
Middle Rima Valley Irrigation Scheme (MRVIS) and Rice Value Chain system: Implications for Rice Value Chain Upgrading in Sokoto State Nigeria

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ABSTRACT

The main aim of this study is to analyze the strengths, weaknesses, opportunities and threats (SWOT) of the rice value chain in Goronyo, Sokoto State, Nigeria. The participants include both direct and indirect actors. A two stage approach including a qualitative analysis through SWOT matrix and quantitative analysis using strategic orientation round were used. With respect to the internal factors, the five most important strengths of the Goronyo rice value chain are good health, availability/use of irrigation system, availability of small capital, profitability of the business and availability of raw materials, while the five most important weaknesses are lack of proper and organized cooperative societies, difficulties in timely accessing inputs, lack of knowledge on improved practices, non-existence of improved drying equipment, low quality of the milled rice supplied. Concerning external factors, the five most important opportunities are the existence of improved/modern equipment for each segment of Rice Value Chain (RVC), job creation, government desire to support rice value chains, availability of markets and existence of companies producing branded rice while the five most important threats are seasonal water scarcity, insecurity in the area, desertification (climate change), pest attacks and farmer-herder conflicts. Further analysis of the Strategic Orientation Round (SOR) suggests that the best strategy in the rice value chain is the offensive strategy exploiting strengths to take advantage from the opportunities. However, many actions need to be implemented to help actors to take profit from these opportunities.

Keywords: *SWOT Analysis, rice value chain system, Middle Rima Valley Irrigation Scheme*

INTRODUCTION

Globally, rice is a very important food crop consumed as healthy and

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staple food. In terms of production, rice is the second most important cereal in the world after maize in terms of total volume of production (USAID, 2010). Since a large portion of maize crops are grown for both human consumption and other uses, rice is perhaps the most important grain with regards to human nutrition and caloric intake. World production of rice stood at 825 million tons in 2017 (FAOSTAT, 2018). This represents an increase of over 31 % within a decade. Rice is consumed by more than 4.8 billion people in 176 countries and is the most important food crop for over 2.89 billion people in Asia, over 40 million people in Africa and over 150.3 million people in America (AfricaRice, 2018).

In Nigeria, rice also represents an important traditional basic commodity contributing a significant proportion of the food requirements for the Nigerian population cultivated in almost all the agro-ecological zone in Nigeria (Adeola Adebayo and Oyelere 2008). Rice consumption in Nigeria is growing, particularly among urban dwellers. The country also ranks first as both producer and consumer of rice in the West Africa sub region (AfricaRice, 2018). Recent data revealed that Nigeria produce over 6 million metric tons of paddy rice annually (FAOSTAT, 2018). This is however not sufficient to meet the demand of the growing population and thus the need for importation of rice to make up for the short fall. In order to bridge this short fall, over a million metric tons of rice was imported in 2003 alone (Sounkoura, 2015).

Despite its potentialities to be self-sufficient, the country only produces an average of 3 Mt of 5.3 Mt demanded leading to an average import of about 2.3 Mt (2007-2016) which makes it to be the first rice importer in Africa and the second in the world (USDA, 2017). Literature points out that relying on imports for satisfying the increasing demand for rice is a risky strategy for sustainable and long-term food and nutritional security. According to Fiamohe Demont, Saito, Roy-Macauley and Tollens (2018) long-term food security should be built on the development of domestic production, with progressive enough barrier protection against world price fluctuations and unfair trading. In addition, the country recorded an increasing cost of importation over the recent years from \$0.33 billion/year over 2001-2007 to \$0.95 billion/year over the period 2008-2014 (FAO, 2018). Consequently, there is an increasing

loss in foreign exchange earnings and low investments in to domestic rice sector. As a result, rice produced in Nigeria at moment is unsustainable and uncompetitive in the market because its value chain is fragmented and cannot steadily supply rice of high quality in large quantities. In fact, rice produced is recognized as low quality with a high proportion of impurities, chalky, and/or diseased grains and a low proportion of whole grains (Demont, 2013; Ndindeng *et al*, 2015; Demont, Fiamohe and Kinkpé., 2017; Mapiemfu *et al* 2017; Fiamohe *et al*, 2018). Many reasons could explain this fact among other, poor linkages between actors, the use of rudimentary pre-and post-harvest practices/ technologies, high post-harvest losses (Ndindeng *et al*, 2015).

