

EUROPEAN COOPERATIVE FOR RURAL DEVELOPMENT

Brewing a Better Future in the Democratic Republic of Congo

An Impact Assessment of Heineken's Local Sourcing Initiative

7 July 2013



Written by Bastiaan Huesken for:

European Cooperative for Rural Development

Headquarters Belgium:

Avenue Louise 500, 1050 Brussels
Belgium

+32 (0) 2 648 8937

+32 (0) 2 649 0531

www.eucord.org

Country Office Democratic Republic of Congo:

l'Avenue du Drapeau 1, Commune de Barumbu, Kinshasa
Democratic Republic of Congo

+243 (0)8 103 22 605

Table of Contents

Acknowledgements	3
Executive Summary	4
Introduction	8
Research Method	11
Development of Rice Production	13
Conclusion	23
Recommendations - Project Sustainability	24
Bibliography	28
Appendix	29

Acknowledgements:

This impact assessment would not have been possible without the generous help of colleagues who have given much of themselves to the 'Increase Food Security and Improve the Livelihoods of Rice Producers in the DRC' development initiative. In particular I would like to thank Niels Hanssens, Frederic Mbaki, Bibiche Biduale, Henk Knipscheer and Samy Mbelolo for their guidance. Thanks also to Jean-Pierre Sassa and Doddy Ntambwa and the rest of the team in Kinshasa, Jean-Pierre Bologne and Faustin Likaka and the rest of the team in Kisangani, Papa Ngomak and Paul Tsasa and the rest of the team in Nsioni, George Reisis and Anicet Mopanza and the rest of the team in Bumba and Jean-Pierre Momboto and the rest of the team in Gemena, without whose effort this impact assessment would not have been realized. I would also like to express my thanks to Hans van Mameren and Alexey Chernyaev for their support. On behalf of smallholder farmers in Kinshasa, Kisangani, Nsioni, Bumba and Ngele whom this project endeavors to help, I would like to express to all, their thanks.

Executive Summary

In 2009 Bralima S.A.R.L. – subsidiary of Heineken International N.V. – and the European Cooperative for Rural Development (EUCORD) launched ‘Increase Food Security and Improve the Livelihoods of Smallholder Rice Farmers in the Democratic Republic of Congo (DRC)’ – also known as ‘Projet Riz’. The development initiative, funded by Heineken International N.V. and the Netherlands Ministry of Foreign

modern agronomic practices and from access to improved seed varieties, of which the project distributed a total 88 MT through reimbursement schemes.

Commercialization of the rice sector was facilitated among others, by Bralima signing 66 contracts with local rice suppliers who purchase and aggregate rice produced by smallholders. The guarantee of sale to Bralima



Smiling rice trader near Yanonge, 2012

Affairs, aims to i) increase food security; ii) improve the livelihoods of smallholder rice farmers and; iii) improve access to primary education in Kinshasa and rice growing areas. A two-pronged approach, which saw EUCORD and Bralima simultaneously implement activities to increase i) the production capacity of smallholder rice farmers and ii) catalyse the commercialisation of rice production was adopted.

58,720 smallholder households located in 8 regions of the DRC including Nsioni, Kinshasa, Kisangani, Bukavu, Lubumbashi, Ngele, Budjala and Bumba directly benefitted from the local sourcing initiative. Smallholders benefitted from workshops and trainings on

has been instrumental in increasing rice sector actors’ confidence and willingness to invest in (developing) the production, processing and sale of rice in the DRC.

Since 2009, Bralima breweries throughout the DRC sourced more than 40,000 MT of rice from smallholder farmers, redirecting in excess of \$26 million toward the local economy. The benefits accrued by smallholders, in terms of productivity and profitability gains are profound.

73% of all respondents indicated that the project has improved their livelihoods. Production increased by 100% in Ngele from 880 kg in 2011 to 1,760 kg in 2012 and by 30%

in Kinshasa, from 1,003kg to 1,296kg. In Kinshasa respondents' average yield increased from 1,708 kg/ha to 2,225 kg/ha and yield likewise increased from 969 kg/ha to 1,516 kg/ha in Ngele. Production increased by 130% in Kisangani, from 755 kg in 2008 to 1,700 kg in 2011 and by 80% from 1,141 kg to 2,044 kg in Bumba. Average yield in Bumba increased from 1,170 kg/ha to 1,371 kg/ha and In Kisangani average yield likewise increased from 782 kg/ha to 1,094 kg/ha.

In Kinshasa marketed surplus increased by 30% from 2011 to 2012. A similar trend is evident in Ngele where the amount increased by 90% over the same period. Likewise in Bumba and Kisangani average marketed surplus increased by 75% and 110% respectively

The project has moreover supported farmers in overcoming market failures and other impediments which stand in the way of agricultural commercialization, resulting in greater market access and participation.

Confidence that produce would be sold increased from 74% to 98% and from 62% to 99% in Bumba and Kisangani from 2008 to 2011. Levels in Kinshasa and Ngele also increased from 89% to 99% and 43% to 78% respectively from 2011 to 2012. Only in Nsioni did confidence levels drop following project intervention.

The combination of factors has resulted in an increase in net income derived from rice production in spite of increases in total production costs.

Profitability of rice production increased in all regions apart from Nsioni. In Kinshasa profitability increased by more than 400% from 2011 to 2012 and similarly, in Ngele average net income increased from -35,200

CDF in 2011 to 19,400 CDF in 2012. In Kisangani farmers' average net income increased by 283,830 CDF between 2008 and 2011 and average net income in Bumba almost tripled from 57,200 CDF in 2008 to 162,850 in 2011.

The project has not been successful in improving access to primary education. Of all 652 respondents, 82% (N=532) stated that the project did not improve access to primary education. The point is underscored by comparing the number of children of primary school age who didn't attend school before and after project intervention. Before project intervention, 203 children of primary school age across the regions of Bumba, Kisangani and Nsioni did not attend class and following intervention, this figure increased to 239. A similar trend is discernible in Kinshasa and Ngele where the number increased from 192 to 205.

Alternative strategies, besides construction of infrastructure can be designed and implemented in future projects to increase project efficacy. For example, innovative pilots to improve educational institutions access to finance and quality of education can be launched and replicated as applicable.

Further challenges identified by the report include; i) the environmental sustainability of the project; ii) the facilitation of access to training in agronomic practices and access to improved seed varieties following project termination in December 2013; iii) availability of credit; iv) availability of intermediaries in intervention areas and; v) the lack of a monitoring and evaluation framework.

Environmental sustainability can be promoted through integrated training modules which illustrate the environmental and economic benefits of sustainable agronomic practices such as crop rotation, minimum tillage and

low-land irrigated rice cultivation. In relation to the sustainability of services provided by the project; EUCORD and Heineken can establish innovative partnerships with commercial actors to ensure the continuation of trainings and continued access to improved seed varieties. Credit service provision can be developed through dialogue and collaboration with credit agencies. Special attention should be given to implementing structures that ensure the commercialization of production in regions devoid of intermediaries and selection of intervention areas should be informed by feasibility studies. Finally, EUCORD and Heineken International N.V. can develop a monitoring and evaluation log-frame during the project design phase to facilitate continuous monitoring and improve the accuracy of impact assessments.

In spite of these challenges, Projet Riz has had a significantly positive impact on smallholder rice farmers in the areas where the project has intervened, improving the livelihoods of one of the most overlooked demographics in the DRC: the rural poor.



Introduction

Introduction

The following impact assessment discusses the findings of an empirical study of Project Riz, conducted from February to July 2012 and from November 2012 until April 2013 with the intent of quantifying the impact that the development initiative has had on the project target groups. In particular this paper will discuss the impact the project has had on:

- The livelihoods of smallholder farmers.
- The productivity and profitability of rice production.
- Food security of rural and urban Congolese.
- Access to primary education in Kinshasa and rice growing areas.

This report will begin with an introduction of the project and by delineating several of the DRC's defining characteristics. Hereafter follows a discussion of the data used in the impact assessment and a section detailing results. The paper will end with concluding remarks and several recommendations concerning project sustainability post 2013.

Project Objectives:

In February 2009 Bralima and EUCORD launched a local sourcing, development initiative entitled 'Increase Food Security and Improve Livelihoods of Rice Producers in the DRC', also known as 'Projet Riz'. The project aimed to increase food security, improve the livelihoods of smallholder farmers and improve food security and access to primary education in Kinshasa and rice production zones by simultaneously facilitating an increase in the production capacity of smallholder farmers and crucially, by incorporating local producers into the value chain of the 6 Heineken owned Bralima breweries.

Project Design

In all, the project has been implemented in 8 regions throughout 6 provinces of the DRC including; Kinshasa (Province de Kinshasa), Kisangani (Province Orientale), Nsioni (Province du Bas-Congo), Bukavu (Sud Kivu), Lubumbashi (Province de Katanga) and Ngele, Budjala, and Bumba (all three Province de l'Equateur). Project intervention has been staggered, beginning at different times in different regions.

The project's two components – the development of rice production and including smallholder farmers in the Bralima value chain – were implemented through close collaboration between Heineken, EUCORD, Bralima and local partners. The project components aimed to facilitate commercialization of rice cultivation by supporting farmers to overcome institutional constraints and market failures common in the DRC.

