Milling sector in Tanzania is dominated by SME with low processing capacity and inferior rice quality

In more detail, the rice milling sector is characterized by:

- Small mills generally produce inferior rice of 'standard' quality (30-50% broken),
- Larger mills produce 'Grade One' rice with less than 15 % broken grains,

- Middlemen dominate the industry and approximately 80% of rice purchasers at the farm gate are middlemen (brokers or traders),
- Most milling is carried out as a service function.

Lessons learnt from Tanzania case study: Development of milling sector needs formal organization of actors and tailored financial support

Based on the findings, three main recommendations from the case study in Tanzania are drawn as follows:

Enabling formal organization of traders and financial support are important for milling sector development

- Enable the formal organization of traders
- Facilitate their division into various zones (e.g. production)
- Tap into their farmer-market linkage role (employ them as extension agents and encourage contract farming)
- Facilitate bulk buying/selling to allow actors achieve economies of scale.
- Engage with the financial sector to support the development of financial products tailored to the needs of SMEs.

Educating consumers and millers on healthier rice product options will contribute to the milling sector development

- Strengthen the training and investment needed to support millers in adhering to food safety and quality specifications,
- Introduce large-scale public initiatives in collaboration with the Ministry of Trade and the Ministry of Health in order to educate consumers and support the creation of a market for healthier options (e.g. parboiled rice),
- Appraise formalization of sun-drying as a business activity,
- Encourage the development of local branding based on aroma and taste.

Encouraging the settlement of exchange platform for actors in the rice value chain to improve information sharing for the milling sector development

- Organize exchange meetings between farmers, millers, traders and brokers to understand how their practices impact on the activities and margins of the other actors in the chain,
- Organize visits to milling sites to allow millers disseminate information on their current practices and understand how these are shaped by the external environment.
- Encourage the introduction of firm-level decent work policies and provide training on the topic.

Case study of Kenya: Rice milling sector is dominated by informal small-scale millers and suffers from a lack of access to commercial lending.

Specifically, milling segment is characterized by:

- About 16 medium and large-scale millers and 256 small-scale millers
- Small-scale millers use the simple one step process with a production capacity of 0.5 tonnes per hour.
- The capacity of the medium and large mills varies from 1 to 22.5 tonnes/ hour
- The three interviewed millers fit into this category as their capacity is 2.5 tons/h and, and 4 tons/h respectively.
- They compete with a large, government-owned mill and hundreds of micro scale enterprises who look to capitalize on the lucrative opportunity created by the irrigation scheme and booming domestic consumption for rice.
- 96% of the farmers in irrigation schemes sell their paddy un-milled

Rice milling sector business growth is challenged by finance support.

In more detailed, findings show that:

- 71 % of total SMEs in the country requested medium- and long-term loans for their business growth but only 39 % were able to get them (Farm Africa, 2014)
- 41 % reported unfavourable interest rates, 15 % too complex procedures, and 13 % too high collateral requirements (Farm Africa, 2014)
- SMEs suffer a lack of access to commercial lending. Investment comes rather from family and social networks, and at start-up enterprises are often supported through income from previous activities
- Within Mwea, relationships between workers and management are based more in reciprocal favours and in-kind perks than formal corporate policies

Lessons learnt from Kenya case study: Milling sector development needs to capitalize on their embeddedness in rural communities and provision of location based- incentives

Based on the findings, recommendations from the case study in Kenya are:

- SMEs can create advantage by capitalizing on their embeddedness in rural communities. Indeed, rural entrepreneurs with deep cultural ties in their local community possess an advantage over “outsiders”,

- Provide location-based incentives in rural areas to compensate for the additional costs that poor infrastructure imposes to businesses.

Case study of Senegal: Rice milling sector is dominated by artisanal mills and millers' lack of investments to grow their business

Key results in the case study in Senegal are summarized in 5 main points as follows:

Milling sector is dominated by artisanal millers in Senegal.

Specifically, findings show that:

- There are 56 mills in the region in Senegal River Valley (SRV)
- 3 can be considered large processors who can mill 16 tons per hour
- Medium mills can process 2 to 6 tons per hour
- Small mills have a capacity of 1.5 tons per hour
- Artisanal mills: the largest segment with an average capacity of 350 kg per hour who are preferred by farmers.

Pre-financing of inputs for contracted farmers is a way to secure supply to millers.

This result is related to the fact that:

- As competition for paddy increases, pre-financing inputs for contracted farmers is a way to secure supply and add value. It also becomes a way for the processor to better control the quality of paddy.
- Millers are able to create advantage by capitalizing on their embeddedness in rural communities
- Senegalese millers act as reliable market for smallholders
- Outbound logistics imposes less costs in the sense that most rice is sold at the factory's gate in which case buyers are in charge of transportation

Millers are willing to provide the market with healthier options upon confirmation that there is demand for it.

