



Foreign Agricultural
Service, United States
Department of Agriculture

Benin Local and Regional Procurement Project

Baseline Evaluation

September 2018

Baseline Evaluation of Bèsèn Diannou Local and Regional Food Aid Procurement Project

The Bèsèn Diannou Local and Regional Food Aid Procurement (LRP) project, funded by the United States Department of Agriculture (USDA) and implemented by Catholic Relief Services (CRS) Benin, supports the establishment and functioning of school canteens in government schools.

Agreement Number: LRP-680-2017/034-00

Project Duration: 2017-2019

Implemented by: Catholic Relief Services

Evaluation Authored by: Evidence for Sustainable Human Development Systems in Africa (EVIHDAF)

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Evidence for Sustainable Human Development Systems in Africa
Evidence pour les Systèmes de Développement Humain Durable en Afrique

**Evaluation of *Bèsèn Diannou* Local and Regional Food Aid
Procurement (LRP) Project**

Baseline Study Report

Prepared for **Catholic Relief Services (CRS)** Benin

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September 27, 2018

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Acknowledgements

With Dr. Mouftaou Amadou Sanni's leadership, the *l'Observatoire Démographique et Statistique des Populations Locales* (ODeSPoL) at the *Ecole Nationale de la Statistique, de la Planification et de la Démographie* (ENSPD), University of Parakou, Benin served as the field partner for data collection.

We would like to acknowledge the unique role played by M. Thierry Kinkpe, our Agri-Economic Advisor, for his immense contribution to the evaluation. He supported the revision of the tools, led the training for and supervised data collection, and conducted the quantitative data analysis with dedication. Dr. Charlotte Baquet, Socio-Anthropologist, contributed to the revision of qualitative tools, led the training, and supervised the qualitative data collection and analysis.

M. Fred Akoha was the programmer of tablets used for data collection; the quantitative Data Processing Officer was M. Djima Baranon; and M. Elihou Adje compiled the qualitative data. Ms. Nadia Tefouet, EVIHDAF's Program Officer, also supported the study, including with French-English translation. Finally, data collection was made possible by 20 quantitative enumerators, four supervisors, and four qualitative researchers (See Appendix C4).

At Catholic Relief Services (CRS) Benin, our grateful thanks are due to Mr. Thierry Yabi, MEAL Coordinator for Benin-Togo, and Mr. Brice Denakpo, MEAL/LRP, for their valuable support and guidance before, during and after data collection.

Most importantly, EVIHDAF would like to acknowledge the hospitality and enthusiasm displayed by individuals who were involved in the study. Participation in questionnaires, focus groups and interviews was demanding of their time, yet it was willingly given.

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List of Abbreviations

AEA	Agri-Economic Advisor
AME	Mother Educators Association
APE	Parents Association
COGES	Comité de Gestion des Ecoles
CRS	Catholic Relief Services
DAS	Direction de l'Alimentation Scolaire
DPO	Data Processing Officer
ENSPD	Ecole Nationale de Statistique, de Planification et de Démographie
EVIHDAF	Evidence for Sustainable Human Development Systems in Africa
FFE	Food For Education
FGDs	Focus Group Discussions
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
INRAB	Institut National de la Recherche Agronomique du Bénin
KAP	Knowledge, Attitudes and Practices
KIIs	Key Informant Interviews
MAEP	Ministère de l'Agriculture de l'Elevage et de la Pêche
MDES	Minimum Detectable Effect Size
MEMP	Ministère des Enseignements Maternel et Primaire
MGD	McGovern Dole
MOH	Ministry of Health
ODeSPoL	Observatoire Démographique et Statistique des Populations Locales
PASDeR	Programme d'Appui au Secteur du Développement Rural
PSI	Population Services International
RA	Research Assistant
RO	Research Officer
UCP	Union Communale des Producteurs
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
URP	Union Régionale des Producteurs
USAID	United States Agency for International Development
WFP	World Food Program