Several efforts and policies have been put in place towards making the country self-sufficient in rice production. However, many rice farmers are presently frustrated due to low access to market for patronage due to several factors range from customer's attitude and believe. In spite of the large volume of paddy rice cultivated in Nigeria, majority of consumer's especially urban dwellers still prefer imported rice than locally produced rice. Rice produced in Nigeria is uncompetitive in the market because its value chain is fragmented and cannot steadily supply rice of high quality in large quantities. Thus the study intends to analyse the rice value chain in the Middle Rima Valley Irrigation Scheme (MRVIS), Sokoto State. The goal of the surveys was to gain a better understanding of the strengths, weaknesses, opportunities and threats of the rice value chain development in MRVIS.

Organizational structure of MRVIS scheme

Working meeting with the Project Manager (PM) of MRVIS and its staff allows us to understand the structure of Middle Rima Valley Irrigation Scheme (MRVIS). Under the supervision of the Project Manager, the scheme is managed by the Water Users Association (WUA). Initially the scheme was made up of three sectors namely Falaliya sector, Takakume sector and Mai-Iyali sector. However, Mai-Iyali was later split into two sectors namely Mai-Iyali A and Mai-Iyali B. Each sector is divided in blocks and each block is divided in Field Canals. Each level of the structure has a management committee which is democratically elected under the advice and support of the Dam managers. Block heads reports to the sector manager who reports to the WAU chairman. Water from the Dam moves

into sectors via the Main canal. This is then channelled into the blocks via the Disc canals and finally into farmer's fields via the field canals. This is managed at each level by the management committee. The organizational structure of the irrigation scheme and its working model are presented in Fig.1.

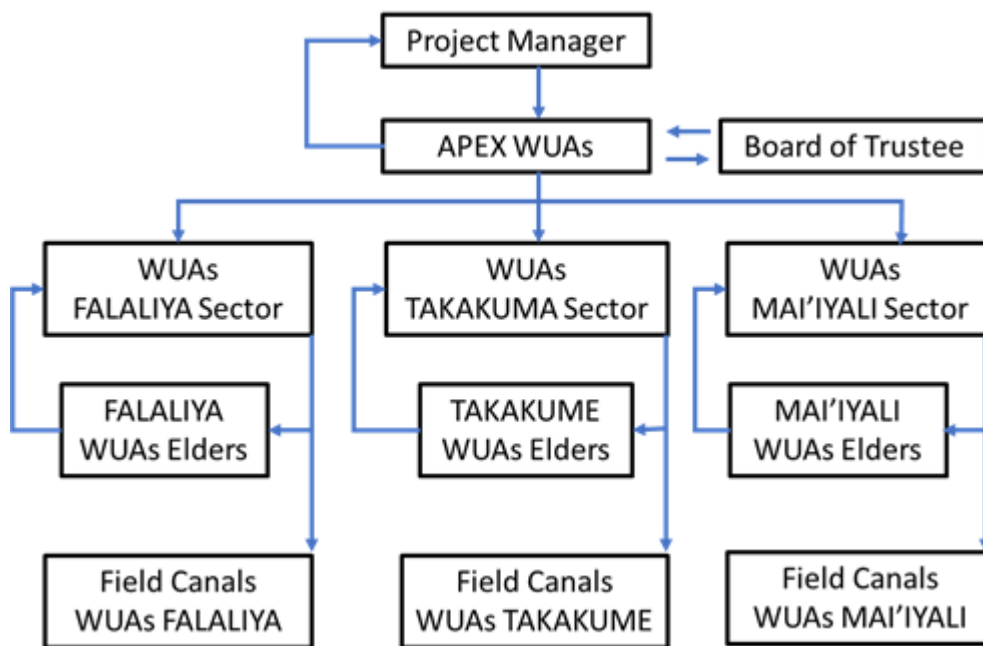


Figure 1: Organizational structure and working model of Middle Rima Valley Irrigation Scheme, Goronyo, Sokoto State, Nigeria.