Specifically, results show that:

- Millers are willing to provide the market with healthier options upon confirmation that there is demand for it
- Interviewed millers understand the benefits of healthier rice options (e.g. brown) but are not sure if the market would respond to it

- Consumers in urban markets are willing to pay a price premium of 35 % for quality local rice, and even 44 % for branded quality rice

Lack of investments and energy deficit hinder millers to grow their business. Indeed,

- All companies started off modestly: activities mainly funded by owner or by member savings
- Consequent investment to grow business possible due to support from development agencies or public programmes
- All three companies accessed loans at least at one point during operations but all favor financing on their own
- Electricity represents the third ranked biggest obstacle to conducting business as reported by small firms (World Bank, 2014).
- Without public sector support, SMEs have little incentive to address nutrition issues.

The role of millers in off-farm employment providing is important.

Specifically, results show that:

- Evidence suggests that millers provide a decent off-farm employment alternative for unskilled workers and youth
- Estimated that up to 80 percent of SMEs food processors are women (Anwer and Senghor, 2005 in Matsumoto-Izadifar, 2008)
- Training- with respect to food handling and milling best practice - is one of the support services the millers reported easily accessing from public agencies and development organizations

Lessons learnt from Senegal case study: Facilitating the initiation of artisanal miller associations and creating a conducive environment for millers to invest into vertical coordination

Based on the findings, recommendations from the case study in Senegal are:

Milling segment development in Senegal needs the structuring of micro-scale millers in associations and the adoption of a market segmentation strategy.

Specific recommendations are:

- Facilitate the initiation of artisanal miller associations and increase inclusion of this segment into current schemes (e.g. WRS, agricultural financing)

- Create a conducive environment for millers able and willing to invest into vertical farming (e.g. address land tenure issues),
- Adopt a market segmentation strategy across all levels of the value chain
- Identify market segments based on further research on consumer preferences (e.g. sampling)
- Provide conducive environment for alignment of upstream and midstream segments of value chain with market demand (e.g. seed production)

Collaboration between the Ministry of Trade and the Ministry of Health is needed to create a market for healthier rice-based products.

This can be done by:

- Encouraging the transition to healthier grain options such as brown rice could be viable strategy for addressing the increase of non-communicable diseases
- Government investment and interventions should target the creation of market demand for healthier options, through collaborations between the Ministry of Trade and the Ministry of Health
- Introduce labor laws that allow for the regularization of casual employees without imposing additional costs to the company

Investment in infrastructure, energy and capacity-building are required for the milling sector development. And this requires to:

- Facilitate the embeddedness of capacity-building initiatives into local education institutions to ensure that impact does not happen on an ad-hoc basis
- Public sector support for rural workers in the form of national health and pension plans in Senegal.
- Concentrate infrastructure investments in hinterland and feeder roads
- Link grants and donor investments to local financial institutions
- Lowering electricity costs needs to be further addressed

The presentation of case studies was followed by a Q/A session. Main discussed issues are:

Considering nutrition as part of the rice milling business model

- Concerning parboiled rice: The nutrients pass into the grain during this process.. So when rice is being consumed, there is extra nutrients in the rice as compared to machine milled rice. To increase consumer awareness on nutritional properties and benefits, more engagement is needed with the different ministries (health, trade, agriculture).. But they need more specialists like doctors and nutritionists to show scientific proof. So far

information about the benefits of parboiled rice is spread informally. Companies interviewed do not consider nutrition into their business model with the small exception of two companies in Kenya which process a limited amount of brown rice. Millers indicate, however, that they would be willing to take nutrition into consideration if there is a business opportunity to tap into. However, educating consumers on nutritional benefits is beyond the ability of SMEs; the government (Ministry of Health, Agriculture, Trade) as such should dedicate large investments into creating market demand for healthier options.

Processing impacts on the nutritional value of rice

- Drying process and insulin side issue. Sun drying raises the glycemic levels within paddy. When drying with a machine, the machine is able to control a stable temperature. Therefore glycemic levels are lower, which is an important factor for diabetics. Brown rice is able to reduce sugar rate in blood so it is recommended to diabetics. But this needs to be more widely disseminated.
- Issue of brown rice: In Tanzania, brown rice is most expensive and more difficult to keep in terms of shelf life for super markets. These are important aspects to be discussed if marketing for supermarkets is supposed to be promoted.
- Rice fortification issue: Adding micronutrient (like vitamin A or zinc) can help in the battle against malnutrition. There were suggestions to discuss bio-fortification more and increase knowledge of research and intake part of it, so we can increase impact on future generations.
- Access to affordable and reliable energy: was regarded as a central concern for running costs.