The first component of the public private partnership focused on capacity building of local partners and smallholder farmers through training workshops and demonstrations and by providing access to inputs such as improved rice varieties.

Local partners were charged with selecting and training field extension agents who were contracted by EUCORD to train farmers in their areas of origin. In total, 241 field extension agents were recruited and 43 field extension agent training workshops were organized. Workshops provided training and information on various subjects including agronomic and commercial practices, environmental sustainability and HIV-AIDS and nutrition. Field extension Information was disseminated by field extension agents among smallholder farmers through on-site demonstrations, of which a total of 1,051 were organized. A critical intervention was the distribution, via a reimbursement scheme, of 88 MT of improved rice varieties.

Commercialization of rice production was facilitated through the signing of 66 contracts

between Bralima and local rice suppliers – effectively increasing smallholder farmers and intermediaries’ confidence and willingness to invest in the rice sector (development).

Since 2009 the project has supported 58,720 smallholder households by facilitating access to inputs and support through training workshops and demonstrations. Investing in increasing the production capacity of smallholder farmers has resulted in a total 40,394 ha being under improved management and volumes of rice produced having increased due to an increase in the number of farmers producing rice and crucially, to the expansion and intensification of rice production by project affiliated farmers.

remaining 87.38% (12,597 MT) were locally sourced. Since 2008 Bralima has purchased 39,319 MT of rice produced by smallholder rice farmers in the DRC, redirecting in excess of \$26 million towards the local economy, specifically, to one of the most overlooked and vulnerable demographics in the DRC: the rural poor.



Concurrently, Bralima drastically altered its sourcing to accommodate smallholder farmers into their value chain. Prior to project implementation, Bralima imported close to 100% of its rice requirements. In 2011 this figure was reduced to 12.62% (for the breweries in Boma and Lubumbashi) while the

The Democratic Republic of Congo - Context:

Endowed with favorable climates, fertile soils, ample water supplies and vast tracts of arable land, the DRC is ideally suited to agricultural production. However, years of physical insecurity and political instability mean that the country's agricultural potential is tremendously underexploited. Since the 1960's, the DRC's agricultural sector has in fact been characterized by stagnation and decline, resulting in the country being highly import-dependent.

Agriculture is a fundamental instrument in poverty reduction (World Bank 2008) and the prolonged lack of public and private investment in the agricultural sector (and infrastructure critical thereto) of the DRC has left many millions of Congolese mired in poverty. 70% of Congolese are dependent on the smallholder dominated agricultural sector for their livelihoods (OECD 2007), not coincidentally, poverty affects 71% of the population of the DRC (African Development Bank 2012). Some 67 million Congolese live below the proverbial USD 1.25 per day poverty threshold. Despite the state of the country's agricultural sector, it accounted for 54% of the country's gross domestic product in 2010 (U.S. Department of State 2012) indicating the severity of the state of the Congolese economy as well as the centrality of the agricultural sector.

Rice is one of the staple foods of the DRC and demand is increasing, as is the case in most Sub-Saharan African countries where rice consumption is estimated to increase 4-5% per annum due to demographic trends, urbanization and changing preference for rice across revenue groups (New Agriculturalist 2009).

The commercialization of smallholder agriculture – a process in which smallholder productivity is increased, resulting in larger marketable surpluses and greater market participation (Jayne, Haggblade, Minot and Rashid, 2011) – is considered a key strategy for sustainable poverty reduction and equitable economic growth in many SSA

countries (Kirsten, Mapila, Okello and De, 2012). Strong public and private sector support to mitigate institutional constraints and market failures is crucial. Such support is however, rare in the DRC which systematically ranks among the world's worst economies for doing business, ranking 178th out of 183 economies in the World Bank's 2012 *Doing Business Report*.

Projet Riz comes at an important junction and is well placed to engage critical and interrelated issues. The results will show that Heineken International, the Netherlands Ministry of Foreign Affairs, Bralima and EUCORD have with Projet Riz, effectuated a revolution in smallholder rice producers' productivity and market participation, resulting in the improvement of livelihoods of an estimated 42,000 smallholder households.

Research Method

Design

This impact assessment was conducted from February to July of 2012 and from November 2012 until April 2013. Research centered on rice producing zones in which the project has been implemented. Local partners were requested to select a representative interview sample of smallholder farmers – in terms of gender and geographical location. Invitations were extended to selected interviewees and interviews were conducted on site, with groups ranging from 15-20 smallholder farmers. Field research was conducted at 5 of the 8 regions in which the project has intervened including; Kinshasa (Province de Kinshasa), Kisangani (Province Orientale), Nsioni (Province du Bas-Congo), Ngele and Bumba (Province de l'Equateur).

The assessment consisted of face-to-face structured and semi-structured interviews with smallholder farmers and local partners and stakeholders. The cornerstone of this impact assessment consisted of a 5-page questionnaire designed to measure the socio-economic impact that the project has had on smallholder farmers (see Appendix 1). Data that was obtained was either qualitative or quantitative and scales varied depending on the nature of the data. The questionnaire contained a mix of background, factual and attitudinal questions. Interviews lasted on average between 30 minutes and 1 hour and were conducted by project agronomists, field extension agents and the author in French, Lingala, Swahili, Kikongo and other local languages.

Questionnaire design varied to accommodate for site particularities. For example, questionnaires conducted in Kinshasa and Ngele differed from other questionnaires to accommodate for the fact that project intervention began in 2011. Measures of 2008 and 2011 were taken elsewhere.

Data validity: sample size and generalization

In total 652 questionnaires were completed – 165 in Bumba, 158 in Kisangani, 96 in Gemena, 119 in Kinshasa and 112 in Nsioni – allowing for inferences to be made about the effect the project has had on smallholder farmers in the 5 aforementioned areas of intervention. It is important to stress that the data is not representative of the remaining three areas of project intervention – Bukavu, Lubumbashi and Budjala – where research was not conducted.

Time constraints did not allow for comparison with control groups to determine the extent to which increased production and profitability are attributable to project intervention. However, a comparison between results obtained in Nsioni and in Kisangani lends insight into the impact of the project.

Poor capacity of the local partner in Nsioni, to operationalize project objectives, constrained delivery of support services to smallholder farmers. Qualitative data collected from respondents in the region indicated that they received little or no support in terms of access to improved seed varieties and training in agronomic practices. This is manifest in the fact that only 20% of all respondents in Nsioni received improved seed varieties. By comparison, in Kisangani 77% of all respondents received improved seed varieties. On average, respondents in Kisangani produced 1,700 kg of rice compared to 528 kg in Nsioni. Of all farmers in the Kisangani area and in the Nsioni region, the 144 who used improved seed varieties in 2011 produced an average 1,723 kg of rice (1,207 kg/ha), while farmers who reported having used only local varieties produced on average 315 kg (366 kg/ha). Farmers that reported using a mix of both, improved varieties and local varieties likewise out-performed farmers using only local rice varieties -

producing an average 1,491 kg (739 kg/ha). The correlation is highly suggestive of a causal link between project intervention and development of production capacity of smallholder farmers.

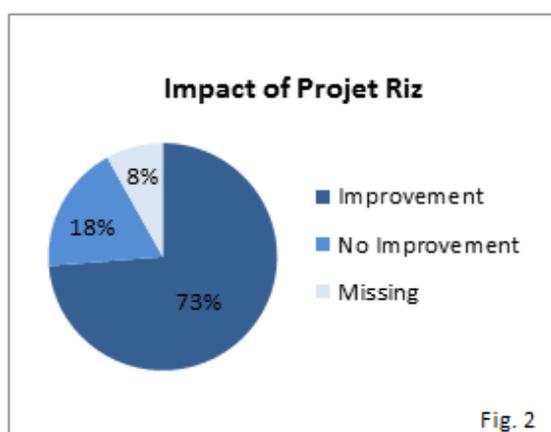
Threats to data validity

An effort was made to reduce the impact of errors but it necessitates discussing several threats to which face-to-face, semi-structured and structured interviews are susceptible. Inherent in these modes of measurement is a danger that interviewer bias influences responses. Reactivity of assessment is another threat to which the assessment was susceptible. The extent to which findings can be generalized to the project population is also constrained as, in spite of the statistical representativeness of the sample size, the unique character of each research location curtails the extent to which results from one location can be generalized to the total project population spread across 6 provinces in geographically and culturally distinct locations. A final threat concerns the accuracy of the data; respondents generally did not record production or income figures and could only provide estimations of these figures. Threats were mitigated to the greatest extent possible by researchers employing a uniform interviewing technique, and through repetition and rephrasing of questions.

Development of Rice Production

Improved livelihoods

Projet Riz has improved the livelihoods of smallholder farmers in the 5 areas under investigation in this paper. 73% (N=478) of all 652 respondents indicated that the project improved their livelihoods (8% of interviewees did not respond). Cited improvements included the purchase of motorcycles and bicycles, construction of houses (pictured right), improved access to healthcare and education – due to increased revenue – better household nutrition and the purchase of household utensils and farming implements.



The image below pictures two brothers who opened a pharmacy with revenue derived from rice production, thereby creating a new source of income for their households and providing the local community with much needed access to medicine.



