## Project evaluation: summary report
Burkina Faso, Ghana, Nigeria, Tanzania (regional): Competitive African Rice Initiative (CARI)

<table>
<thead>
<tr>
<th>Project no.:</th>
<th>2013.2450.8</th>
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<tbody>
<tr>
<td>Sectoral attribution:</td>
<td>Agricultural Value Chains</td>
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<tr>
<td>Project objective:</td>
<td>Income and nutrition situation of resource poor male and female rice producers and their families in BF, GH, NG and TZ is sustainably improved</td>
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<tr>
<td>Project term:</td>
<td>10/2013 – 06/2018</td>
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<tr>
<td>Project volume:</td>
<td>22,206,000 Euro</td>
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<tr>
<td>Commissioning party:</td>
<td>BMZ, co-funding by BMGF and Walmart</td>
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<td>Lead executing agency:</td>
<td>GIZ</td>
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<td>Implementing organisations (in the partner country):</td>
<td>GIZ (regional, Burkina Faso, Nigeria), John Kufuor Foundation (regional), TechnoServe (Ghana), Kilimo Trust (Tanzania)</td>
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<td>Other participating development organisations:</td>
<td></td>
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<td>Target groups:</td>
<td>150,000 male and female Small Holder Farmers (initially 122,000)</td>
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### Project description

Rice production in Africa is estimated at 14.6 million tons per year on 7.3 million hectares, corresponding to 2.6% of the global rice production on 4.6% of the rice producing area, thus with low productivity. Rice consumption in steadily growing urban areas in Africa is tremendously increasing the demand for rice (4.6% per year). Paddy and rice quality of the national production is improving (purity, foreign materials, grain breakage), but still low and reducing the competitiveness with rice imported from Asia. Asian rice is imported under favorable import conditions with low but increasing import taxes while smuggling is not well controlled. Therefore, import of rice from Asia that is produced at relatively low costs does not decrease despite increasing but rather expensive rice production in Africa.

Agriculture is the most important economic sector in all four countries of the Competitive African Rice Initiative (CARI). More than 70% of the farmers are Smallholder Farmers (SHF) with either irrigated plots with one or two rice seasons/year, or as rainfed production in lowlands during the dry season. They use rice for own consumption as well as for income generation. Agricultural growth is insufficient to keep pace with population growth and ensure food security and poverty reduction sustainably. Men are usually responsible for rice production and oversee the marketing. Women carry out field works during production and have responsibilities in the (post)-harvest process, especially the parboiling of paddy.

Productivity of rice production is low with about 2.5 t/ha. Low productivity is a combined result of limited use of Good Agricultural Practices (GAP) and inputs of good quality (esp. seeds and fertilizers) and very low mechanization. Rice
production is carried out as mainly rainfed production with a high risk of inappropriate water availability or drought – aggravated through climate change - and only limited irrigated, but often not well maintained plots and schemes.

The core problem was initially identified as: the main part of the rural population in rice production areas lives under or close to the poverty line. The Rice Value Chain (RVC) is not effective and does not develop systematically. Resource poor rice producing families depend on a cheap and carbohydrate-rich diet and suffer from micronutrient deficits. Income and the food and nutrition situation of male and female rice producers is insufficient and does not match the human right to food. Causes for the core problem were related to the structure of the RVC: production potentials remain unexploited because supply and demand of agricultural inputs (seed, fertilizer, pesticides) are not sufficiently developed. Production incentives are scarce in the context of unreliable marketing conditions. In addition, access to finance is not yet fully and sustainably ensured.

Despite the priority given to rice production and RVC development in national policy documents, their implementation is not followed with emphasis. The national governments do not sufficiently coordinate their sectoral governance with VC stakeholders through a structured Public Policy Dialogue (PPD).

The objective of CARI is that “The income and nutrition situation of resource poor male and female rice producers and their families in Burkina Faso, Ghana, Nigeria and Tanzania is sustainably improved.” This objective shall be achieved with four outputs:

1. improved productivity, sustainability and competitiveness of the rice production systems (with product diversification in the paddy-based farming systems),
2. sustainable business relations between producers, processors and traders and beneficial conditions for sellers and buyers (with increased efficiency of local rice sourcing, processing and marketing, higher rice quantities in line with market requirements),
3. improved access to finance/inputs and/or consultancy services for producers and private sector businesses in the RVC and other economic activities (finance for equipment, inputs via pre-financing solutions and working capital for millers),
4. improved framework conditions for the rice sector reflecting producers and private sector interests, with recommendations of national sector organizations regarding ecological or climate aspects that are implemented and regional cooperation of the countries and RVC platforms promoted (while the John A. Kufuor Foundation’s (JAKF) and Kilimo Trust’s (KT) organizational capacities are increased).