Session Discussion

Comments on Tanzania presentation:

Limited supply as barrier to operate for the whole year

Most millers operate for 5 months only during the year because of shortage of supply. The rest of the year, they engage in other revenue-generating activities. On the market: Participants were interested in the commissions charged by middlemen and their organisation in the chain. These have a wide presence and are well-known in the village. They put their margin (between Tsh 500 and 1000 per bag, depending on season) on top of the selling price of the farmer.

Comments on Kenya presentation:

Participants showed interest in the price for paddy in Kenya. The price for paddy depends on market forces, supply and demand and fluctuates during the high or low season.

It was highlighted that it is important to look at profit margins to understand how finance and investment can be encouraged in a viable manner.

Comments on Senegal presentation

Contract farming is taking off so well in Senegal

Participants highlighted that despite a shortage of supply, which typically results in side-selling, the contract farming structure is for the most part respected by all parties. This is owing to the institutional investments that have been made in the sector to support contract farming process, such as support on developing contracts that work for the parties concerned, training in contracting farming, and an appropriate legal framework.

Senegal's national rice platform was also commended as instrumental in guiding the development of the national rice sector in Senegal. The platform oversees the 'collateral guarantee' tool which monitors the quality of paddy supplied to the market and assess and advises on import quotas.

5.4.Session 4: Actions for strengthening in-country milling sector investment

This session aims to propose actions to strengthen in-country milling sector investment in Sub-Saharan African countries. In addition, lessons from Rice Value Chain Upgrading in Asia and West Africa were presented by Matty Demont from IRRI. The main conclusion of this presentation are:

- Urbanization and diet change are major triggers of structural transformation of rice value chains
- Rice value chain development trajectory led by Asian exporters and followed by Asian & African importers

Provide optimal enabling environment for the private sector to (i) target different market segments by introducing demand-led products, (ii) develop contract farming schemes to provide inputs (seeds, fertiliser, etc.) to producers, and (iii) invest in new milling technologies to improve the quality of milled rice.

Following the presentation, three working groups were created: Group 1 (Tanzania and Uganda), Group 2 (Nigeria and Kenya) and Group 3 (Benin, Senegal, Cameroon, Mali and Cote d'Ivoire). The aim of the working groups is to elaborate actions to foster public-private-partnerships for milling sector investment and follow-up actions for both private sector perspective and public sector perspective. To achieve this objective, the groups were asked to address 6 main questions:

- Which policy actions are needed to favour investment environment?
- How can the private sector be leveraged to remove the bottlenecks to sector development?
- What has the Government done well in recent years in your respective country? What has worked?

- What are the top priorities they need to focus on moving forward?
- What are the institutional obstacles for working with the private sector?
- Sustainability, climate change and nutrition are becoming central to sector development. Is there a role for the private sector? What is it?

Following the working presentation in the plenary session, main top priorities according to private actors to favour investment environment and institutional obstacles for working with the private sector according public actors are:

Group 1: Tanzania and Uganda

According to private actors, top priorities to favour investment environment in Tanzania and Uganda are:

- Seeds – change policy to allow privatization of seed sector; create demand for quality seeds through contract farming (for Tanzania); in Uganda seeds are bred by government and multiplied by ps. role of millers association.
- Improve mechanization
- Improve land acquisition
- Increase power availability / tariff reduction
- Improve extension services and capacity building

According to public representative, institutional obstacles for working with the private sector in Tanzania and Uganda are:

- Lack of trust in government officials
- Private sectors shy away from cooperatives
- No organized sector base platform (Kenya)
- Lack of shared vision between public and private sectors - (Tanzania)
- Not enough official staffs in the local government capacity

Group 2: Kenya and Nigeria

According to private actors, top priorities to favour investment environment in Kenya and Nigeria are:

- Capacity building – across all actors.
- R&D in the whole value chain
- Value addition on rice
- Energy challenges
- Building of strong association

- Good infrastructure : -communication channels for proper relay of information, roads and Storage facilities

According to public representative, institutional obstacles for working with the private sector in Kenya and Nigeria are:

- Poor management of private organizations
- Insufficient funds for activities budget
- Non- compliance of set regulations and standards
- Inadequate Profiling of stakeholders public private partnership
- Poor linkage of both parties and harmonizing of objectives
- Unqualified technical personnel in both public and private
- Non-existence of policies underlying the relationship between public and private
- Low public awareness on government policies

Group 3: Benin, Senegal, Cameroon, Mali and Cote d'Ivoire

According to private actors, top priorities to favour investment environment are:

- Organization of actors in cooperative (Cameroon)
- Develop founding mechanism along the value chain (Cote d'Ivoire)
- Invest in irrigation infrastructure development (Cote d'ivoire)
- Investment in rural road development (Senegal)
- Accelerate the establishment and smooth runing of the multi-actor platform (Senegal)
- Encourage importer to invest in local rice sector development (Mali and Benin)

According to public representative, institutional obstacles for working with the private sector are:

- Lack of well organized cooperative
- Poor management of private organizations

Overall, institutional obstacles for working with private sector from the public point of view are the lack of strong organization of actors in cooperative and the poor management. For moving forwards, public sector have to enable good infrastructure (investment in roads, increase energy availability, etc.) and accelerate the establishment and smooth running of the multi-actor platform.