Productivity

Project intervention has affected an increase in smallholder production. Respondents' total production increased from 609,795 kg to 990,826 kg following project intervention. Average production measured across all 5 regions increased from 937 kg to 1,520 kg and average yield increased from 1,114 kg/ha to 1,336 kg/ha. Variation between sites and in research design however, necessitates an analysis of results on a site by site basis

Productivity in Bumba, Kisangani and Nsioni – 2008 to 2011

Total production of all 435 respondents across Bumba, Kisangani and Nsioni increased by 65% – from 403,340 kg in 2008 to 663,742 kg in 2011. Respondents' average production increased from 927 kg to 1,526 kg between 2008 and 2011 and average yield increased from 983 kg/ha to 1,062 kg/ha.

Production increased most in Kisangani, by 130% from 755 kg in 2008 to 1,700 kg in 2011, followed by Bumba where production increased by 80% from 1,141 kg to 2,044 kg (see fig. 4). Production levels in Nsioni

declined from 854 kg to 528 kg in 2011. The decline is due to a combination of project

more per hectare in 2011 than they did in 2008. In comparison, average yield declined

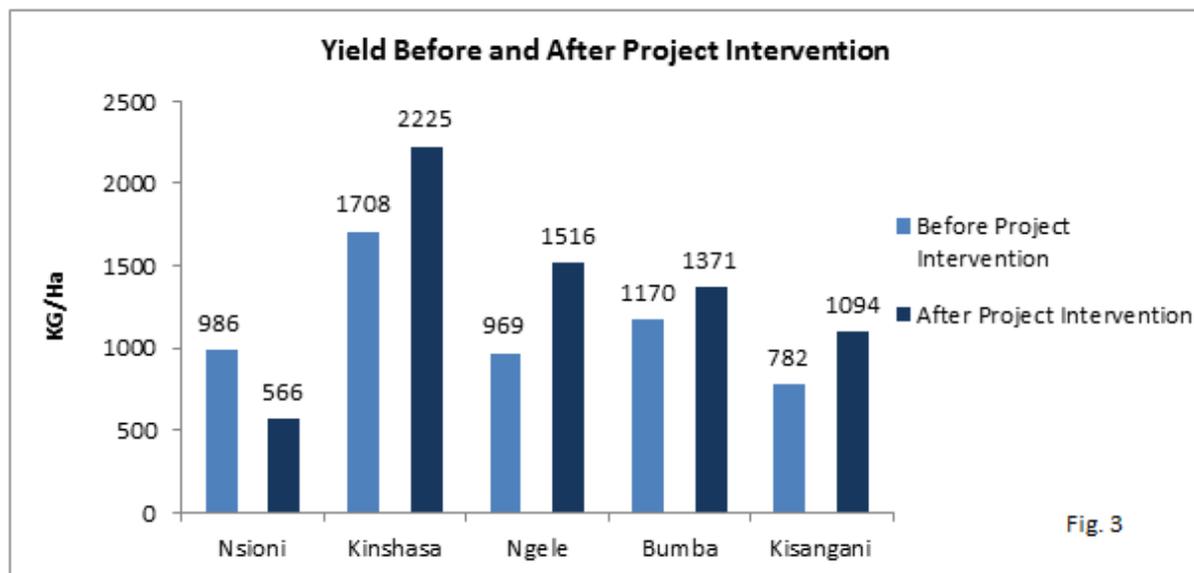


Fig. 3

external and project related factors: EUCORD's first local partner in the Bas-Congo failed to disseminate information and to distribute improved rice varieties. A mere 20% (N=22) of project affiliated farmers in the Bas-Congo were given access to improved

from 986 kg/ha to 566 kg/ha in Nsioni over the same period. Total production of all respondents in Kinshasa and Ngele increased from 206,455 kg to 327,084 kg over a one year period from 2011 to 2012. Average production per respondent across both

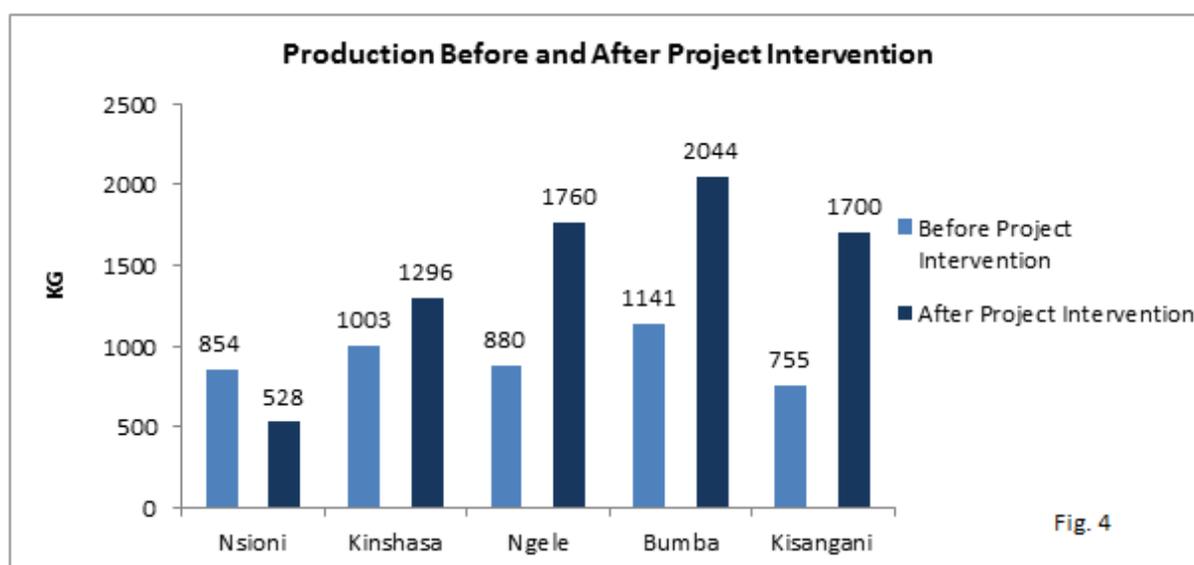


Fig. 4

varieties, compared to 77% (N=122) in Kisangani. Average yield in Bumba increased from 1,170 kg/ha to 1,371 kg/ha. In Kisangani average yield likewise increased from 782 kg/ha to 1,094 kg/ha. Farmers in Bumba and Kisangani harvested on average 15% and 40%

regions increased from 956 kg to 1,507 kg and average yield increased from 1,390 kg/ha to 1,887 kg/ha over the same period.

Production increased most in Ngele, by 100%; from 880 kg in 2011 to 1,760 kg in 2012. In Kinshasa in 2012, respondents produced 1,296 kg, 30% more than in 2011 when production averaged 1,003 kg.

Average yield measured in Kinshasa is high relative to other regions under investigation due to a myriad of factors including the fact that rice in Kinshasa is cultivated under lowland rain-fed conditions, whereas rice production in other regions is predominantly upland rain-fed. In Kinshasa respondents' average yield increased from 1,708 kg/ha to 2,225 kg/ha. Yield likewise increased from 969 kg/ha in 2011 to 1,516 kg/ha in 2012 in Ngele.

As noted, production has increased at all the sites of project intervention save Nsioni, where poor project implementation combined with a drought saw production fall well below production levels of 2008.

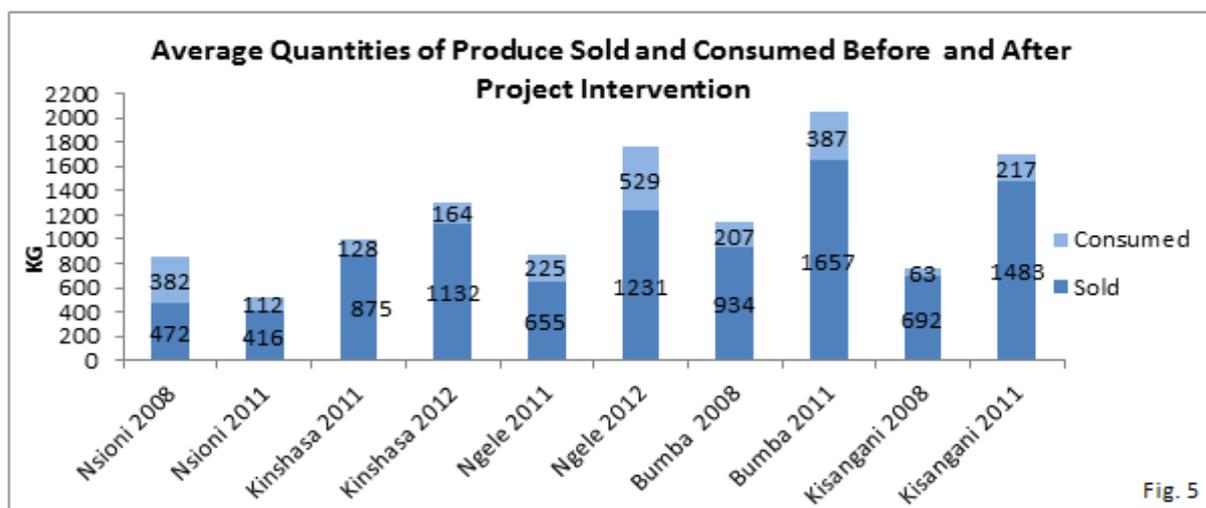
It merits noting that the production (and profitability and food security) increases in Bumba and Ngele are remarkable in terms of the impact they have had on smallholders in the Equateur Province, which with a poverty incidence of 93% is the poorest province in the DRC and one of the most overlooked in terms of receiving aid (UNDP 2009). The Equateur Province is also historically known as the bread-basket of the Congo, and is one of three main basins of rice for the 10 million inhabitants of the countries' capital Kinshasa.