MATERIAL AND METHOD

Data were collected through diagnostic survey with different rice value chain stakeholders and a participatory workshop bringing several value chain actors together. The study employed both qualitative and quantitative methodologies. The Focus group discussion (FGD) targeted at exploring the potentials for rice value chain development in MRVIS. Focus group discussion (FGD) sessions was conducted with the representatives of both direct and indirect actors in the rice value chain. Interviews session was carried out with direct actors which include farmers, parboilers, millers, marketers, and service providers and indirect

actors include the expert from academia, University and research institute, the project staff of Agricultural Development Programme and Middle Rima Valley Irrigation Scheme (ADP/MRVIS), policy makers, Non-governmental organization (NGO) and Agricultural service providers. Sampling was made based on the structuration of the scheme. A list was provided by actors of each sector. Seven to eleven persons were selected in each sector for focus group discussion. The last two sectors, Mai-Iyali A and B are combined in one sector, Mai-Iyali. A total of 110 direct and indirect actors included in the characterization and the qualitative analysis of all segment.

The first stage of the mixed sequential design of Van Wezemael *et al* (2013) was used, the qualitative analysis consists of SWOT analysis used to evaluate in a systematic way the external threats and opportunities, and the internal weaknesses and strengths of a sector (Fine, 2009). This first stage allows identifying the main points of interest for the future strategy development (Sabbe *et al.*, 2009) for the rice value chain in MRVIS. During this stage, stakeholders were asked to list all possible internal strengths and weaknesses, and external opportunities and threats of the rice value chain in the State. After aggregation, the lists were filtered from repeated and overlapping answers. Misclassifications of internal and external factors were relocated in the appropriate cell of SWOT matrix. Furthermore, stakeholders were asked to rank elements of each component of the SWOT analysis.

The second stage of the mixed sequential design consisted of scoring the SWOT matrix and performing a quantitative analysis through a Strategic Orientation Round (SOR) (Dyson, 2004). The SOR allows translating the Statements in the SWOT analysis into more practical strategic objectives. Following the sampling method of Vandermeulen *et al.* (2009) and Rutsaert *et al* (2014) who first selected different number of stakeholders for qualitative analysis and quantitative analysis, the sample size of direct actors combined with indirect actors was randomly selected. The five most important elements of each SWOT were combined in a matrix where the rows were filled with the internal components and the column with the external components. Each internal component was confronted with each external component. Value chain actors were asked individually to attribute scores to every single cell of the matrix. These

scores represent their answers to the questions relating to the quadrants encompassing the cell (Table 1). Scores were attributed according to two guidelines: first, a maximum of 12 points was attributed to each column; and secondly, each single cell score ranged between 0 to 3, indicating points of numbers, (0) - low (1) - medium (2) - high (3) - importance.

Table 1: Questions for each quadrant of the SOR matrix

| | Opportunities | Threats |
|-------------------|---|--|
| Strengths | To what degree does the strength facilitate to benefit from the opportunity? (Quadrant 1) | To what degree does the strength allow to cope with the threat? (Quadrant 2) |
| Weaknesses | To what degree does the weakness prevent to benefit from the opportunity? (Quadrant 4) | To what degree does the weakness prevent to cope with the threat? (Quadrant 3) |

Qualitative Analysis of Rice Value Chain

All rice value chain actors including direct and indirect actors were gathered during a one-day workshop to conduct the qualitative analysis of the rice value chain in Goronyo with result of SWOT analysis presented in Table 2. The strength ranked as the first by Rice Value Chain actors as good health. Without good health actors cannot perform their activities. Mentioning this strength as the first one suggests that in Goronyo, rice value chain actors are relatively healthy. The second most important strength is the use of irrigation system which allows them to have water for rice farming especially in the dry season.

Therefore, their income is higher than those who perform activities only in the wet season. The profitability of the business along the rice value chain is the third most important strength of the rice value chain in Goronyo. Whatever Rice Value Chain actors are doing along the value chain, it is profitable. The fourth strength is the availability of raw materials because of the use of irrigation facilities and rice farming in dry season, raw material is available for parboilers, millers and marketers. The fifth strength of the rice value chain is the availability of customers. Direct actors always sell their product because of the existence of customers. This is very important for the improvement of the value chain performance.