Executive Summary

The Bèsèn Diannou Local and Regional Food Aid Procurement (LRP) project, funded by USDA and implemented by Catholic Relief Services (CRS) Benin, supports the establishment and functioning of school canteens in government schools of N’dali, Perere, Parakou and Tchaourou districts in the Borgou Region. The purpose of the project is to develop a replicable and scalable model for decentralized school feeding through effective local procurement and distribution of commodities with the aim of providing students with nutritious and locally procured meals (rice, shea, cowpea and maize) from an estimated 200 Producer Associations. CRS and its sub-recipient *Union Régionale des Producteurs Borgou-Alibori* (URP) will work with school management committees, commune authorities, central government agencies and private partners to achieve project goals.

As part of the evaluation, the project’s relevance, effectiveness, efficiency, sustainability, and impact will be measured. In addition to measuring the timeliness and cost-effectiveness of local ration distribution under the LRP project compared to those imported and distributed under other school feeding programs, the impact of school canteens on attendance of pupils at school and the nutritional state of children will also be evaluated.

The Baseline Study, led by Evidence for Sustainable Human Development Systems in Africa (EVIHDAF), establishes benchmark values against which progress on impact and outcome indicators can be tracked and informs decision-making about early project implementation, planning and execution. A mixed method approach involving a quasi-experimental quantitative design as well as a qualitative component was used. Surveys with students, *Comite de Gestion des Ecoles* (COGES) and Producer Associations were implemented, as well as key informant interviews with school principals, target communes, *Programme d’Appui au Secteur du Developpement Rural* (PASDeR), and ProAgri. Focus group discussions (FGDs) with Producer Associations, parents, women’s groups, teachers and students were also conducted. A summary of the survey results is presented in Table ES1 below.

The results of this baseline study, as outlined in this report, demonstrate the need for improved nutrition and eating patterns among students to achieve a minimum acceptable diet. In achieving improved student outcomes, Producer Associations have the potential to increase organizational capacity so as to successfully deliver quality local foods to support school canteens. Furthermore, COGES have the potential to improve their capacity in school canteen and stock management to ensure the efficient and sustainable provision of nutritious foods to students.

Table ES1: Survey results

	Comparison districts	Intervention districts	Difference
1. Producer Associations			
Overall organizational capacity score ^a	0.30 (0.05)	0.16 (0.03)	-0.14 **
Score derived from PA's management ^a	0.30 (0.10)	0.20 (0.04)	-0.11 ^{NS}
Score derived from PA's members ^a	0.29 (0.05)	0.12 (0.02)	-0.17***
Use of URP Market Information System	30.0	11.8	-18.2*
2. Schools			
2.1. COGES			
Overall Score in school canteen and stock management ^a	0.23 (0.2)	0.19 (0.1)	-0.04 ^{NS}
Score derived from COGES management ^a	0.68 (0.7)	0.56 (0.3)	-0.12 ^{NS}
Score derived from COGES cooks	0	0	0
Score derived from COGES store keepers	0	0	0
2.1. Students			
Students who consumed foods at school that they consume at home ^a	20.0 (1.3)	22.4 (1.4)	2.4 ^{NS}
Female ^a	18.9 (1.9)	22.8 (2.0)	3.9**
Male ^a	21.1 (1.9)	22.1 (2.0)	1.0 ^{NS}
Students receiving a minimum acceptable diet	54.7 (1.7)	64.3 (1.6)	9.6***
Female ^a	55.5 (2.54)	64.7 (2.3)	9.2***
Male ^a	54.0 (2.3)	64.0 (2.3)	10.1***

^aValues in brackets are standard error

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

1. Introduction

In an effort to improve education quality and achieve universal education in Benin, the Strategic Orientation for Development (OSD) of the Ten-Year Plan for the Development of Education (PDDSE) calls for the development of a school feeding program. Catholic Relief Services (CRS) is supporting the development of a sustainable school feeding program through school canteens.