Marketed surplus

Smallholder farmers' increased productivity has enabled them to produce larger marketable surpluses in all regions but Nsioni, where the amount of marketed surplus decreased from 472 kg to 416 kg from 2008 to 2011.

Overcoming market failures

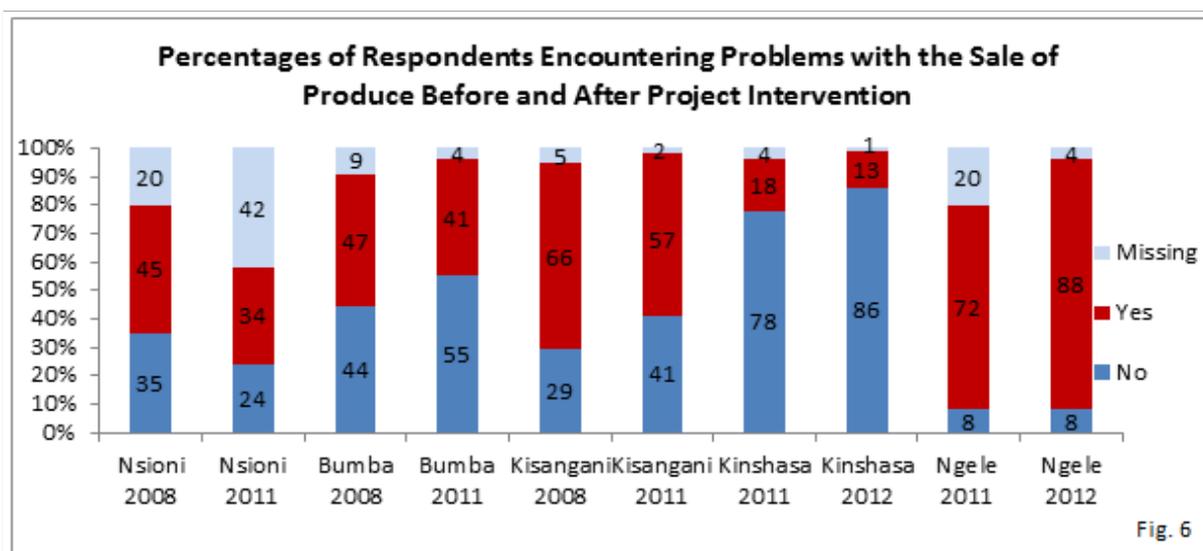
Market failures place a considerable constraint on smallholder farming in SSA in general and in the DRC in particular. In this context, Bralima and EUCORD provided a critical service by easing the effects of market failures on smallholder farming in the DRC.



In Kinshasa marketed surplus increased by 30% from 2011 to 2012. A similar trend is evident in Ngele where the amount increased by 90% over the same period. Likewise in Bumba and Kisangani average marketed surplus increased by 75% and 110% respectively.

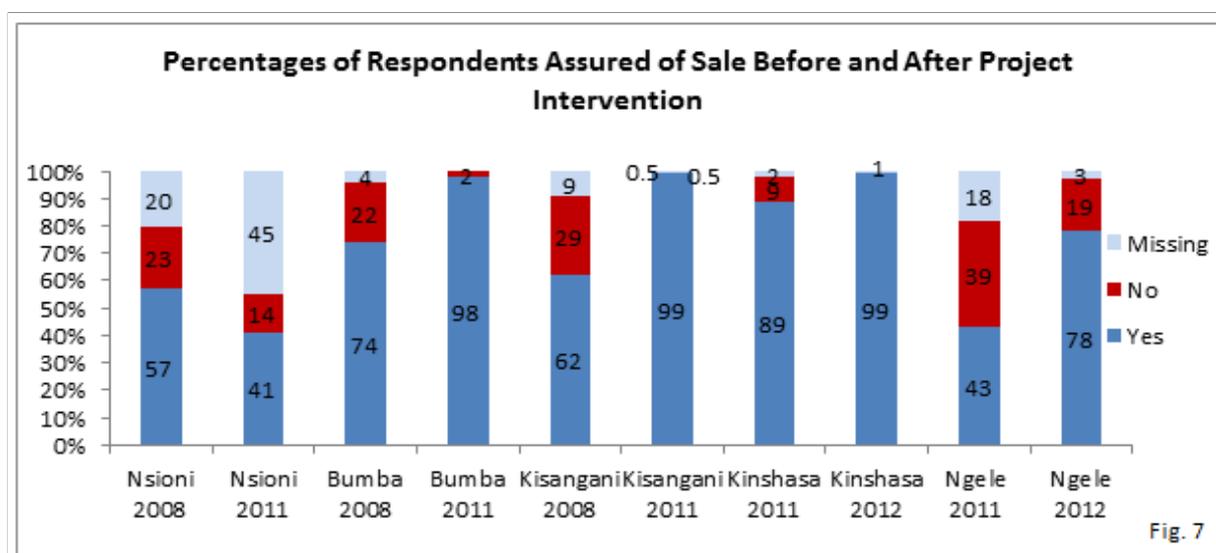
The data indicates that volumes of produce saved for household consumption and for use as seed also increased in all regions apart from Nsioni which indicated an improvement in terms of food security as well as revenue potential of smallholder farmers' households.

Their local sourcing initiative resulted in an improvement in local markets throughout the DRC by building capacity of local NGO's to support farmers in the commercialization of production and critically, by improving commercial intermediaries and smallholder producers' confidence in and commitment to rice production.



In Bumba, the number of respondents encountering problems with the sale of their produce declined by 6% following project intervention. Similar trends are evident in Kisangani and Kinshasa where numbers dropped by 9% and 5% respectively.

by the fact that the project has intervened in the Ngele region for only a short period and that the commercialization of production is still to be further developed. The figure likewise dropped in Nsioni, due to reasons discussed above.



The figure increased in Ngele due to an increase in the number of farmers selling produce as evidenced by the decrease in missing values from 20% to 4%. Nevertheless, the figure is telling of problems encountered by smallholder farmers in the region. The data can be explained to an extent

The reduction in the number of constraints encountered by smallholder farmers caused and is complemented by farmers' increased confidence in the market. Confidence that produce would be sold increased from 74% to 98% and from 62% to 99% in Bumba and Kisangani from 2008 to 2011. Levels in

Kinshasa and Ngele also increased from 89% to 99% and 43% to 78% respectively from 2011 to 2012. Only in Nsioni did confidence levels drop following project intervention. This may have been influenced by a drop in the number of smallholder farmers selling produce and not to a worsening of the market (as indicated by an increase in number of missing values from 20% to 45%).

The importance of this service rendered by Bralima cannot be understated. The smallholder dominated agricultural sector of the DRC is characterized by a 'low confidence' induced paralysis. Low confidence levels deter farmers from investing in agricultural production and the development thereof and is one of the factors locking smallholder farmers in subsistence based agriculture. The increase in surpluses discussed above is the product of farmers' increased confidence and access to improved inputs and agronomic practices.

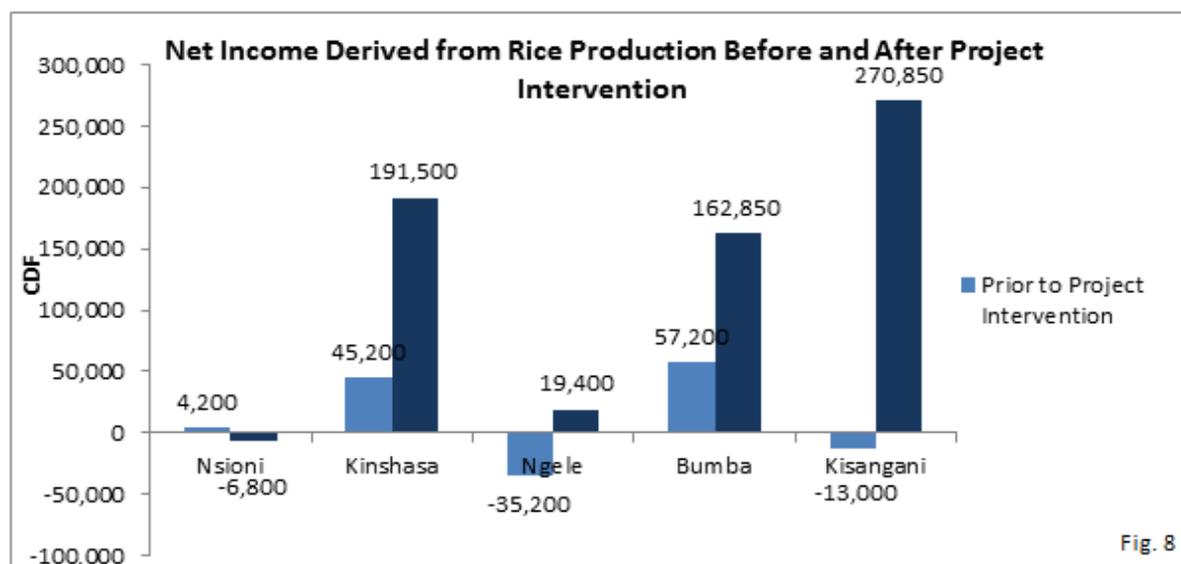
The combination of these factors: increased production and improved market participation has had a positive impact on the profitability of rice production, to which the paper now turns.