The project’s objective is very ambitious, aiming at doubling the income of SHF, while starting to work in many intervention areas (above four outputs) from its beginning on in four countries in a complex institutional setting. It is assumed that all involved actors work for the same outcome to increase producers income, although private sector might have own business interests. Output 3 (finance) – although very important - rather forms a sub-element of output 2 (business relations in the value chain). Output 3 and even output 4 have a rather supporting character for the achievement of the central output 1 (productivity, sustainability and competitiveness of production) in relation to the outcome. Output 4 involves a long and complex result chain, including the qualification of the implementing partners to achieve the results. It was unrealistic to expect that the governments will not only integrate a number of recommendations in rice policies but also implement them (e.g. ecological and climate aspects) In addition, the theory of change assumes regional cooperation beyond the CARI countries already performing. The theory of change considers the outputs as interdependent and contributing in achieving the objective. The achievement of the objective itself depends on favorable framework conditions (such as favorable or stable trade and rice policies, market conditions, availability of quality inputs at reasonable prices, and the maintenance of irrigation infrastructures). The contribution of the finance sector to agricultural VC (output 3) constitutes at the same time a risk, while agricultural insurance systems are not yet developed in the CARI countries (missing assumptions/activity necessary for success). The results matrix has been reviewed, but did not receive substantial update.

The indicators (see effectiveness) are in general Specific, Measurable, Achievable, Relevant and Time-bound (SMART) with the exception of indicator 4 on diversification (not achievable). The measurement of three indicators at SHF level is relatively costly. Indicator 5 on the publication and integration of policy recommendations is either less relevant (publication level) or difficult to attribute to and achieve by CARI’s interventions during one project term (level of reflection in Government decisions). The nutrition situation (outcome) is assumed as a result of increased income and diversified production. Despite these shortcomings, the indicators were suitable to measure CARI’s effectiveness, and completed by additional indicators (employment) as well as other indicators already included in CARI’s monitoring at output level. The evaluation mission could only conduct limited own assessments at field level but used results from the project progress review conducted in 2016. Food and nutrition security, poverty reduction as well as the competitiveness of the RVC were considered as indicators at the impact level.

The size of the target group was increased and consists of 147,810 small-scale rice farmers including at least 30% of female rice producers. An overall gender strategy for the RVC was not developed while the Walmart foundation funding was developed for working particularly with women in paddy processing, crop diversification and nutrition. Producers should be integrated into inclusive Business Models along the RVC and receive quality training and advisory services for production.
The objective of CARI is well in line with the sectoral strategies at all levels. CARI’s approach is particularly influenced by the MENA-2 project (tobacco) and the project on cocoa sector strategy and policy reform of GFID. The project promotes diversification in agriculture, and the integration of 30% of women into the SHF systems differ according to the specific cropping and marketing conditions. Further clarification on the diversification strategy (nutritious crops or additional marketable crops and their relation to rice farming) could not be sufficiently translated and integrated into MGF projects. It is also well in line with the ValueLinks methodology to support value chain development.

Relevance (Are we doing the right thing?)

The relevance of the project is rated as very high, since it is based on a sound problem analysis of the RVC at the level of SHF as main beneficiaries, but also including the full range of problems in the RVC. SHF systems differ according to the specific agro-ecological sites, and include particularly vulnerable groups, such as conflict-affected farmers in Northern NG, migrated farmers in Eastern BF or female headed households in Northern GH. The project and its strategy fill an important gap to the effective integration of the private sector into RVC development and are complementary to other sectoral development initiatives. The MGF instrument is a perfect leverage in support of dynamic integration of private sector interests. Activities are driven by the off-takers and ensure that quality aspects are sufficiently taken into account. The integration of MGF partners with the policy component makes sure that their interest is reflected in policy improvements for the RVC development.

Gender and crop diversification rather represent “annexes” to the main RVC strategy and could not be well embedded in this novel approach, since most MGF projects were channeled through aggregators and millers who work on specific commodities without entry point for a farming systems approach. In this context, it is even dubious to integrate new additional crops (indicator) into various farming systems and site-specific cropping and marketing conditions. Further clarification on the diversification strategy (nutritious crops or additional marketable crops and their relation to rice farming) could not be sufficiently translated and integrated into MGF projects. It is also well in line with the ValueLinks methodology to support value chain development.