Regarding weaknesses, the first is the lack of proper and organized cooperative societies. In MRVIS, actors recognized that they are not well organized and therefore lose many opportunities from the environment. It was discovered that in the cause of study there is no cooperative/associations of actors on the field. Difficulty in timely accessing inputs is the second most important weakness and is related especially to farmers. As mentioned above, this situation negatively affects the performance of the rice value chain. One of the most important factors which improve productivity is improved technology and practices. In the scheme, actors have lack of knowledge on improved practices which they listed as the third most important weakness of the value chain. Likewise, they do not have any improved drying equipment in the scheme and ranked this as the fourth main weakness of the value chain. Finally, actors agreed that the low quality of the rice milled supplied on the market is the fifth most important weakness. Rice value chain in Goronyo produces low quality parboiled milled rice.

Concerning the opportunities of the rice value chain, actors think that the existence of improved/modern equipment for each segment of the Rice Value Chain is a great opportunity that increase the performance of the value chain. They mentioned several improved equipment such as tractor, weeders, power tillers, harvesters, combined harvester, thresher-cleaner, improved parboiled equipment, improved drying equipment, etc. The second most important opportunity is the possibility to create more jobs along the value chain in order to increase its performance. The following opportunity in the point of views of actors is the government desire to support rice value chains through its Agricultural Transformation Agenda (ATA). Several projects have been developed by the government and financed by different institution such as World Bank (WB), African Development Bank (ADB), etc. Another main opportunity is the existence of the market for rice in the State and its environs. The opportunity ranked as the fifth by the actors is the existence of companies producing branded rice. According to actors, they can establish contract with these companies to produce more quality rice and get more profit from their activities.

There are many threats for rice value chain in MRVIS. The most important for actors is the seasonal water scarcity. This is a serious threat

which can jeopardize efforts made by actors to improve the performance of the value chain. Insecurity is another serious threat. When there is a lack of security no activities can prosper in the area and hunger can occur and therefore food and nutritional security of the local government, the State and the country will be negatively affected. The third most important threat is desertification. Desertification affects the rice value chain in threefold: first, it will decrease the quantity of water in wet season and second will make soil more vulnerable to erosion. Finally, in the medium- and long term, parboilers and households will have difficulties to have firewood for parboiling and household cooking. Pest attack is ranked as the fourth most important threat in the value chain.

In fact, pest can destroy rice farms in just some hours or days. The fifth threat mentioned as the most important is farmer-grazer conflicts. The conflict between farmers and grazers is common in the entire West Africa region; however, this is more pronounced in the study area. Recently, many attacks have been reported between farmers and herd men in the country. According to the Coalition on Conflict Resolution and Human Rights in Nigeria, over 2000 lives have been lost to violent activities and clashes between herdsmen and farmers in the country. This situation is hurting the potential of an agricultural-powered economy of local government, States and the country.

Table 2: SWOT matrix for rice value chain in MRVIS, Goronyo, Sokoto State, Nigeria

| Strengths | Weaknesses | Opportunities | Threats |
|---------------------------------------|--|---|-------------------------|
| Good health | Lack of proper and organized cooperative societies | Existence of improved/ modern equipment for each segment of RVC | Seasonal water scarcity |
| Availability/Use of irrigation system | Difficulties in timely accessing inputs | Job creation | Insecurity in the area |
| Existence of small capital | Lack of knowledge on improved practices | Government desire to support rice value chains | Desertification |
| Profitability of the business | Nonexistence of improved drying equipment | Availability of markets | Pest attacks |
| Availability of raw materials | Low quality of the milled rice supplied | Existence of companies producing branded rice | Herdmen problems |

The strategic orientation round (SOR) was used to perform the quantitative phase of diagnostic study. To perform this, the five most important strengths, weaknesses, opportunities and threats were used to elaborate the SOR matrix submitted to the 33% of the direct and indirect actors of the rice value chain in MRVIS, Goronyo. In this matrix, each of the internal components (strengths and weaknesses) was confronted with each of the external components (opportunities and threats). The aggregated cell score indicates the relevance of each cell relative to other cells of the SWOT matrix. As mentioned in the methodology, the cell scores per actor ranges from 0 to 3 resulting in a maximum score of 99 for the stakeholders. The maximum score attributed per column (scores for opportunities and threats) per person is 12 resulting in maximum column scores of 396. Concerning total score per row for strengths and weaknesses, there are no limitations, and this can be up to 990. Although the quantitative phase was conducted for the whole rice value chain (only the quantitative analysis of the whole value chain is presented in the narrative).