Profitability

Project intervention has increased the profitability of rice production. The data indicates a positive trend in relation to income generated by rice production before and after project intervention. The profitability increased in all regions apart from Nsioni, where for reasons discussed above, smallholder farmers incurred a loss. Profitability of rice production increased most in Kisangani where, from 2008 to 2011, farmers' average net income increased by 283,830 CDF.

analysis. However, they are also to an extent the product of realities faced by smallholder farmers. In Ngele the negative net income is to an extent the product of a civil war fought in the region between 2009 and 2010. The war saw farmers in the Kungu Territory of the, where the research was conducted, flee their homes to escape the violence.

Following the cessation of hostilities farmers in the region had to rebuild their homes and livelihoods.



Average net income also increased in Bumba and Kinshasa, almost tripling from 57,200 CDF in 2008 to 162,850 in 2011 in Bumba and increasing by more than 400% from 2011 to 2012 in Kinshasa.

Likewise farmers' net income in Ngele increased from 2011 to 2012, from -35,200 CDF in 2011 to 19,400 CDF in 2012.

It merits discussing the negative net income recorded in Kisangani and in Ngele prior to project intervention. The negative net income values recorded in Ngele and Kisangani are possibly due to errors in data collection and

Continuing security concerns did not immediately inspire farmers with sufficient confidence to invest heavily in agriculture, with low production as a result. Moreover, immediately following the war, most agricultural production was destined for household consumption as the security situation had had a disastrous effect on commercial activity in the region.

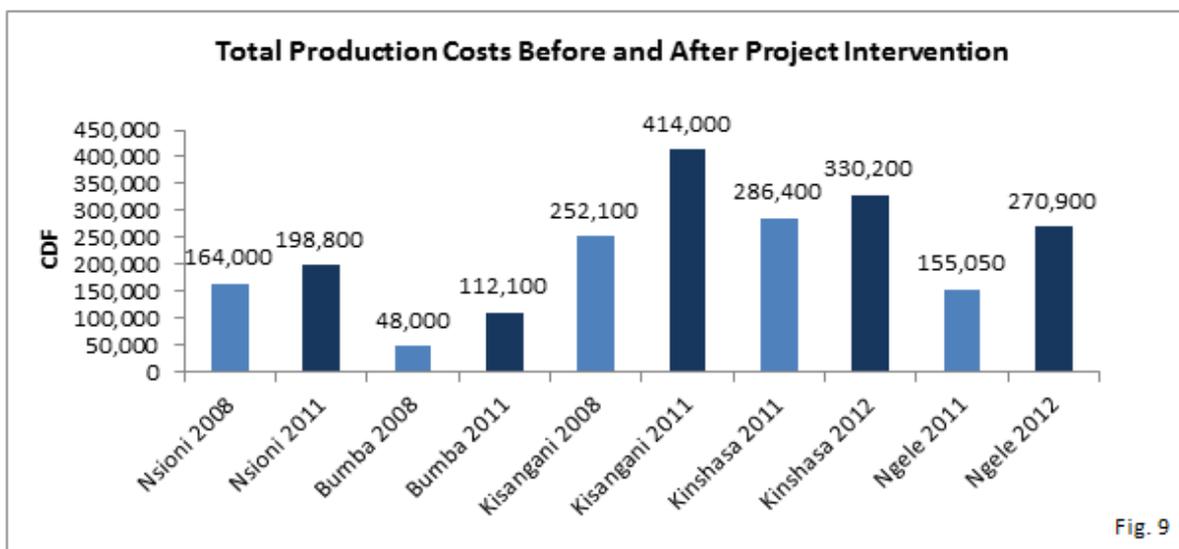


Fig. 9

Production costs

The production cost of rice has increased.

Average production costs increased most in Kisangani, where rice production cost 40% more in 2011 than in 2008. Average net income increased in all regions apart from Nsioni, in spite of increases in total production costs because of increases in the price of rice and paddy (paddy refers to un-processed rice) on markets and a decrease in production costs per kilogram.

Net income of smallholder farmers also increased due to a decrease in production costs per kilogram of paddy following project intervention in all regions apart from Bumba and Nsioni.

Costs decreased most in Kisangani where figures dropped from 338 CDF per kilogram to 241 CDF. Figures in Kinshasa and Ngele also decreased by 30 CDF and 26 CDF respectively. Production cost increased marginally in Bumba, by 13 CDF from 2008 to 2011 (see figure 12).