A Q/A session was organized after each group presentation. Main discussion points are summarized as follow:

Market for local rice exists and needs to be sustained and competitive

- Create sustainable markets: Nigeria and Kenya are deficit countries. How do you create markets when you have a deficit? For SMEs to perform better, they must assess markets and supply what they can favorably compete in. The market for local rice exists but what can we do to make it more competitive? These details should be added to the action plans.

Eradicating of smuggling needs implementation of existing regulation measures

- To eradicate smuggling there are regulations within ECOWAS, so there is no need for new regulations. Measures currently being taken are not stringent and there is lack of strong diplomatic cooperation. Land-locked countries provide an avenue for smuggling, e.g., rice from Benin destined for other countries is smuggled into Nigeria. Mechanisms for curbing smuggling exist but need implementation.
- In Kenya, there's the problem of "paddy flight" to Uganda and Tanzania. Paddy flight should not be seen as a problem. It's because Kenya's paddy fetches a higher price across the border, thus the need to tap into the export market. Regarding paddy flight, it is marketing, which is good for domestic rice.
- On availability of quality paddy, mixing of varieties and storage were not mentioned. On vertical integration, in Kenya, millers are mostly service providers so are not too concerned about quality

Aggregating rice small holding farmers, a business model to favor crop insurance

- On climate change, we talked about introduction of climate-smart agriculture and crop insurance. Crop insurance should begin by quantifying the level of risk. In Uganda, insurance companies have started with maize, so hopefully, they'll move on to rice. Insurers need to know the sources and level of risk. In Tanzania, negotiations are underway to insure against different risks but farmers have small holdings. Therefore, there is need for a business model that aggregates farmers. Regarding insurance, in Nigeria, there is a parastatal under the central bank, which can benefit farmer associations. They deal with farmer groups and this is working well.

In general, the main discussions point about actions for strengthening in-country milling sector investment is related to creating a sustainable and competitive market. SME need therefore to assess market and supply what they can favorably compete in.

5.5. Session 5: Recalibration plan to increase investment in the milling sector

Based on working group on bottlenecks and priorities to foster investment in the middle segment of rice value chain, a recalibration plan was developed by each group. The recalibration plans were developed following three main points: Objectives/domains (credit facilities, research and

development, partnership, regulation, etc.), activities/actions, countries, responsible (public, private organization, NGOs, etc.) and timeframe (short, medium and long terms). Three recalibration plans were developed and annexed to this report (Annex 3). Participants were encouraged to develop joint calibration plan. However, some country specificities were mentioned where needed in order to ease the in-country implementation of the actions plan.

6. Conclusion

This report presents the summary of a three-day workshop was organized by AfricaRice, FAO and Rice Council of Tanzania, in Dar es Salam, Tanzania, from May 28th to 30th, 2019. In addition to the lessons on the role that millers play in upgrading the entire chain and ensuring return on investments in production identified during the workshop's sessions, the meeting also contributed to:

- The validation of the quantitative and qualitative research findings and enabled their dissemination to relevant ministries, private sector representatives, development partner organizations and research institutions and CARD.
- The provision of technical inputs for CARD's efforts in supporting member countries on the revision of the National Rice Development Strategies. CARD confirmed that the workshop's findings would be instrumental in the revision of the NRDS, and in particular would emphasize.
- Strengthening regional knowledge exchange on rice strategy development and the role of private sector engagement in public policy planning.
- A regional dialogue on the topic of nutrition and the role that milling has in depleting or adding nutritional value, and also the potential marketing opportunities that can be leveraged to compete with imports. It is likely that these considerations will be better addressed in the next revision of the NRDS.
- The current NRDS and support to the sector have focused on production and yield increases. As some countries, e.g. the United Republic of Tanzania, now move towards self-sufficiency, more emphasis is being placed on downstream actors and activities. The project's findings contributed to this process.
- Development potential for Sub-Saharan African countries:
 - Large gap between production and domestic demand: most Sub-Saharan African countries have high rice consumption, but the number of imports remains very high.
 - Demand for rice is constantly increasing
 - An investment programme is in progress to significantly improve infrastructure and increase rice production.
 - Investment opportunities at all levels of the value chain (see below)
- Despite all the financial, logistical and competitive constraints, there are numerous investment opportunities at all levels of the rice value chain.
 - Supply of seeds
 - Fertilizer Distribution
 - Irrigation structures
 - Agricultural machinery
 - Post-harvest management