Table 3 presents the total score of the 33 value chain actors with the total score attributed to the different SWOT components when compared. The most important strength related to the identified opportunities and threats is the good health of the direct actors in the scheme with a score of 457, followed by the availability and the use of irrigation system with a score of 392. The major weaknesses in relation to the opportunities and threats in MRVIS is the absence of an organized cooperative societies with a score of 385, followed by difficulties to access inputs on time (289). Concerning the most important opportunity, the existence of improved/modern equipment for each segment of RVC recorded the highest score (371) followed by availability of markets which recorded a score of 366. It is important to mention that the existence of improved modern equipment for each segment of the RVC scored high because of the strengths of the Goronyo RVC. Regarding threats, the most important is pest attacks with a score of 337 followed by insecurity in the area (330) and desertification and climate changes (330). Pest attacks recorded the highest score also because of the strengths of the RVC.

The aggregated cell scores in the first quadrant of the matrix (affecting strengths and opportunities) indicate to what extent a specific strength allows a direct rice value chain actor to benefit from a specific opportunity. The good health (61) of value chain actors, the profitability of the business (43) and the availability and the use of irrigation system (42) are the main strengths which can enable them to take advantage with the existence of improved/modern equipment for each segment of the RVC. Good health, availability and the use of irrigation system are also the main contributors for making profit from opportunities such as job creation, government desire to support rice value chains and availability of markets.

The aggregated cell scores in the second quadrant of the matrix (affecting strengths and threats) indicate to what extent a specific strength allows a direct rice value chain actor to cope with a specific threat. Good health (46) is the main strength which allows actors to cope with pest attacks. Another strength which contributes to cope with threats is the profitability of the business (42). Insecurity in the area can be mitigated by good health (41) of rice value chain actors which will allow them to take appropriate actions and the profitability of the business (41) which can lead local and political authorities to intervene on the security issues.

The aggregated cell scores in the third quadrant (confronting weaknesses and threats) indicate whether a weakness of the rice value chain prevents an actor to cope with a specific threat. In this quadrant, seasonal water scarcity recorded the highest score (152) followed by farmer-grazer conflicts. The major weakness that prevents actors from coping with all the threats is the lack of proper and organized cooperative societies which could allow them to collectively define actions and mobilize resource for coping with the threats. After this weakness, the lack of knowledge on improved practices is the main factor which prevents actors from coping with pest attacks. Almost all the other weaknesses have the same effect (28) on coping with the threats.

The aggregated cell scores in the fourth quadrant (confronting weaknesses and opportunities) indicate to what extent weaknesses of the rice value chain prevents actors to take advantage from a specific

opportunity. Two weaknesses are highlighted namely the lack of proper and organized cooperative societies (192) and difficulties to access inputs on time (160). These are the important weaknesses which prevent actors for taking opportunities such as job creation, government desire to support rice value chains, availability of market and the existence of companies producing branded rice. However, lack of knowledge on improved practices is the main weakness which prevents actors to take advantage from the improved/modern equipment for each segment of the value chain. SOR analysis allows us to translate SWOT analysis into strategic choices and related policy options.

Strategic choice and policy options

Summing the score obtained per quadrant in the SOR allows for the identification of strategic choices and the related policy options. According to Van Wezemael *et al* (2013), strategy is the way that internal strengths and weaknesses are used to tackle the most important external opportunities and threats. The strategy is determined by the quadrant which records the highest relative score. There are four types of strategies: offensive (strength-opportunity), defensive (strength-threat), clean-up (weakness-opportunity), or crisis (weakness-threat). Table 4 presents the main strategy of the rice value chain in MRVIS, Goronyo.