CRS's Bèsèn Diannou Local and Regional Food Aid Procurement (LRP) project seeks to support the establishment and functioning of school canteens in government schools of N'dali, Perere, Parakou and Tchaourou districts in the Borgou Region. Its purpose is to set up a local mechanism for the procurement and distribution of commodities with the aim of providing students with nutritious and locally procured meals (rice, shea, cowpea and maize) from an estimated 200 Producer Associations. This intervention will also complement CRS' existing school feeding program under McGovern Dole (MGD) Food for Education (FFE), currently being implemented in 146 schools of the Borgou and Alibori Regions. This complementarity will allow CRS to compare timeliness and cost-effectiveness of rations distributed as part of the LRP program with those imported and distributed under FFE, as well as with the *Ministere de l'Enseignement Maternelle et Primaire* (MEMP), World Food Program (WFP) and World Bank school feeding programs.

The LRP project will be implemented with the support of both government and non-governmental actors, considered "key stakeholders." Key stakeholders include Direction d'Alimentation Scolaire (DAS), Ministère de l'Agriculture, l'Élevage et de la Pêche (MAEP), Ministère de l'Économie et des Finances (MEF), Ministère de l'Enseignement Maternel et Primaire (MEMP), Commune administrations of Parakou, Perere, N'Dali, and Tchaourou, Union Communale des Producteurs (UCP), Agence Karité du Bénin (AKB), Union Régionale des Producteurs de Riz (URPR), GIZ's ProAgri project, Cooperation Swiss' Programme d'Appui au Secteur du Développement Rural (PASDeR) and Association Nationale des Communes du Benin (ANCB). Other stakeholders include Ministry for Finance and relevant civil society organizations (OSC). The specific goals of the Bèsèn Diannou LRP project are to:

- Increase the capacity of schools, school management committees, and the Government of Benin to effectively and efficiently procure local commodities to supply school feeding programs, promoting the sustainability of school feeding;
- Strengthen Farmer Groups' ability to provide high-quality, nutritious commodities and connect them to school feeding programs; and
- Improve nutrition of students by increasing access to and use of various, high-quality, nutritious, and culturally appropriate foods in school meals.

1.1. Project Theory of Change

LRP's overall theory of change is structured around the following sequence of assumptions:

- IF commune level authorities and community groups have increased capacity to plan, manage and oversee school canteens (Pathways A and B); and

- IF central government agencies support the local purchase and canteen management approach (Pathway C); and
- IF commodity procurements are structured to leverage existing agricultural support projects and to reinforce the agricultural sector in the Borgou Department;
- THEN a replicable and scalable model for a locally managed and sourced school feeding system, allowing school children to receive nutritious, culturally acceptable and diverse quality meals efficiently and cost-effectively, will be developed.

Pathway A

- IF commune authorities are trained in local procurement of school feeding rations, canteen planning, management, budgeting, and oversight; and
- IF school management committees (COGES) are trained in canteen ration planning, ration storage, and ration management; and
- IF commune authorities and COGES receive supportive supervision as they carry out activities directly;
- THEN the capacity of commune level authorities and COGES to manage school canteens locally will be increased.

Pathway B

- IF the COGES, mother associations and cooking teams are trained in hygiene, nutrition and food preparation safety and demonstrate application of knowledge and skills; and
- IF mother associations and cooking teams are trained in a variety of culturally acceptable recipes; and
- IF the cooking team is provided with a hygienic cooking area and cooking materials; and
- IF culturally appropriate foods are procured for consumption at school canteens;
- THEN school children will receive nutritious and culturally acceptable food that meets quality standards.