References

Farm Africa. 2014. Strengthening the First Mile: Enabling small and medium agribusinesses to unlock development in Tanzania, Uganda and Kenya. Available at: <https://www.farmafrica.org/downloads/resources/strengthening-the-first-mile---pages.pdf>

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ANNEX

Annex 1: Workshop Agenda 28th -30th of May 2019

Day / Time	Activities	Resource persons
DAY 1	Rice Sector Development – A Regional Focus	
08.30-09.00	Registration	Irene
09.00-10.20	Opening ceremony	
	Welcome address	Winnie Bashangi, Rice Council of Tanzania
	Goodwill message	Aminou Arouna, AfricaRice
	Opening speech	Fred Kafeero, FAO Tanzania
	Introduction of CARD phase II	Yusuke Haneishi, CARD
	Self-introduction of participants	Participants
10.20-10.30	<ul style="list-style-type: none"> • Presentation of agenda • Objectives, outputs and deliverables of Workshop 	Winnie Bashangi/ Aminou Arouna
10.30-11.00	<i>Group photo / Coffee break</i>	Irene Fatognon
11.00-11.20	AfricaRice: Continental Investment Plan for accelerating Rice Self-Sufficiency in Africa (CIPRiSSA)	Aminou Arouna, Africa Rice

11.20-11.45	IRRI: Comparison of Rice Value Chain Upgrading: Lessons from Asia and West Africa	Matty Demont, IRRI
11.45-13.00	Round table – Exchange with Ministries of Agriculture <ul style="list-style-type: none"> • Presentation of NAIPS/ NRDS – How do they relate to the domestic rice sector 	MinAg reps (Tanzania, Senegal, Kenya)
13.00-14.00	<i>Lunch break</i>	
14.00-14.15	Presentation of project objectives and methodology	Siobhan Kelly
13.45-14.10	Presentation of key findings and recommendations of case study: Tanzania	Janne Kyauke
14.10-14.30	Discussion and Feedback	Participants
14.30-14.45	<i>Coffee break</i>	
14.45-15.10	Presentation of findings and recommendations of case study: Kenya	Bibiana Walela
15.10-15.30	Discussion and Feedback	Participants
15.30-16.00	Presentation of findings and recommendations of case study: Senegal	Abdoulaye Fall
16.00-16.30	Discussion and Feedback	Participants
16.30-16.45	Presentation of Synthesis	Siobhan Kelly
16.45	Day 1 closing comment	Aminou Arouna
19.00	Evening reception	Irene Fatognon

DAY 2	Investment Perspectives for Rice VC Development	
08.30-08.45	Recap of previous day	Aminou Arouna
08.45-09.15		
09.15-11.00	<p>Work Session 1: Working plan for framework development to foster public-private-partnerships for milling sector investment and follow-up actions – A private sector perspective</p> <ul style="list-style-type: none"> • Which policy actions are needed to favour investment environment? • How can the private sector be leveraged to remove the bottlenecks to sector development • What has the Government done well in recent years in your respective country? What has worked? • What are the top priorities they need to focus on moving forward? 	<p>Regional groups:</p> <ol style="list-style-type: none"> 1. Mali, Senegal, Cote d'Ivoire 2. Benin, Nigeria, Cameroon 3. Uganda, Kenya, Tanzania
11.00-11.30	<i>Coffee break</i>	
11.30-13.00	<p>Working Session 2: Actions for strengthening in-country milling sector investment – A public sector perspective</p> <ul style="list-style-type: none"> • What are the institutional obstacles for working with the private sector? • Sustainability, climate change and nutrition are becoming central to sector development. Is there a role for the private sector? What is it? 	<p>Regional groups:</p> <ol style="list-style-type: none"> 1. Mali, Senegal, Cote d'Ivoire 2. Benin, Nigeria, Cameroon 3. Uganda, Kenya, Tanzania
13.00-14.00	<i>Lunch</i>	
14.00-15.30	Discussion – Recalibration of Rice Sector Strategies	

15.30-15.45	<i>Coffee break</i>	
15.45-16.30	Continuation of discussion: Recalibration of Rice Sector Strategies	
16.30-17.00	Report the results back at national level within the regional groups	
17.00	Day 2 closing comment	
DAY 3	Learning Lessons	
08.30-08.45	Recap of previous day	
08.45-10.30	Plenary to present all Recalibration Plans	
10.30-11.00	<i>Coffee break</i>	
11.00-12.30	Country presentation of Recalibration Plans and feedback	Participants
12.30-13.00	General report/ Concluding remarks	Siobhan/Aminou
	Closing ceremony	FAO rep
13.00-14.00	<i>Lunch</i>	
	End	