The total scores per quadrant are compared to the maximum possible quadrant score, considering the number of value chain actors who participated in the overall rice value analysis and answered the SOR questions, the number of rows and the maximum column score of 12. The results suggest that the offensive strategy, attack using strengths to take advantages from the different opportunities, is perceived by the rice value chain actors as the most adequate and effective strategy for sustainability and the competitiveness of the rice value chain in MRVIS, Goronyo. This mean that value chain actors would like to focus more on developing and enhancing strengths to tackle current and future opportunities in the environment.

Table 3: Aggregated SWOT scoring matrix for participants

| | | THREATS | | | | | | | | | | TOTAL ROW | | |
|--|------------|-------------------------|------------------------|----------------------------------|--------------|-------------------|----------------|---|-------------------------|---|--------------|--|----------------|--|
| | | Second quadrant | | | | | Third quadrant | | | | | Subtotal | | |
| | | Seasonal water scarcity | Insecurity in the area | Desertification (climate change) | Pest attacks | Herd men problems | Subtotal | Existence of companies producing branded rice | Availability of markets | Government support to rice value chains | Job creation | Existence of improved/modern equipment for each segment of RVC | First quadrant | |
| Food health | 61 | 28 | 41 | 40 | 46 | 44 | 258 | 40 | 56 | 46 | 55 | 61 | 457 | |
| Availability/Use of irrigation system | 42 | 40 | 33 | 37 | 45 | 41 | 212 | 40 | 41 | 45 | 44 | 42 | 392 | |
| Existence of small capital | 38 | 38 | 34 | 30 | 39 | 38 | 189 | 41 | 38 | 39 | 33 | 38 | 357 | |
| Profitability of the business | 43 | 37 | 41 | 31 | 38 | 35 | 193 | 35 | 38 | 38 | 39 | 43 | 380 | |
| Availability of raw materials | 35 | 30 | 35 | 43 | 32 | 38 | 179 | 38 | 39 | 32 | 35 | 35 | 350 | |
| Subtotal | 219 | 173 | 184 | 181 | 200 | 206 | 194 | 212 | 212 | 200 | 206 | 219 | 1731 | |
| Fourth quadrant | | Third quadrant | | | | | | | | | | | | |
| Lack of proper and organized cooperative societies | 28 | 43 | 43 | 35 | 41 | 36 | 192 | 44 | 43 | 41 | 36 | 28 | 385 | |
| Difficulties in timely accessing inputs | 31 | 28 | 22 | 23 | 30 | 36 | 160 | 33 | 30 | 30 | 36 | 31 | 289 | |
| Lack of knowledge on improved practices | 34 | 25 | 27 | 31 | 27 | 28 | 146 | 28 | 29 | 27 | 28 | 34 | 287 | |
| Scarcity of improved farming equipment | 30 | 28 | 28 | 29 | 30 | 25 | 137 | 27 | 25 | 30 | 25 | 30 | 273 | |
| Low quality of the milled rice supplied | 29 | 28 | 26 | 31 | 29 | 28 | 139 | 26 | 27 | 29 | 28 | 29 | 281 | |
| Subtotal | 152 | 152 | 146 | 149 | 157 | 153 | 158 | 154 | 154 | 157 | 153 | 152 | 1521 | |
| TOTAL COLUMN | 371 | 325 | 330 | 330 | 337 | 359 | 352 | 366 | 366 | 357 | 359 | 371 | 3251 | |

Table 4: Proportion of the maximum score per quadrant for rice value chain actors and corresponding strategic choice

| | Opportunities | Threats |
|-------------------|--|---|
| Strengths | Strategic choice: ATTACK RVC: 1031/1980= 52.07% | Strategic choice: DEFENCE RVC: 905/1980= 45.71% |
| Weaknesses | Strategic choice: CLEAN UP RVC: 774/1980= 39.09% | Strategic choice: CRISIS RVC: 905/1980= 37.42% |

Based on the SWOT result, an actions need to be taken by government to improve and maintain good health for rice value chain actors' especially direct actors such as farmers, parboilers, millers and marketers. Beyond actors, public actors need to take care of the health of the children as this can also affect actors' activities in the value chain. This suggests well-functioning hospitals available and relatively close to actors wherever they are in the scheme, availability of medicine at affordable price, hospitals services at free for some given diseases especially for children and women, regular vaccination of children, etc. RVC actors are proud of the use of irrigation system.