The relevance of the TC measure is rated very successful with 16 points.
**Effectiveness (Will we achieve the project’s objective?)**

<table>
<thead>
<tr>
<th>Objectives indicator</th>
<th>Target value according to the offer (Version 2014)</th>
<th>Current status according to the project evaluation</th>
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<tr>
<td>1) 150,000 SHF male and female rice producers with less than 2 US$ income/day/person receive services. 125,000 SHF among them are in addition integrated into productive economically and environmentally viable business models (at least 30% women mainly rice production).</td>
<td>Number of farmers (ratio of male and female) integrated into different types of Business Models (BM) BF: 12,000 farmers in 3 BM GH: 30,800 farmers in 3 BM NG: 50,000 farmers in 3-4 BM TZ: 30,000 farmers in 3 BM Total: 122,800 farmers with 30% women in each country</td>
<td>Farmers reached with services: 97,165 farmers Farmers integrated into BM with written supply agreements: BF: 3,487 farmers (29% of target) GH: 15,858 farmers (51% of target) NG: 38,458 farmers (77% of target) TZ: 23,672 farmers (79% of target) Total: 81,475 farmers including 33% female farmers</td>
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<td>2) The income (per ha) of farmers derived from rice production has at least doubled.</td>
<td>500 – 1,200 USD/ha</td>
<td>The minimum target of 500 USD/ha for lowland production is already achieved in South GH, TZ and NG. The maximum target of 1,200 USD/ha for irrigated production is not yet achieved, but shows good progress (indicating “doubling the income”). The values show high variation between the regions</td>
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<td>3) 90% of male and female rice producers apply sustainable technology packages adapted to their cropping systems, the ecological context and climate risks.</td>
<td>90% of male and female producers NB: target value changed to 112,500 apply technology packages</td>
<td>Currently, 68,015 farmers (60%) apply sustainable technology packages.</td>
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<td>4) 60% of farmers participating in the programme diversify their production with crops having higher nutritional value than rice.</td>
<td>Two additional products NB: Target value was specified as: at least one legume and one vegetable</td>
<td>It is currently not known how many farmers have new additional crops, CARI focussed on developing already existing nutritious crops. (see problem of diversification strategy and this indicator under project description and relevance)</td>
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<tr>
<td>5) RVC analysis and policy recommendations for the rice sector are published (and reflected in Government decisions).</td>
<td>2 publications per country</td>
<td>14 policy recommendations have been drafted and published. The publication of the recommendations (sometimes not very developed) does not yet indicate a change.</td>
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1 The indicators partly do not correspond to SMART criteria. This means, they are partly not specific, measurable, achievable (indicator 4), relevant (indicator 5) or time-bound. This reduces the significance of the results.
The evaluation team comes to the conclusion that objectives indicator 1 will probably be fully achieved until June 2018, since MGF projects only started in 2015 and reach their target groups progressively.

It is also worthwhile to mention that farmers and millers require time to gain confidence into their intensified relationships before signing agreements. The effective program start in BF was comparatively late. Two projects (one in BF with interruption and another in NG with intransparent management) encountered difficulties that seem to be resolved now. Two projects in GH and one project in NG were terminated prematurely. Although the target figures might not be fully achieved here, they are likely to be overachieved in other places and countries, especially in NG and TZ (notwithstanding the late programme start in October 2014), since millers propagate the model on their own resources or through cooperation agreements.

The evaluation team comes to the conclusion that objectives indicator 2 will probably be fully achieved by the end of the project in June 2018, since profitability indices have shown positive development in all areas.

A high variation of profitability has been observed with values between reversion of a negative profitability trend in Northern GH, 74% in BF, and between 150% and 2,275% in other areas. The measurement of this indicator is difficult since correct baseline values were difficult to obtain, and seasonal climatic conditions largely influence the productivity. The profitability increases are assumed on the basis of seasonal yields and model calculations (Vision of Success).

The evaluation team comes to the conclusion that objectives indicator 3 will probably be fully achieved by the end of the project in June 2018 since adoption rates for those GAP technologies that do not require additional inputs are easily adopted.

It is also assumed that many farmers will apply the second technology package with improved inputs (seeds, fertilizers, pesticides) to the extent that seeds are available in good quality and quantity. It is not assumed that many farmers will adopt all technology packages, especially those requiring investments or finance for mechanization and fully controlled water management.

The evaluation team comes to the conclusion that objectives indicator 4 will probably not be achieved by the end of the project in June 2018, since the strategy to introduce new crops on a general basis was unrealistic and the project setting inappropriate.

Although a crop diversification strategy was not worked out in detail, and it turned in general out to be difficult to implement diversification, some site-specific positive results have been achieved, in particular in the four Walmart Foundation funded projects or where millers processed other crops (e.g. soy beans and maize) and therefore had their own interest to invest in diversification.