Pathway C

- IF the *Département d'Alimentation Scolaire (DAS)*, *Ministère d'Enseignement Maternelle et Primaire (MEMP)*, *Ministère de l'Agriculture, de l'Élevage et de la Pêche (MAEP)*, and the *Ministère de Finance (MF)* are engaged early in the LRP process; and
- IF the DAS, MEMP, MAEP, and MF receive training in key aspects of local procurement and canteen management; and
- IF the DAS, MEMP, MAEP, and MF visit schools with locally procured meals and provide oversight and guidance on project implementation; and
- IF the National Association of Communes of Benin and agricultural stakeholders engaged through the project actively advocate for the decentralization of school feeding responsibility with the DAS, MEMP, MAEP, and MF;
- THEN central and local government buy-in of localized procurement and canteen management will be created.

Pathway D

- IF school rations are procured as locally as possible ("Farm to Fork"); and
- IF the project leverages the rice, shea, cowpea and maize value chain investments and initiatives of other projects operating in Borgou department; and

- IF the project leverages the investments of private sector partners; and
- IF the project supports and invests in umbrella organizations to reinforce producer capacity and quality; and
- IF the project addresses gaps in current activities; and
- IF the project improves producer production capacity, market access, and access to market price information systems for producers not currently targeted through existing projects;
- THEN the project will contribute to strengthening local and regional food market systems in the Borgou Department.

1.2. Results Framework The specific results to be achieved by the project include:

- Improved cost-effectiveness of food assistance
- Improved timeliness of food assistance
- Improved utilization of nutritious and culturally acceptable foods that meet quality standards
- Strengthened local and regional food market systems
- Increased capacity of government institutions
- Improved policy and regulatory framework
- Improved capacity of relevant organizations
- Increased leverage of private sector resources

Table 1 presents the project level results framework, beginning with the strategic objective (SO), the intermediate results (IR), and the specific activities (A).

Table 1. Project results framework

SO: Improved Effectiveness of Food Assistance through Local and Regional Procurement			
IR 1: Improved cost-effectiveness of food assistance	IR 2: Improved timeliness of food assistance	IR 3: Improved utilization of nutritious and culturally acceptable food that meet quality standards	IR 4: Foundational results
IR 1.1: Improved cost-effectiveness of procurement IR 1.2: Improved cost-effectiveness of delivery IR 1.3: Improved cost-effectiveness of distribution	IR 2.1: Improved timeliness of procurement IR 2.2: Improved timeliness of delivery IR 2.3: Improved timeliness of distribution	IR 3.1: Improved access to culturally acceptable foods IR 3.2: Strengthened local and regional food market systems IR 3.3: Improved access to nutritious foods	IR 4.1: Increased capacity of government institutions IR 4.2: Improved policy and regulatory framework IR 4.3: Improved capacity of relevant organizations IR 4.4: Increased leverage of private sector resources
A 1.1.1: Commodity management (procurement; market monitoring)	A 2.1.1: Commodity management (procurement; market monitoring) A 2.1.2: Capacity building (commune gov't training	A 3.1.1: Capacity building (community training and support) IR 3.2.1: Increased agricultural productivity	A 4.1.1: Capacity building (central gov't engagement; commune gov't training and support)

<p>A 1.1.2: Capacity building (commune gov't training and support; umbrella organization training and support)</p> <p>A 1.2.1: Commodity management (delivery, construction and rehabilitation [storerooms and kitchens])</p> <p>A 1.3.1: Commodity distribution (distribution, vouchers)</p> <p>A 1.3.2: Capacity building (community training and support)</p>	<p>and support; umbrella organization training and support)</p> <p>A 2.2.1: Commodity management (delivery, construction and rehabilitation [storerooms and kitchens])</p> <p>A 2.3.1: Commodity management (distribution, vouchers)</p> <p>A 2.3.2: Capacity building (community training and support)</p>	<p>A 3.2.1.1: Capacity building (umbrella organization training and support; producer organization training and support)</p> <p>IR 3.2.2: Increased value added to post production agricultural products</p> <p>A 3.2.2.1: PASDeR and ProAgri support rice, shea, cowpea and maize value chains with value addition activities</p> <p>IR 3.2.3: Increased access to market to sell agricultural products</p> <p>A 3.2.3.1: Capacity building (producer organization training and support)</p> <p>IR 3.2.4: Improved transaction efficiency</p> <p>A 3.2.4.1: Capacity building (umbrella organization training and support)</p> <p>A 3.2.4.2: Private sector leverage</p> <p>A 3.3.1: Capacity building (community training and support)</p>	<p>A 4.2.1: Capacity building (commune gov't training and support; advocacy)</p> <p>A 4.3.1: Capacity building (community training and support; umbrella organization training and support; producer organization training and support)</p> <p>A 4.4.1: Private sector leverage</p>
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The project will be rigorously monitored and evaluated, and the learnings and recommendations will be shared with MEMP for the adoption, replication and/or scale up of a model for decentralized school feeding using local and regional procurement. The project is designed for 24 months.