Annex 2: Participants' list

No	Names	Gender	Occupation	Country
	Country representatives			
1	Cyriaque AKAKPO	Male	Ingénieur Agronome Chercheur Spécialiste en Riziculture- Directeur des Programmes ATDA	Benin
2	HOSSOU Honoré	Male	Directeur de ESOP-LALO / Spécialisé dans la transformation du riz paddy	Benin
3	BISCENE A NGON Hermann Guy-Aurèle	Male	Directeur Homologue National	Cameroon
4	DIABATE Mory	Male	Président de la Fédération des transformateurs de riz	Cote d'Ivoire
5	ABOUBAKARY Traore	Male	Directeur de l'Appuis à la Valorisation	Cote d'Ivoire
6	Jane Ndungu KAHITHE	Female	Head Rice Promotion Program- Assistant Director of Agriculture	Kenya
7	Julia HEYA	Female	Assistant Director	Kenya
8	John Wambugu KIHONGE	Male	Manager	Kenya
9	Centrine Nasambu CHANGALWA	Female	Factory Manager	Kenya
10	Justus Henry OKOMBO	Male	Manager	Kenya
11	Joseph Maina NDUNGU	Male	Agribusiness Consultant	Kenya
12	SIDIBE Moussa	Male	Chef de Bureau Statistique et Suivi-évaluation /(MA)	Mali
13	KEITA Seydou	Male	Secrétaire Exécutif-Interprofession de la Filière RIZ au Mali (IFRIZ-M)	Mali

No	Names	Gender	Occupation	Country
14	AYELEKE Dauda Ayewale	Male	Senior Agricultural Officer	Nigeria
15	DAMA Naankot Peter Douglas	Male	Rice Miller	Nigeria
16	Waly DIOUF	Male	Coordonnateur Programme National d'Autosuffisance en Riz (PNAR)	Senegal
17	Amadou Abdoul SY	Male	Directeur général de l'Agence de Régulation des Marchés	Senegal
18	Ousseynou NDIAYE	Male	Président CIRIZ Sénégal	Senegal
19	Assane FAYE	Male	Directeur general COIOPEC-ESOPP	Senegal
20	Jamhuri Amin	Male	Agricultural Officer (PAO)	Tanzania
21	Cleophas Kaseza RUHUMBIKA	Male	Assistant Director Investement Monitoring-PMO	Tanzania
22	Inocent Goodluck LEMA	Male	Economist	Tanzania
23	Peter CHISAWILLO	Male	Engineer	Tanzania

No	Names	Gender	Occupation	Country
24	Mays Mkwembe	Male	Managing Director	Tanzania
25	Steven MWAMPWANI	Male	Manager	Tanzania
26	Winnie BASHAGI	Female	Executive Director	Tanzania
27	Geofrey Edward RWIZA	Male	Rice value chain specialist- Marketing	Tanzania
28	Emmanuel Kissaba	Male	Researcher ARI-Ilonga	Tanzania
29	Nassibu Katoto	Male	Farmer & Miller	Tanzania
30	Emmanuel OGWAL	Male	Rice program Officer	Uganda
31	Yob Yobe OKELLO	Male	Secretary General	Uganda
	AfricaRice			
32	AROUNA Aminou	Male	Impact Assessment Economist	Cote d'Ivoire
33	FATOGNON Irene	Female	Assistant in Data analysis on Rice Statistics (AfricaRice)	Cote d'Ivoire

No	Names	Gender	Occupation	Country
34	Sali NDINDENG	Male	Grain quality and Postharvest Technology Scientist	Cote d'Ivoire
35	Edgar TWINE	Male	Agricultural Economist – Marketing and Consumer Preference	Cote d'Ivoire
	FAO			
36	Barwitzki Sonja	Female	Agribusiness Development Consultant	Italy
37	Kelly Siobhan	Female	Program Advisor Food Systems	Italy
38	Janne Remmy KYAUKEA	Female	Local consultant	Tanzania
39	Amadou Abdoulaye FALL	Male	Local consultant	Senegal
40	Fred Kafeero	Male	Representative of FAO Tanzania	Tanzania
41	Bibiana WALELA	Female	Local consultant	Kenya
42	Stella Kimambo	Female	Food Security & Nutrition Officer	Tanzania
	JICA			
45	Suzuki Fumihiko	Male	Senior Representative	Tanzania
	IRRI			
46	Matty DEMONT	Male	Senior Scientist	Philippines
47	Martin Gummert	Male	Senior Scientist	Philippines
	CARD			
48	Yusuke Haneishi	Male	General Coordinator du CARD	Kenya