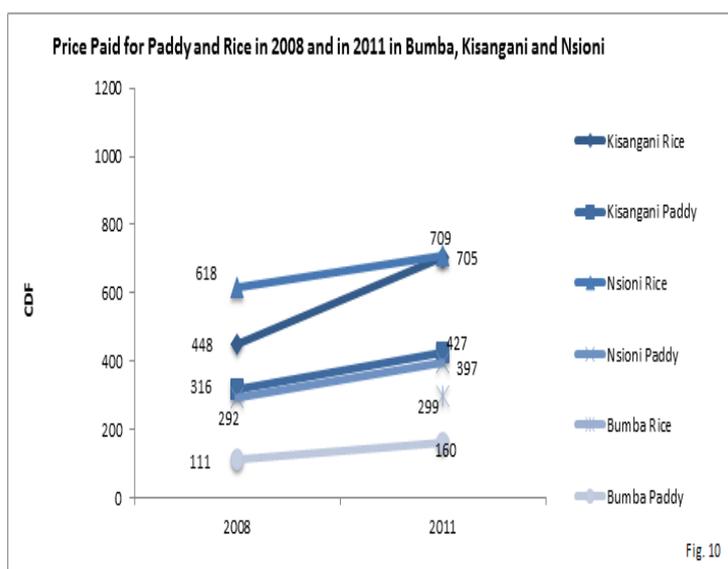


Fig. 10

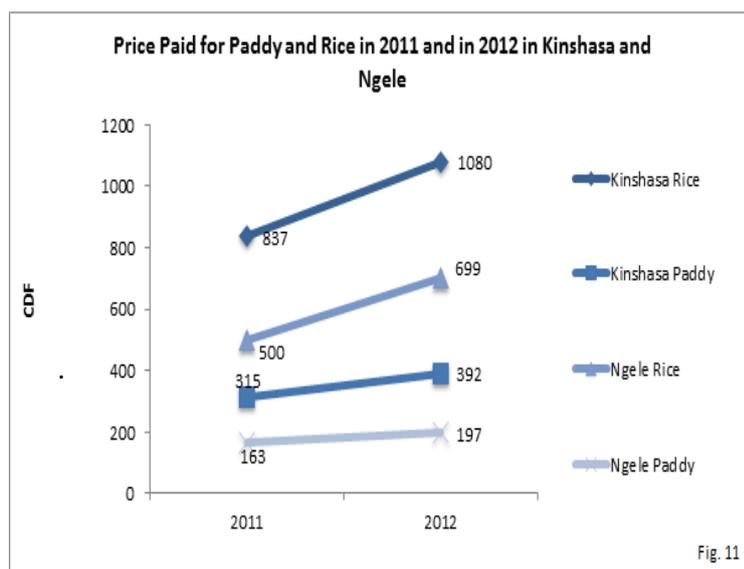


Fig. 11

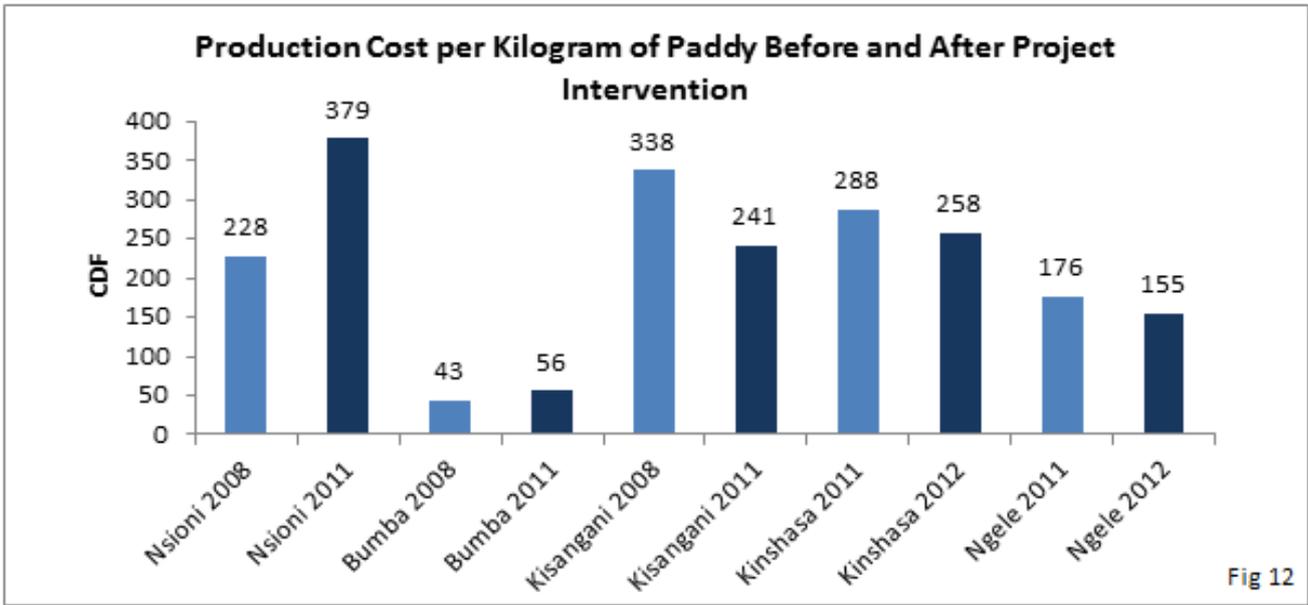


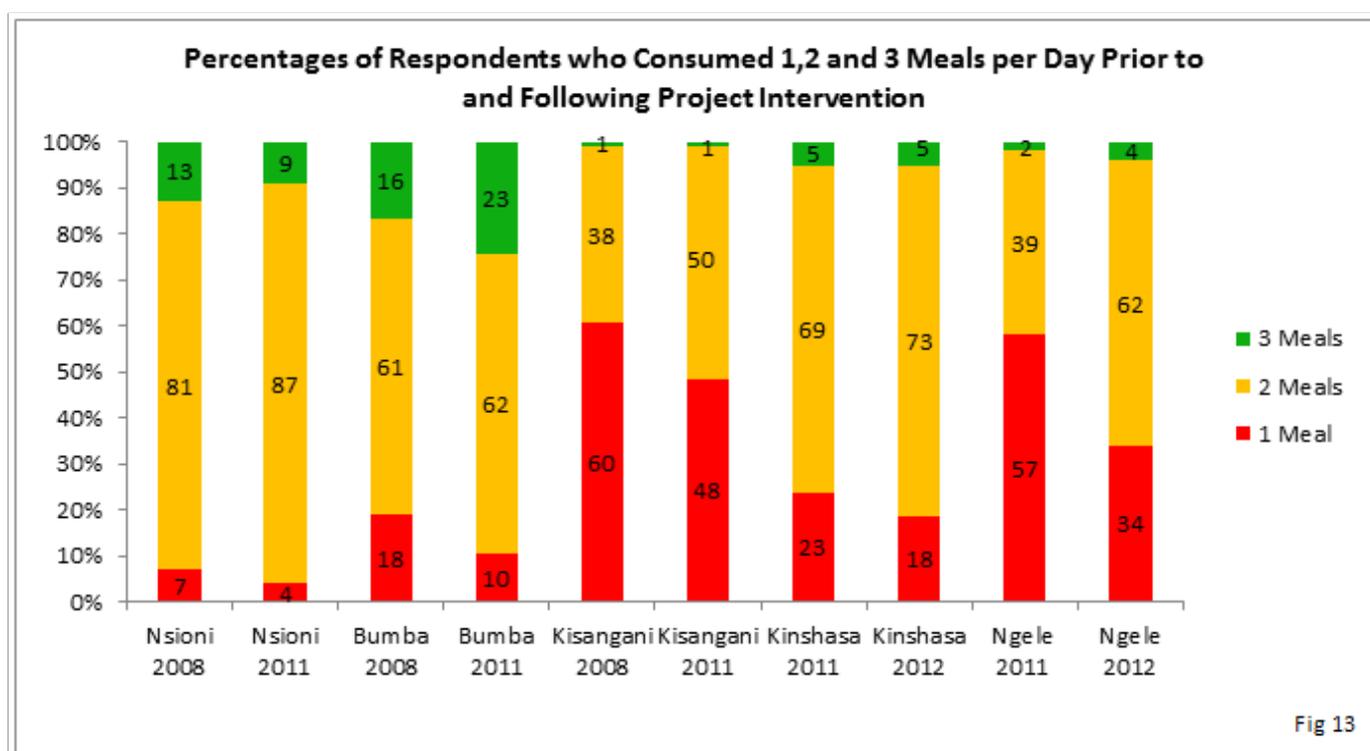
Fig 12

While a positive trend in production cost per kilogram of paddy and rice is discernible, smallholder farmers need to be encouraged to further pursue strategies which mitigate production costs. Imported rice is dominant on local markets and smallholder farmers must be encouraged to minimize production costs to increase their competitiveness. Strategies and entry points to address this will be discussed further on.

Food security

The project has improved food security of rural households. The average daily number of meals consumed by respondents increased following project intervention. Respondents reported that increased productivity and revenue facilitated the consumption of more and more nutritious meals. The number of respondents consuming one meal per day decreased at all sites. On average the majority of respondents consume two meals daily.

Of all 652 respondents, 82% (N=532) stated that the project has not improved access to primary education. Prior to project intervention, 203 children of primary school age across the regions of Bumba, Kisangani and Nsioni did not attend class. This figure further increased to 239 following intervention. Figures for Kinshasa and Ngele indicate a similar trend. Prior to project intervention 192 children did not attend



Primary education

The project has failed to improve access to primary education. The third of the project's stated objectives is to improve access to primary education through the construction and renovation of schools throughout the DRC – 34 schools in urban areas and a further 50 schools in rural areas. In total 16 schools in urban areas and 3 in rural areas have been constructed or renovated.

primary school and this figure increased to 205 following project intervention. In the majority of cases respondents cited a lack of financial means as the reason for their children not attending school.

Conclusion

As has been indicated, 73% of all respondents indicated that the project has improved their livelihoods. Productivity of farmers increased following project intervention resulting in the production of larger marketable surpluses.

Production increased by 100% in Ngele from 880 kg in 2011 to 1,760 kg in 2012 and by 30% in Kinshasa, from 1,003kg to 1,296kg. In Kinshasa respondents' average yield increased from 1,708 kg/ha to 2,225 kg/ha and yield likewise increased from 969 kg/ha to 1,516 kg/ha in Ngele. Production increased by 130% in Kisangani, from 755 kg in 2008 to 1,700 kg in 2011 and by 80% from 1,141 kg to 2,044 kg in Bumba. Average yield in Bumba increased from 1,170 kg/ha to 1,371 kg/ha and In Kisangani average yield likewise increased from 782 kg/ha to 1,094 kg/ha.

In Kinshasa marketed surplus increased by 30% from 2011 to 2012. A similar trend is evident in Ngele where the amount increased by 90% over the same period. Likewise in Bumba and Kisangani average marketed surplus increased by 75% and 110% respectively

The project has moreover supported farmers in overcoming market failures and other impediments which stand in the way of agricultural commercialization, resulting in greater market access and participation.

Confidence that produce would be sold increased from 74% to 98% and from 62% to 99% in Bumba and Kisangani from 2008 to 2011. Levels in Kinshasa and Ngele also increased from 89% to 99% and 43% to 78% respectively from 2011 to 2012. Only in Nsioni did confidence levels drop following project intervention.

The combination of factors has resulted in an increase in net income derived from rice production in spite of increases in total production costs.

Profitability of rice production increased in all regions apart from Nsioni. In Kinshasa profitability increased by more than 400% from 2011 to 2012 and similarly, in Ngele average net income increased from -35,200 CDF in 2011 to 19,400 CDF in 2012. In Kisangani farmers' average net income increased by 283,830 CDF between 2008 and 2011 and average net income in Bumba almost tripled from 57,200 CDF in 2008 to 162,850 in 2011.

Challenges remain, including, the environmental sustainability of the project and the facilitation of access to training in agronomic practices and inputs following project termination in December 2013. Lessons can moreover, be drawn from the results obtained in improving access to primary education to improve this component in future projects. Special attention should be given to implementing structures that ensure the commercialization of production in regions devoid of intermediaries. These points will be developed in the 'Recommendations' section below.

While challenges remain however, Projet Riz has had a significantly positive impact on smallholder rice farmers in the areas where the project has intervened, improving the livelihoods of one of the most overlooked demographics in the DRC: the rural poor.

Recommendations - Project Sustainability

Improved seed varieties and training in agronomic practices

Improved rice varieties are the principal source of gains in production capacity and it is critical therefore, that farmers continue to have access to improved varieties beyond project termination in 2013.

Projet Riz has provided access to improved seed varieties through a reimbursement scheme. This service has been critical as smallholder access to improved seed varieties in the DRC is constrained due to the inability of the national organizations charged with developing and distributing improved seed varieties to execute their mandate.

Alongside the distribution of improved seed varieties, Projet Riz ensured that affiliated farmers acquired the skills required to select and store seed from harvests. However, EUCORD does not currently have plans in place to ensure smallholder farmers' continued access to new stocks of improved varieties after the project ends in 2013.

In certain regions commercial actors have indicated an interest in facilitating access to improved rice varieties. In Bumba for example, SOCAM N.T. provided smallholder farmers with improved seed varieties as the company directly benefits from greater quantities and better quality rice production. This dynamic is not present in all regions where the project intervened and smallholders in certain regions therefore risk losing access to this critical input.