2. Purpose of the Baseline Study

The purpose of the baseline study is to: a) Establish benchmark values against which Bèsèn Diannou's progress on each of the impact and outcome indicators pertaining to the project results framework can be tracked; b) Verify project design assumptions and identify potential threats to implementation; and c) Inform decision-making about early project implementation planning and execution. In addition, the baseline evaluation will support the refinement of the project's metrics and help strengthen relationships between the project team and key stakeholders.

On the other hand, the final evaluation will focus on assessing the relevance of the interventions, the effectiveness of the implementation strategies and activities, the efficiency of the project, the progress on effect and impact indicators, and achievements related to sustainability, and will:

- Assess whether the project has achieved the expected results as outlined in the project-level results framework and compared to the baseline evaluation;
- Assess areas of project design, implementation, management, lessons learned and replicability;
- Generate lessons learned and recommendations for CRS, the Ministry of Education, Ministry of Agriculture, partners, United States Department of Agriculture (USDA) and other stakeholders for future school feeding programs which emphasize local and regional food procurement.

The endline evaluation will also consist of a comparison study which will estimate cost and time differentials between the LRP project and other similar initiatives including FFE and the World Bank and WFP-funded projects.

3. Methodology

3.1. Study population

The LRP intervention is taking place in 77 schools. The selection process began with DAS providing a list of 406 schools in the target districts (N'Dali, Parakou, Perere and Tchaourou districts) that did not have a school canteen. CRS then computed a composite score for each of these districts using the literacy rate, schooling rate and malnutrition rate of these districts. It initially determined that the LRP project budget could afford to include 75 schools in the intervention. The 75 intervention schools were then distributed to the districts proportionally to this score. As a result, 10 schools were allocated to Parakou district, 19 to N'Dali district, 25 to Perere district, and 21 to Tchaourou district.

In order to select the intervention schools in each district, another composite indicator was calculated. This indicator, called vulnerability score of schools was computed using the dropout rate and proportion of unqualified teachers in each school. For each district, the average vulnerability score was calculated and all schools (simple schools and complex schools) which had a score higher than the average in the district were eligible for the intervention. This led to 225 eligible schools. A random selection was conducted among eligible schools to select the intervention schools (simple schools and complex schools), and the remaining schools (150 in total), were considered comparison schools. In the end, two additional schools in Parakou and Tchaourou were included in the intervention schools, bringing the total number of intervention schools to 77 and the number of comparison schools to 148. This process led to 11 intervention schools and 54 comparison schools in Parakou; 19 intervention schools and 19 comparison schools in N'Dali; 25 intervention schools and 9 comparison schools in Perere; and 22 intervention schools and 66 comparison schools in Tchaourou, as shown in Table 3.