Annex 3: Recalibration plan developed during the workshop

Table A: Tanzania and Uganda actions plans

Objectives/domains	Activities/actions	Countries	Responsibility (Public/private)	Time frame (short/medium/long)
Guarantee enough and high quality supply of paddy to millers	Provision of high yield quality seeds	Tanzania & Uganda	Research & Breeding by government agencies	Medium
	Lobbying and advocacy for private sector engagement in seed multiplication and distribution	Tanzania	Multiplication & distribution by private sector	Short
	Facilitate easy land acquisition for investment in large scale production	Tanzania & Uganda	TIC (Public) UIA (Uganda)	Short
	Demand creation for quality seeds through contract farming	Tanzania	Millers & Millers Associations (Private)	Medium
	Develop Contract farming regulatory framework	Tanzania & Uganda	Public, Millers Association, Farmers Association, etc	Medium-Long
Foster acceleration of labour saving technologies & quality maintenance	Conduct Inventory of available technologies	Tanzania & Uganda	Ministry of Agric. (Public)	Short
	Awareness creation and dissemination of technologies	Tanzania & Uganda	Africa Rice (Private), Min. of Agric (Public), SIDO (Public), Rice Council (Private), TIC (Public), Universities (Public), CTI (Private)	Short

Objectives/domains	Activities/actions	Countries	Responsibility (Public/private)	Time frame (short/medium/long)
	Creation of special purpose funds for mechanization in production and processing	Tanzania & Uganda	Financial institutions (Private & Public), TCCIA (Private)	Short
	Sourcing new advanced technologies for local manufacturers	Tanzania & Uganda	Min. of Science & Tech (Public), Universities (Public, Private), CAMARTEC (Public)	Continuous
	Acquisition of technologies	Tanzania & Uganda	Large millers/traders, Farmers Associations & groups (Private)	Medium
	Trainings on machine operations and maintenance	Tanzania & Uganda	Development partners, Millers, Technology suppliers, Vocational Training Institution, government mechanization Units (Public)	Short
	Provide after-sale service support (availability of spare parts etc.)	Tanzania & Uganda	Manufacturers/Traders/Dealers (Private)	Medium
	Developing & demonstrate business models for service provision (mechanization)-incubator or innovation centre	Tanzania & Uganda	Universities, private investors, service providers	Medium
	Facilitate platform for public/private fabricators linkages	Tanzania & Uganda	RCT (Private), District Value chain Platforms (Private)	Short

Objectives/domains	Activities/actions	Countries	Responsibility (Public/private)	Time frame (short/medium/long)
Reduce operation cost and increase competitiveness	Advocacy and lobbying on tariff reduction to decision makers	Tanzania & Uganda	RCT, Millers Association, ACT, ANSAF, CTI	Short-Medium
	Promote the use of alternative source of energy e.g. Rice husks for electricity generation	Tanzania & Uganda	Millers Council in collaboration with CTI	Medium
	Promote innovations in rice processing to create business cases in nutrition rice byproducts like brown rice parboiled , fortified rice products and fortified pellets feed for livestock and fish	Tanzania & Uganda	Millers and consumer institutions like supermarkets	Short-Medium
	Adoption /implementation of rice standard for market enhancement and product differentiation and food safety enhancement	Tanzania & Uganda	Millers, millers associations, TBS, SIDO, UBS- Governments, RCTs, DPs	Short-Medium
Improved collaboration and coordination among stakeholders	Capacity building of Millers associations, Cooperatives	Tanzania and Uganda	Government, RCT	Short-Medium

Objectives/domains	Activities/actions	Countries	Responsibility (Public/private)	Time frame (short/medium/long)
	Creating / formation of communication channels /strategies among stakeholders	Tanzania & Uganda	Millers, Farmers groups, Cooperatives, Public institutions	Short-Medium
	Improving trust between Government and private sector Actors, i.e. Millers, Service providers, etc.	Tanzania and Uganda	Millers associations, Government/Local Governments	Medium
	Increase private sector involvement in RD strategy formulation and implementation	Tanzania	Government, RCT, Millers associations	Short-Medium

Table B: Kenya and Nigeria recalibration plans

OBJECTIVE	ACTIVITIES	COUNTRY	RESPONSIBLE	TIMEFRAME
1. Credit facilities	<ul style="list-style-type: none"> - Credit to be backed with legislation - Have farmers bank or revamp the AFC (Agri.finance corporation) 	Nigeria /Kenya	Public	Long term
2. To have prompt Communication of the reports	<ul style="list-style-type: none"> - Action plans submitted to respective bodies - Memo sent up to the presidential level 	Nigeria /Kenya	Public/private	Short term
3. To eradicate Smuggling	<ul style="list-style-type: none"> - Stringent Enforcement of the regulations - Regional integration/diplomatic actions 	Nigeria /Kenya	Public	Short term
4. To create sustainable markets	<ul style="list-style-type: none"> - Market assessment skills – market penetration. - Product quality and differentiation for SMes’s 	Nigeria /Kenya	Public	Long term
5. Training and skills development	<ul style="list-style-type: none"> - Technicians in milling processing- ethics , maintenance - Rice technologies – Kenya. - Business skills for family business. 	Nigeria/Kenya	Public/private - Africa rice	Immediate