The evaluation team comes to the conclusion that objectives indicator 5 will probably be fully achieved (even overachieved) by the end of the project in June 2018.

The policy component drafted a number of policy briefs on the basis of country specific analysis. Quality standards for these publications have not been seen. The policy recommendations partly correspond to policy briefs that provide an introduction to a specific topic to address, but not yet detailed recommendations to be taken into account at policy level.

The effectiveness of the project is high since CARI is likely to achieve its objective according to the indicators with outstanding outreach to farmers and considerable productivity and profitability increase for the farmers who apply sustainable technology packages. Further target group and profitability increases are expected before the end of the project while the relations between farmers and aggregators or millers continue stabilizing and improving. Access to finance for producers and processors is not yet sufficiently developed. The policies and framework conditions for the RVC are likely to be improved in the future on the basis of good cooperation with the political partners and further developed policy recommendations. Unintended or negative results did not occur.

Some achievements of the project that relate to its outcome are not reflected in the indicators, e.g.:

- More than 62,400 farmers have had access to finance for procuring inputs through various channels,
- A number of millers have improved their milling equipment and can process larger quantities in better quality,
- The improvement of paddy and rice quality and successful marketing in competition with imported rice (depending on countries and markets),
- Exchange and cross-learning among MGF partners with a high diversity of business models that contributes to scaling-up innovations,
- Generally good influence on the main actors of the RVC, depending on the specific situation in the countries and the windows of opportunity at policy level, but difficult to follow through the monitoring system.

Employment effects have not yet been substantiated.

The effectiveness of the TC measure is rated successful with 13 points.
Overarching development results (impact) (Are we contributing to the achievement of overarching development results?)

CARI has resulted in considerable profitability increases in all MGF project areas on the basis of increased production and efficient use of resources (outcome). The additional rice harvest can serve for own consumption (limited increase until full self-sufficiency) and for selling (larger increase). Thus, the caloric intake of households can be improved with rice available outside the general harvest periods (dry season harvest) and the additional income can serve to buy additional food. Finally other more nutritious crops might be available in larger quantities than before through the crop diversification results where they were successful. Nutrition trainings have raised the awareness on the quality of nutrition and might partly be applied. Thus, depending on SHF priorities, it is strongly plausible that nutrition at household level was and can be further improved. At the same time, the additional income can be used to improve livelihoods in terms of education, health, housing and the extension of rice cropping or other economic activities. Increased incomes from improved paddy parboiling techniques and crop diversification in some areas are used by women and often to the benefit of the primary needs of the family. However, the additional income is limited by the size of the plots and the potential to expand rice schemes. In addition, overall economic conditions have affected the extent of translation of increased income into improved living standards in GH and NG.

Women are rarely found among the MGF partner representatives and in the national stakeholder forums with the exception of the parboilers union UNERIZ in BF, WOFAN in NG and OKATA in GH. Therefore, their role and interests are less represented in the current project setting. It is not known how many female headed households or members of women groups are among the supported SHF and whether the application of GAP techniques and increased market integration will change the gender balance in terms of workload and decisions on additional income in mixed farming households.

Although CARI has given particular attention to alternative weeding techniques and integrated pest management as well as to the safe use of pesticides during the GAP training, the application of these topics remains limited. Independent from CARI, the use of herbicides is common practice among rice farmers. GAP training also increases the awareness on environmental and climate issues, such as the management of natural resources and the resilience to climate change. Energy for rice processing is increasingly sourced from husks. Energy saving stoves have been developed for parboiling. The application of improved water management in trainings as suggested by the System of Rice Intensification (SRI) techniques reduces methane emissions from rice plots. However, Ministries and national stakeholders might in practice not give priority attention to environmental concerns, including water management, first as integrated water resource management, second as water use efficiency and management in the irrigation schemes and third as pollution of percolation or runoff water with nitrate or chemicals. Even in case that respective regulation might be in place, their application and control lacks behind. The number of stakeholders in the CARI system who have a good insight into environmental issues is too limited to create substantial awareness, influence and change and it seems to remain a donor-driven priority.

The impact of the TC measure is rated successful with 13 points.

Efficiency (Are the objectives being achieved cost-effectively?)

This first project period was short compared to the ambitious objectives and the simultaneous establishment of the multi-dimensional CARI components through implementing partners and MGF projects. In Tanzania the project started even later. The implementation process required tender procedures at two levels (IP and MGF partners) in all four countries. The MGF management cycle could not be aligned with the agricultural calendar. The organizational processes at FBO and stakeholder platforms also had to be considered. Furthermore, policy works require time and the establishment of networks. The no-cost extension of the project was very beneficial in this regard and will allow including at least one more rice season to further strengthen the adoption of techniques and extending the MGF projects as cooperation agreements. This extension is expected to considerably increase CARI's results, impact and sustainability.