3.2. Study design and key indicators

The study uses a mixed-methods approach involving quantitative and qualitative investigations. The quantitative component adopts a quasi-experimental design in which 77 schools across the four target districts have been identified by CRS as intervention schools, and 148 schools across the four districts identified as comparison schools. CRS also identified a total of 49 Producer Associations in N'Dali, Perere and Tchaourou as the intervention group, and 10 Producer Associations in the comparison districts of Kalale and Niki (see Section 3.3 on the sampling strategy). The target indicators presented in Table 2 were measured through surveys with students, *Comite de Gestion des Ecoles* (COGES) and Producer Associations. The qualitative component consists of key informant interviews (KIIs) with school principals, target communes, and *Programme de Appui au Secteur du Developpement Rural* (PASDeR). Focus group discussions (FGDs) were also conducted with Producer Associations, parents, women's groups and AME, teachers and students.

Table 2. Target indicators

Indicator	Data source
Percentage of COGES demonstrating at least 50% increased capacity in school canteen and stock management	Survey with COGES
Percentage of students who consume culturally acceptable, high-quality nutritious food, based on one-day recall*	Survey with Students
Percentage of students reporting having consumed foods at school that they consume at home, based on one-day recall	
Percentage of students receiving a minimum acceptable diet, based on one-day recall	
Percentage of Producer Associations demonstrating increased organizational capacity	Survey with Producer Associations
Percentage of Producer Associations using Union Regionale des Producteurs (URP) Market Information Systems (MIS)	

*This indicator proved difficult to estimate. Our suggestion would be to break down the indicator in two separate sub-indicators on: a) consumption of culturally acceptable food; and b) consumption of high-quality nutritious food. Assuming the concept of “culturally acceptable food” is derived from the foods consumed in the communities, the corresponding sub-indicator may not lend itself for easy interpretation at baseline, in the absence of school canteens. For the second sub-indicator, the criteria of “quality” and “nutritious” should be based on objective and easy-to-measure variables. At endline, we could run a simple difference across the two study arms and use the qualitative data to illustrate program effects (if not impact).

At endline, to quantify the impact of the LRP intervention on target outcomes, we will use a Difference-in-Differences (DID) approach, which compares the before-after changes in outcomes between individuals in the intervention group and those in the comparison arm. The key assumption in the DID methodology is that trends in outcomes between the intervention and

comparison groups should be similar. While this assumption cannot be directly tested (especially without longitudinal data before the baseline), inspecting the data may help to roughly gauge its likelihood. For example, if pre-program observable characteristics of the treatment and comparison groups are very different, we may be concerned that comparison schools may experience dissimilar changes in their outcomes, independent of the intervention (i.e. a violation of the common trend assumption). One way to reduce the bias and improve the estimates is by combining DID with propensity score matching (PSM).

The fact that there was a reasonable degree of randomness in the allocation of schools as intervention or comparison suggests that the DID approach may suffice. Indeed, the pre-program observable characteristics of the intervention and comparison schools are quite similar. For the analyses on Producer Associations, we may resort to combining DID with PSM, given the differences in key characteristics (e.g. crops produced) across the two arms.

3.3. Sampling strategy

Data collection covered a total of six districts in the department of Borgou: Parakou, N'Dali, Perere and Tchaourou as intervention districts of the LRP project; Nikki and Kalalé as comparison districts of the project.

3.3.1. Sampling design for schools

For sample size calculations, we used the Minimum Detectable Effect Size (MDES) method which provides the minimum effect that can be detected by considering the number of students selected from each cluster, for given values of confidence level, margin error and power. The method yielded a sample size consisting of 60 schools (30 intervention schools and 30 comparison), with 30 students from each school (1,800 students in total).

The sampling of schools was conducted in three steps. **First**, the number of sampled intervention (and comparison) schools was distributed by district proportionally to the number of intervention (and comparison) schools. **Second**, acknowledging the wealth of evidence on urban-rural differentials in education and nutrition behaviors and outcomes, the N'Dali, Perere and Tchaourou districts have been further stratified by type of neighborhood (urban or rural). With the third city in the country, the district of Parakou is entirely urban. In the three other districts, the total sample size was broken down by urban-rural neighborhood type proportionally to the number of schools in each neighborhood. **Third**, considering that school sizes may characterize socio-cultural and demographic areas, which themselves would deeply influence the nutritional habits of people, we drew a random sample of schools with probabilities proportional to school size (PPS) in each stratum (urban or rural area of each district).