OBJECTIVE	ACTIVITIES	COUNTRY	RESPONSIBLE	TIMEFRAME
	- Entrepreneurship skills to youths – job creation.			
6. Lower cost production	- Lower power tariffs - Alternative source of power- solar, bagasse, biomass	Nigeria /Kenya	Public/private	Immediate
7. Research and development	- Sustainable Technologies on milling for small millers - Product development and differentiation from rice. – Value addition on by-products and fortification. - Varieties high yielding and customer oriented. - Bio-fortification – new traits	Nigeria /Kenya	Public/private -breeders	Short term/long-term
8. Formation of strong vibrant association	- Mobilization of the millers - Sensitize the millers on association. - Advocacy for the association	Kenya	Public	Short term
9. Involving private sector Create sustainability	- Sustainable collective paddy aggregation, drying and storage facilities - To enhance the mechanization	Kenya	public	Short term

OBJECTIVE	ACTIVITIES	COUNTRY	RESPONSIBLE	TIMEFRAME
10. Involving private sector in climate change mitigation measures	<ul style="list-style-type: none"> - To have climate mitigation strategies in place - Involve private sector from planning and implementation on all activities that mitigate the effects of climate change 	Nigeria/Kenya	Public	Long term
11. Involving private sector in nutrition	<ul style="list-style-type: none"> - To have the nutrition strategies in place - To involve private sector in development implementation on the strategies on nutrition of rice. 	Nigeria/Kenya	Public	Long term

Table C: Senegal-Benin Cote d'Ivoire –Mali –Cameroun recalibration plans

Objectives/Domains	Activities/actions	Countries					Responsibilities (Public / Private)	Calendar (S= short term; M=medium; L=long)												
		Mali	Benin	Cameroun	Senegal	Cote d'Ivoire		Mali	Benin	Cameroun	Senegal	Cote d'Ivoire								
Improvement of legal and regulatory framework																				
	Update laws and regulatory frameworks																			
	Equipment	X	X	X	X	X	Public	M	S	M	S	S								
	Paddy and milled rice			X	X	X	Public / Private					S								
	Institutionalize the access of the public procurement	X	X	X	X	X	Public	S	S	S	M	S								
	Secure the materials and products	X	X	X	X	X	Public	L	L	L	L	L								
Access to funding	Put in place a guarantee fund		X	X		X	Public		S	M		S								
	Set-up solutions for agricultural insurance	X		X		X	Public /Private	S		M		S								
	Leverage join surety		X	X		X	Private		S			S								
	Put in place financing lines with reduced rate of interest	X	X	X		X	Public	S	S	M	S	S								

	Facilitate the access to appropriated loans	X	X	X		X		Private		S	M		S
	Make available long resources	X	X	X	X	X		Public / Private	S	S	S	S	S
Strengthening of public /private partnership													
	Strengthen the capacity of the value chain stakeholder	X	X	X	X	X		Public / Private	S	S	S	S	S
	Professionalize the value chain	X	X	X	X	X		Public	S	S	S	M	S
	Create or reinvigorate the value chain platform	X	X	X	X	X		Public			S		S
Availability of subsidies													
	Subsidize equipment	X	X	X		X		Public		S	S		S
	Regulate domestic market (safeguard clause)	X	X	X	X	X		Public	S	S	S	S	S
	Reduce energy cost	X	X	X	X	X		Public	S	S	S	S	S
	Put in place infrastructures (roads, irrigated schemes, post-harvest storage and conservation, water management, energy, etc.)	X	X	X	X	X		Public	M	M	M	M	M
	Subsidize the packaging		X					Public		S			
Fiscal measures													
	Reduce tax for SMEs	X	X	X	X	X		Public	M	M	M		M
	Exempt the VAT for millers				X			Public			M	M	

Sustainability	Involve the private sector in water distribution and the governance of the sector	X	X	X	X	X														
	Encourage the private sector to invest in the industry	X	X	X	X	X														
	Promote win-win partnership;	X	X	X	X	X														
	Involve rice millers in diversification and upgrading of co-products and by-products	X	X	X	X	X														
	Put standards and quality premiums on the product	X	X	X	X	X														
	Reinforce the measures of contract agreement with quantity and quality insurance	X	X	X	X	X														
	Facilitate the development of multi-stakeholder platforms	X	X	X	X	X														
Climate change	Develop equipment / technology with respect to environment	X	X	X	X	X														
	Promote investment in renewable energy sector	X	X	X	X	X														

	Promote cogeneration and recycling of residues;		X	X	X	X	X		Private / Public	M	M	M	M	M
	Involve the SP in resilience technologies		X	X	X	X	X		Private	L	L	L	L	L
		X	X	X	X	X								
Nutritional quality	Promote brown , parboil and biofortification rice		X	X	X	X	X		Private / Public	L	L	L	L	L