CARI’s organisational structure and management capacities are excellent to manage such complex project as described above. It is worthy to note that the ambitious and multiple objectives had not been substantiated by sufficient human resources to promote them. The most important gaps were related to conducive and sustainable access to finance (output 3) and business (output 2/transversal). In some cases, staff was not always assigned according to experiences.

CARI’s efficiency in terms of financial input and development output was outstanding: first, the MGF fund was leveraged at 60% by the private sector and allowed reaching out to about 150,000. The ratio is best in NG and TZ with about 5,000 targeted farmers/project and less in GH with 3,000 - 4,000 and BF with only 3,000 targeted farmers/project. More farmers might in addition be reached through the initiative of some MGF partners. The efficiency in terms of financial input related to achieved outputs and outcome is also very impressive with considerable productivity and profitability increases at SHF level. The efficiency and utilization of operational capacity of the rice mills is not followed through the monitoring system.

The MGF proved to be an excellent instrument to implement CARI and ensured the private sector’s full involvement. Therefore, the quality and marketing aspects of the VC were well addressed and the project made use of complementary levers related to other projects in the RVC that often focused on production (e.g. GAP training) or processing techniques. The full potential was not yet utilized since senior staff for access to finance and agribusiness were not involved.
Furthermore, the study results are not yet transformed into application, e.g. new business models for service provision. The strengthening of relations between the partners in the business models, and in particular between millers or aggregators and farmers proved to be a very positive and sustainable result that strongly enhances the effectiveness and the efficiency of the RVC. The consortium approach in TZ proved to be at an advanced stage compared to the other countries. The MGF partners rated high the advisory services that they have received from CARI.

CARI works with varying but good cost-efficiency in the four countries. It is carried out in complementary and synergetic relations with other development projects and partners in the RVC while the regional cooperation could still be further developed. CARI’s country teams have managed to establish good relationships with many other projects in the RVC in all countries, in particular where relations with other organizations as well as with other GIZ projects proved to be suitable to transfer and scale-up innovations. Good cooperation has been established at regional level through bi-annual meetings in the context of the steering committee. As the CARI approach is unique, the project was perceived as complementary in all countries without duplication.

The efficiency of the TC measure is rated very successful with 15 points.

**Sustainability (Are the positive results durable?)**

Policies and regulation for the RVC are in place in all countries and tend to develop towards promoting national production through the increase of taxes and tariffs for Asian rice although the enforcement of these regulations does not yet fully work (continued smuggling). Other policies work in favor of national food security by limiting the prices for main staple food (under discussion in NG) or by stabilizing minimum procurement prices for rice as national food reserve in BF. The latter national policies guarantee markets, but do not work in favor of improvements of the RVC, especially in terms of quality since quality standards are not followed at this level (food reserves).

The core business relations within the MGF project’s VCs have become much stronger, a very important element for sustainability of the RVC. The rice millers and their related stakeholders depend on farmer organizations to procure paddy. The farmer organizational aspect was strongest in BF but in general not yet found sufficiently strong to appropriately defend the farmer’s interest. Their negotiation skills and bargaining power and group dynamics are not yet well developed to avoid side selling on one hand and to obtain mutually favourable terms as outgrowers on the other.

The supply chains for inputs and services as well as relations within the MGF projects and consortia are not yet sufficiently functioning and strong to ensure sustainability of the diverse business models although the core relations between farmers and millers have considerably improved. The state controlled seed sector remains particularly weak with considerable difficulties to source quality seeds in all countries while awareness for quality seeds at the farmer level has risen. Sustainable access to finance is a partly resolved core problem up to now that limits the progress and success of the VC development. There is still work to do to fully and sustainably integrate service and input providers. In addition, millers require access to sufficient working capital to use the benefits of their financial investments: they will support training for farmers as far as they are sure to secure their paddy production. They also give priority to those training elements that ensure advantages to them, e.g. quality seed utilization and specific varieties or post-harvest handling for better prices and competitiveness of their products, but not necessarily the safe handling of pesticides or the nursery techniques.

The training system improvement was very successful and the acquired improvements of energy efficiency at the processing level have been developed, shared and applied, especially in parboiling.

It is not sure whether gender concerns will be reflected in the RVC: participation of 30% of women in the trainings will not ensure that benefits of the value generation will be equally shared.

The sustainability of the TC measure is rated successful with 12 points.