EUCORD can investigate and map the local availability of improved rice varieties and attempt to establish partnerships with

commercial rice traders such as SOCAM N.T. to distribute said varieties beyond 2013.

A similar problem characterizes the trainings that EUCORD organized. EUCORD provided smallholder farmers with trainings in agronomic practices via field extension agents. The value of these well trained individuals on the ground as a permanent source of information is unquestionable however, no mechanisms have been put in place to ensure that field extension agents will continue to disseminate information on agronomic practices once the project ends.

Farmers in certain regions stand to lose access to training in agronomic practices and access to improved seed varieties once the project ends in 2013. EUCORD and Bralima can investigate and implement innovative mechanisms which ensure that said critical service provision continues beyond 2013 and EUCORD and Heineken International N.V. must address this in the design of future projects.

The availability of improved seed and the adoption of improved agronomic practices will significantly improve the environmental sustainability of rice cultivation, to which the report now turns.

Environmental sustainability

The total surface area under cultivation by interviewees in Bumba, Kisangani and Nsioni increased from 451 ha to 640 ha between 2008 and 2011. Cultivated surface area increased most in Kisangani, from 170 ha in 2008 to 270 ha in 2011. This was followed by Bumba where it increased from 176 to 258 and Nsioni where surface area under cultivation totaled 104 in 2008 and 112 in 2011. Likewise in Kinshasa and Ngele the total surface area increased from 162 ha in 2011 to 197 ha in 2012.

Rice production does not severely impact the environment at the Kingabwa rice fields as the fields are situated on a floodplain on the outskirts of Kinshasa between the Kingabwa Township and the Congo River. In Ngele, Bumba, Kisangani and Nsioni conversely, rice is cultivated in densely forested regions. Customary agricultural practices mean that farmers clear land for cultivation on an annual basis. The 532 smallholder farmers questioned in Ngele, Bumba, Kisangani and Nsioni are together responsible for the clearing of an estimated 747 ha of land on an annual basis¹.

The potential impact hereof on weather systems in the DRC cannot be overlooked. Across all regions producers noted that late rains or conversely, heavy rains resulted in the loss of large volumes of produce. An estimated 100 ha of the Kingabwa rice fields, which total 555 ha, have been flooded this year and smallholder farmers in Limpoko near Ngele harvested what remained of their fields in pirogues². The clearing of land caused by project affiliated smallholder farmers and the significance of Congolese rainforests to global weather patterns necessitates a clear action plan to reduce the environmental impact of rice production.

Sustainability in terms of production and the environment necessitate an integrated module emphasizing the economic benefits of sustainable agricultural practices such as crop rotation and intensification of production through the application of new inputs and methods such as lowland rice production.

¹Average cultivated surface area × Number of respondents.

²Local boats made from hollowed out tree trunks.

Education

As noted, the third of the projects' objectives to improve access to primary education was not achieved. An innovative and sustainable solution to the poor quality of infrastructure critical to primary education piloted in Ngele provides an interesting case-study with the potential of replication in the DRC and in future projects elsewhere.

EUCORD's local partner in Ngele established a partnership with a primary school in the region with the aim of providing the school with much-needed funds and the local partner with a well-maintained and easily accessible demonstration field. The 'EP Bondi' school in Ngele was provided with improved varieties and the school director and several teachers have received training from the local field extension agent. The training, coupled with the improved varieties enabled teachers and students to prepare a field on school property. The field – which is cultivated using improved agronomic methods – is easily accessible relative to other fields in the area and serves as a demonstration field for the wider community. Rice harvested from the plot will be sold and the revenue used to improve school buildings. In this manner the school and the local partner hope to inspire a greater appreciation for the project, a greater appreciation of improved varieties and agronomic practices and provide the school with much needed funds.

The local partner in Nsioni, is in the design phase of another pilot which will see them establish a partnership with a local agricultural school.

There are agricultural schools located throughout the DRC and like most educational institutions in the country these schools are defined by underinvestment in infrastructure

and education material. In particular syllabi are generally outdated and schools lack the means to obtain new material.

EUCORD's partner in Nsioni has offered to prepare a field demonstrating lowland irrigated rice production techniques on school terrain. The field is to be prepared and maintained by students who benefit from learning by doing. Nearby farmers will be encouraged to visit the field for reference purposes and will receive support from students – the next generation of agronomists. The revenue derived from the production of rice is to be used to provide the school with much needed funds to upgrade syllabi and infrastructure.

These pilots demonstrate the potential inherent in cooperation with educational institutions. Such initiatives hold much promise in increasing rural communities' sustained access to finances to maintain and upgrade primary schools and also increasing the quality of education in rural areas.

Credit and farmer organizations

Respondents indicated that a lack of access to credit is one of the main constraints on smallholder rice production. Limited income prevents most farmers from saving money and farmers often have difficulties in obtaining the funds needed to prepare their land at the start of the new season. A lack of credit moreover seriously restricts farmers' capacity to scale-up their operations.

While the project has supported local partners in obtaining credit, the project has not facilitated access to credit for smallholder farmers. The provision of credit is constrained by a lack of (micro) credit agencies and difficulties in establishing well-functioning farmer organizations. Only one project supported farmer organization at the

Kingabwa site in Kinshasa has successfully leveraged credit. Dialogue with credit lending facilities can lend insight into said institutions requirements in offering (micro) credit to smallholder farmers. Closer collaboration with organizations specialized in (micro) credit can be investigated in future projects.

Intermediaries

Numerous challenges are caused by intermediaries (or lack thereof) in the rice value chains.

Certain areas are devoid of intermediaries who provide critical services such as processing and transportation of produce to Bralima breweries and markets. The lack of commercial intermediaries in project areas impacts project sustainability and it is critical that solutions be devised hereto. Careful consideration of the commercial intermediaries present in regions is advised when selecting sites.

Moreover, suppliers incorporated in the value chains should have a clear understanding of project objectives and commit to transparent collaboration. A potential point of contention that needs to be agreed upon in advance by Heineken International N.V. breweries and intermediaries/ suppliers is margins and suppliers' obligations vis-à-vis smallholder farmers. Margins dampen prices of paddy and rice. Contracts which clearly delineate margins and obligations are necessary to avoid situations in which suppliers exploit smallholder farmers.

Project Monitoring and Evaluation:

Finally, project monitoring and evaluation: Projet Riz does not have in place a coherent monitoring and evaluation log-frame. A baseline study and clear modes to measure the extent to which the project has attained its objectives can be developed in the project design phase of future projects to facilitate continuous analysis and more accurate impact assessments.

Moreover, special consideration has to be given to the beneficiaries and principal sources of feedback concerning Projet Riz and other similar projects. During the assessment it became clear that farmers did not possess over records of the required figures and often could only provide estimates. Future projects can investigate whether households can be encouraged to maintain records of critical production and finance figures. Such an approach would allow for thorough follow up and evaluation of project impact and would support smallholder farmers in developing skills critical in agricultural commercialization.

Bibliography

- African Development Bank Group, 2012. *Democratic Republic of Congo*. [online] Available at: <<http://www.afdb.org/en/countries/central-africa/democratic-republic-of-congo/>> [Accessed 25 June 2012].
- New Agriculturist, 2009. *Country Profile – Democratic Republic of Congo*. [online] Available at: <<http://www.new-ag.info/en/country/profile.php?a=641>> [Accessed 25 June 2012].
- OECD-FAO, 2011. *OECD-FAO Agricultural Outlook 2011-2020*. [online] OECD-FAO. Available at: <<http://www.oecd.org/site/oecd-faoagriculturaloutlook/48184282.pdf>> [Accessed 25 June 2012].
- OECD, 2007. *Democratic Republic of Congo*. [online] OECD. Available at: <<http://www.oecd.org/countries/democraticrepublicofthecongo/38562481.pdf>> [Accessed 25 June 2012].
- The World Bank, 2008. *World Development Report 2008: Agriculture for Development*. [online] The World Bank. Available at: <<http://web.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTWDRS/0,,contentMDK:23062293~pagePK:478093~piPK:477627~theSitePK:477624,00.html>> [Accessed 25 June 2012].
- United Nations Development Programme. *Profil Resume: Pauvrete et Conditions de Vie Menages*. [online] United Nations Development Programme. Available at: <http://www.cd.undp.org/mediafile/Profile_equateur_Final.pdf> [Accessed 30 June 2013].
- U.S. Department of State, 2012. *Background Note: Democratic Republic of Congo*. [online] Available at: <<http://www.state.gov/r/pa/ei/bgn/2823.htm>> [Accessed 25 June 2012].

Appendix 1

Questionnaire Projet Riz de Bralima S.A.R.L. et EUCORD

Module 1 : Identification du Questionnaire

Numéro questionnaire : /_____/

1.1. Village : _____

1.2. Site : _____

1.3. Membre Association Paysanne : 1. Oui 2. Non

Module 2 : Profil du Cultivateur

2.1. Age de l'enquêté : /_____/ ans

2.2. Genre de l'enquêté : 1. Masculin 2. Féminin

2.3. Quelle est la taille du ménage ?

2.3.1. 2011 : /_____/ personnes 2.3.2. Avant le projet : /_____/ personnes

Module 3: Production Rizicole

3.1. Statut de l'enquêté par rapport à la terre cultivée :

1) Propriétaire 2) Locataire 3) Autres à préciser.....