It is worth noting that there is a higher proportion of urban schools in the comparison group (49%) than in the intervention group (29%). These proportions mirror the distribution of the population of 225 schools by type of neighborhood (urban, rural), and should not have any bearing on the interpretation of the findings.

During the data collection the target of 30 students was not reached in some of the schools, due to the smaller size of these schools (some did not even have 30 students in total) or the absence of students. In order to achieve the target of 1,800 students, 10 more schools were selected (five comparison schools and five intervention schools) following the same principles as above. For example, two of the five additional intervention schools were allocated to rural Perere, and one to each of the three remaining rural districts. Similarly, the five additional comparison schools were allocated as follows: two to Parakou, two to Tchaourou (rural), and one to N'Dali (rural). Overall, the sample consisted of 70 schools (35 comparison schools and 35 intervention schools). The number of schools by district is shown in Table 3.

Table 3. Intervention and comparison schools

District	Parakou	N'Dali	Perere	Tchaourou	Total
Intervention					
Schools	11	19	25	22	77
Sampled schools	5	8	12	10	35
Urban	5	2	1	2	10
Rural	0	6	11	8	25
Comparison					
Schools	54	19	9	66	148
Sampled schools	13	5	2	15	35
Urban	13	1	1	2	17
Rural	0	4	1	13	18

3.3.2. Sampling design for students

While the initial TORs suggested to focus exclusively on grade 4-6 students, EVIHDAF and CRS agreed to systematically cover all existing grades with the exception of grade 1, as first-graders may be emotionally and cognitively unable to answer survey questions. In each of the 70 sampled schools, 30 students were randomly selected among all grade 2-6 students, using class registers to number students from 1 to N (N being the total size of the school).

One of the challenges faced during data collection was the absence of students, largely for three reasons. Data collection coincided with cultural and sport activities organized at the regional level, which resulted in some schools or classes within schools being closed for a few days. The second reason is that some community teachers abandoned classes because they were not paid on time by communities. Finally, data collection also coincided with farming activities in the area. As a consequence, some parents elected to keep their older children home from school to help with farming. This phenomenon was largely noticed in the remote villages of Perere and Tchaourou districts. In all these instances, enumerators were obliged to revisit these schools or classes.

A list of the selected schools, along with the number of students in those schools, the probability of their sampling, the phone number of their headmasters and the number of surveyed students, is available in Appendix C1.

3.3.3. Sampling design for COGES

The COGES questionnaire was administered to all 70 sampled schools (35 in the intervention arm and 35 in the comparison arm). While it was originally planned to collect data at both COGES level and individual member level targeting cooks and storekeepers, through questioning of school headmasters it was learned that none of the schools had established COGES. A limited number of questions was therefore asked to understand hygiene practices in each school. The endline scores will be compared to the baseline scores to determine if there has been an increase by 50 points or more.

3.3.4. Sampling design for Producer Associations

Data were collected from 45 Producer Associations: 35 associations in the intervention districts of the LRP project (except Parakou which is an urban district) and 10 associations in the two comparison districts (Nikki and Kalalé). For each district, the staffs of the Union Régionale des Producteurs (URP) and the Union Communale des Producteurs (UCP) provided a list of associations. Based on the small number of associations in N'Dali, Nikki, Kalalé and Perere, all the associations quoted by the URP and UCP staffs were surveyed. However, there were a lot of associations in Tchaourou and the survey could not cover all of them. Accordingly, twelve associations were randomly selected in Tchaourou.