However, the irrigation facilities need to be improved as well as the distribution and the management of the water especially at farm level. Farmers need to be trained on how to effectively manage the water in their farm to get most benefit i.e. high yield from it. Although actors have a small capital to perform their activities, access to finance need to be facilitated though different options. Government or other development agent can provide credit in cash to actors for activity expansion. However, one is never sure if actors use the money for the right purpose. Another option is therefore to provide credit in kind by giving inputs to actors and buying the products from them.

AfricaRice (2018) revealed that government agencies and projects should also facilitate access to finance in the microfinance institutions which have suitable products for agricultural sectors. Multi-stakeholder innovation platforms (IPs) have been demonstrated to facilitate collective action for the generation, adoption and scaling of agricultural innovations that improve productivity, income and health (Sanyang *et al*, 2016).

Opportunities perceived by value chain actors need to be transformed into tangible facts i.e. from something that they can talk about

because they have seen or heard about it to something they can talk about because they have experience it for long time. Research institutes and private companies have developed several improved and modern equipment for farmers, parboilers, millers and marketers. Rice value chain actors are aware of that but need to have easy access to the equipment in their own area. This suggests taking actions to make the equipment available for use. In addition to the equipment, spare parts must be also available and local fabricators and/or artisans trained on the maintenance of the machine. Development agencies may provide this equipment to the actors and train motivated youth on how to operate them. Therefore, they can provide services to actors based on their specific needs. Government interventions in the agricultural sectors especially rice sector must include Goronyo dam actors.

However, government should not act as an active actor but as facilitator which create enabling environment for private companies for investing in the rice value chain through contractual arrangement with actors. Rice value chain is characterized by a fragmentation of the supply of paddy as well as processed rice. Government intervention must focus on facilitating the transformation of these small-scale actors to large-scale actors so that they can effectively benefit from the opportunities. Moreover, government intervention is critical if rice value chain actors want to effectively benefit from the companies producing branded rice.

The main role of government is to facilitate the connection between this private companies and rice value chain actors. Low technology base (mechanization), decaying infrastructure, high interest rates, weak institutions (such as poorly-funded research institutes, public extension system, and seeds certification), and corruption-ridden fertilizer distribution system and low public sector investments in agriculture (Biyi, 2005). Lack of improved varieties with scarcity and high input costs has led to farmers not using inputs such as fertilizers and other agrochemicals and those who use them, use sub – optimal proportions of the inputs resulting in low and poor quality yields (Demont *et al.*, 2017).

Concerning the weaknesses, there are three main actions to take in emergency: strengthen capacities if RVC actors on networking and assist them to be organized in strong and effective cooperatives/ association. This is very important for tapping into the opportunities and

even for tackling threats from the environment. When they are well organized, actors can easily access inputs by putting pressure on the private and public companies responsible for supplying these inputs. Furthermore, business link between actors along the value chain will be enhanced and problems will be easily solved. They ensure that different interests are considered, and various groups contribute to finding solutions (Homann-Kee *et al*, 2013).

CONCLUSION

The five most important strengths of the Goronyo rice value chain are good health, availability/use of irrigation system, existence of small capital, profitability of the business and availability of raw materials., while the five most important weaknesses are lack of proper and organized cooperative societies, difficulties to access inputs on time, lack of knowledge on improved practices, non-existence of improved drying equipment, low quality of the milled rice supplied. Concerning the external factors, the five most important opportunities are the existence of improved/modern equipment for each segment of RVC, job creation, government desire to support rice value chains, availability of markets and existence of companies producing branded rice while the five most important threats are seasonal water scarcity, insecurity in the area, desertification (climate change), pest attacks and farmer-grazer conflicts. Strategic orientation round analysis revealed the most important internal (strength and weakness) and most important external (opportunity and threat). Further analysis of the SOR suggests that the best strategy in the rice value chain is the offensive strategy exploiting strengths to take advantage from the opportunities. However, many actions need to be implemented to help actors to take profit from these opportunities.

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