3.1.2. Combien avez-vous payé -

3.1.2.1. Si par argent, combien payez-vous ?

a) 2011 /_____/FC

b) Avant le projet /_____/FC

3.1.2.2. Si en nature, quelle est la valeur en Franc Congolais ?

a) 2011 /_____/FC

b) Avant le projet /_____/FC

3.2. Quelle est votre superficie d'exploitation rizicole au total en hectares ?

a) En 2011 /_____/ hectares

b) En Avant le projet /_____/ hectares

3.3.1. Si vous-avez cultivé le riz avant le projet, existe-il un changement dans votre façon de cultiver le riz actuellement et celle utilisé avant le Projet Riz de Bralima et EUCORD?

1. Oui 2. Non

3.3.2. Si oui, expliquez les ?

.....
.....

3.3.3. Avez-vous déjà reçu l'appui technique pour la production rizicole avant le Projet de EUCORD ? 1. Oui 2. Non

3.4. Quelle a été votre production totale ? :

3.4.1. En 2011 : a) Paddy/_____/ kg

3.4.2. Avant le projet: a) Paddy/_____/ kg

3.5. Quelle quantité aviez-vous vendu :

3.5.1. En 2011 : a) Paddy/_____/ kg b) Riz décortiqué/_____/ kg

3.5.2. Avant le projet: a) Paddy/_____/ kg b) Riz décortiqué/_____/ kg

3.6. Quelle types de semences avez-vous utilisé en 2011?.....

3.7. Que faites-vous avec les quantités restantes ?
.....

Module 4 : Commercialisation

Formation et information sur le prix

4.1. Qui était l'acheteur principal de votre production ?

4.1.1. En 2011 :..... 4.1.2. Avant le projet:

4.2. Combien d'argent avez-vous reçu pour la vente d'un kilogramme de produit à votre acheteur principal :

4.2.1. En 2011: a) Paddy/_____/ FC/kg b) Riz décortiqué/_____/ FC/kg

4.2.2. Avant le projet a) Paddy/_____/ FC/kg b) Riz décortiqué/_____/ FC/kg

4.3. Sur une échelle de 1 à 5, comment êtes-vous satisfait du prix d'un kilogramme de produit vendu au votre acheteur principale?

4.3.1. En 2011:

1) (très insatisfait) 2) (insatisfait) 3) (neutre) 4) (satisfait) 5) (très satisfait)

4.3.2. Avant le projet:

1) (très insatisfait) 2) (insatisfait) 3) (neutre) 4) (satisfait) 5) (très satisfait)

4.4. Avez-vous eu des problèmes de vendre le produit ? :

4.4.1. En 2011 : 1. Oui 2. Non

4.4.2. Avant le projet: 1. Oui 2. Non

4.5. Etiez-vous rassurée que votre production serait vendu ? :

4.5.1. En 2011 : 1. Oui 2. Non

4.5.2. Avant le projet: 1. Oui 2. Non

Stockage et Evacuation de Produit

4.6. Où stockez-vous les produits de votre récolte destinés à la vente ?

4.6.1. En 2011 : a) A la maison b) Au dépôt c) Au grenier de village
d) Au grenier de champ e) Autre à préciser.....

4.6.2. Avant le projet : a) A la maison b) Au dépôt c) Au grenier de village
d) Au grenier de champ e) Autre à préciser.....

4.7. À quelle distance de votre stockage se trouve le principal point de collecte/ vente de votre production ?

4.7.1. En 2011 : / _____ / km 4.7.2. Avant le projet: / _____ / km

4.8. Quels sont les changements que vous avez observés, dans la commercialisation de vos produits avec le projet ?

.....

Module 5. Coût de revient du riz

5.1. Si vous-avez décortiqué de paddy, combien avez-vous payé par kilogramme?

5.1.1. En 2011 / _____ / FC/kg 5.1.2. Avant le projet / _____ / FC/kg

5.2. Pour quels intrants agricoles suivant et combien avez-vous payé?

<i>Catégorie des dépenses</i>	<i>Paiement (FC)</i>	
	<i>2011</i>	<i>Avant le projet</i>
1. Semences		
2. Engrais		
3. Matériel agricole		
4. Emballage		
5. Autres à spécifier		
a)		
b)		

5.3 Pour quelles taches suivant et combien avez-vous payé?

Activités réalisées	Païemant (FC)		Païemant pour la nourriture (FC)	
	2011	Avant le projet	2011	Avant le projet
1. Préparation du Terrain				
2. La coupe de sous-bois				
3. Abattage et rabbatage				
4. Semis				
5. Premier sarclage				
6. Deuxième sarclage				
7. Gardiennage				
8. Récolte				
9. Battage				
10. Vannage et conditionnement				
11. Transport				
12. Autres à spécifier				
a)				
b)				

Module 6. Contraintes liées à la production du riz

6.1. Quels sont les principaux problèmes auxquels fait face votre exploitation ? Placer, les dans l'ordre de Priorité (1 à 8).

- a. Irrégularité de pluie
- b. Approvisionnement difficile en intrants agricole
- c. Difficulté dans l'obtention de crédit
- d. Difficulté dans la transformation et le stockage
- e. Difficulté dans la commercialisation
- f. Access a la terre
- g. Inaccessibilite de route
- h. Autres à préciser.....

Module 7 : Aspect revenus

7.1. Quelles étaient les principales sources de revenu de votre ménage ? Enumère les 3 sources les plus importantes (1 à 3).

Source de revenu	En 2011 Rang (3 premières sources)	Avant le projet Rang (3 premières sources)
Riziculture	<input type="checkbox"/>	<input type="checkbox"/>
Autre agriculture	<input type="checkbox"/>	<input type="checkbox"/>
Exploitation forestière	<input type="checkbox"/>	<input type="checkbox"/>
Elevage	<input type="checkbox"/>	<input type="checkbox"/>
Petit commerce	<input type="checkbox"/>	<input type="checkbox"/>
La pêche	<input type="checkbox"/>	<input type="checkbox"/>
Autre à spécifier	<input type="checkbox"/>	<input type="checkbox"/>

Activités Extra-Agricoles

7.2. Avez-vous cessé de faire des activités extra-agricoles pour cultiver le riz ?

1. Oui 2. Non.

Si oui, quelles activités et pourquoi ?

.....
.....
....

Activités Agricole : Autre Production

7.3. Avez-vous cessé de cultiver d'autres cultures pour la culture du riz ?

1. Oui 2. Non.

Module 8 : Aspect social

Alimentation.

8.1. Combien de repas avez-vous consommé par jour ?:

8.1.1. En 2011 :

8.1.2. Avant le projet:

8.2. Combien des bières avez-vous consommé par mois ? :

8.2.1. En 2011 :

8.2.2. Avant le projet:

Santé

8.3. En comparant la situation sanitaire de votre ménage avant le projet et actuellement, quels sont les grands changements que vous observez ?

.....
.....
.....

Education

8.4.1. A quelle distance se trouve l'école primaire la plus proche ?

8.4.1.1. En 2011: a) <1km b) 1-5km c) 6-10km d) Plus de 10km

8.4.1.2. Avant le projet: a) <1km b) 1-5km c) 6-10km d) Plus de 10km

8.4.2. Combien a coûté les frais scolaires pour l'école primaire par année par enfant ?

8.4.2.1. En 2011: / _____ / FC 8.4.2.2. Avant le projet: / _____ / FC

8.4.3. Combien de vos enfants à l'âge de l'école primaire n'étudient pas ?

8.4.3.1. En 2011 : a) Garçons..... b) Filles.....

8.4.3.2. Avant le projet : a) Garçons..... b) Filles.....

8.4.4. Quelles étaient les raisons de l'arrêt ou abandon de la scolarité ?

8.4.4.1. En 2011 :

8.4.4.2. Avant le projet:

Module 9: Expertises et satisfaction avec le Projet Riz de Bralima S.A.R.L. et EUCORD

9.1. Quels services obtenez-vous du projet ?

1. Accès aux intrants agricole	Oui	Non
2. Accès aux crédits / d'épargnes	Oui	Non
3. Encadrement technique	Oui	Non
4. Facilités : e.g. Point de collecte	Oui	Non
5. Appui à la commercialisation	Oui	Non
6. Appui à la scolarisation	Oui	Non
7. Autres à préciser	Oui	Non

9.2. Pour vous, quel intérêt avez-vous tiré du projet ?

.....
.....

9.3. Avez-vous remarqué une amélioration dans votre mode de vie grâce au Projet Riz de Bralima et EUCORD ? S'il vous plait expliquez votre réponse.

.....
.....
.....

9.4. Sur une échelle de 1 à 5, comment êtes-vous satisfait du projet riz ?

1 (très insatisfait) 2 (insatisfait) 3 (neutre) 4 (satisfait) 5 (très satisfait)

9.5. Avez-vous des suggestions, des commentaires ou des observations concernant le projet ?

.....
.....
.....
.....

Nos remerciements les plus sincères pour votre collaboration à cette enquête.