In each association, a representative (chairman/chairwoman or his/her representative) was interviewed to collect general information on the association, including on the organizational capacity, composition and activity of the association, and partners of the association. The second step involved interviewing four individual members. It was realized that producer associations may not have up-to-date lists of their members, which in itself, is an indication of low organizational capacity. As a consequence, there was no intent to view the selection of individual members as a random sampling. After his/her interview, the representative was asked to provide a list of active members of the association. To avoid any interviewer level selection bias, the interviewers selected three members at random from the list, using random number generator set up on the tablets. The representative him/herself was counted *de facto* as an individual member to be interviewed. This method of selection was designed to be, and indeed was, an improved version of the snowball approach. Data was collected from members on their production capacity, their knowledge on the production technics and the role of the association for them. A list of the surveyed Producer Associations is available in Appendix C2.

3.2.5. Sampling Design for Qualitative Component

The plan for the qualitative component is presented in Table 4.

Table 4. Key informant interviews and focus group discussions

Type	Planned	Realized
FGD with Parents	4 in total: 1 per district, 6-8 respondents from 2-3 sampled intervention schools	4 FGDs , all in Bariba language
FGDs with Women/AME	4 in total: same as above	4 FGDs , all in Bariba language
FGDs with Teachers	4 in total: same as above	4 FGDs , all in French
FGDs with Students	4 in total: same as above	4 FGDs , all in French
FGD with Umbrella Organizations	3 in total: 1 per district (except Parakou), respondents from 2-3 producer associations	3 FGDs (N'Dali, Perere and Tchaourou), all in Bariba
KII with communes	8 in total: 2 per district, members of the ad hoc committee set up by CRS	8 KIIs , all in French
KII with School Principals	8 in total: 2 per district (1 from urban strata, 1 from rural strata), 6-8 respondents from 2-3 sampled intervention schools	8 KIIs , all in French
KII with PASDeR	1 au total	1 KII in French
Total	36 (19 FGDs, 17 KIIs)	36 (19 FGDs, 17 KIIs)

3.4. Sampling weights

The STATA software was used to analyze the quantitative data. The COGES/school and student indicators were generated using sampling weights¹ consistent with the cluster and multi-stage sampling design described above.

3.4.1. Sampling weights for schools

The probability of inclusion of school i is defined as:

$$\pi_i^{a,b,pps} = \frac{g_i^{a,b}}{G^{a,b}} * n^{a,b}$$

Where

- $g_i^{a,b}$ is the total enrollment of school i in district a , zone b
- $G^{a,b}$ is the total enrollment of all schools in district a , zone b
- $n^{a,b}$ is the total number of schools sampled in district a , zone b

¹Steps in applying Probability Proportional to Size (PPS) and calculating Basic Probability Weights.

Available at:

http://www.who.int/tb/advisory_bodies/impact_measurement_taskforce/meetings/prevalence_survey/psws_probability_prop_size_bierrenbach.pdf

Then the sampling weight of each school will be computed as:

$$\omega_i^{a,b} = \frac{1}{\pi_i^{a,b,pps}}$$

3.4.2. Sampling weights for students

The probability of inclusion of a student j in school i is:

$$\pi_{ij}^{a,b} = \pi_i^{a,b,pps} * \pi_{j/i}^{a,b};$$

where $\pi_{j/i}^{a,b} = \frac{S^{a,b}}{g_i^{a,b}}$

– $S^{a,b}$ is the number of students sampled per school in district a , zone b

$$\pi_{ij}^{a,b} = \frac{S^{a,b} * n^{a,b}}{G^{a,b}}$$

Then the sampling weight of each student will be computed as:

$$\omega_{ij}^{a,b} = \frac{1}{\pi_{ij}^{a,b}}$$

3.5. Data collection and quality assurance

3.5.1. Data collection tools

Three questionnaires and 10 interview and focus group discussion guides were developed and administered. These study tools and their content are outlined in Table 5. Data was collected over a period of three weeks (May 28 to June 15). The survey data was collected using tablets provided by CRS and programmed by an EVIHDAF team member from ENSPD/ODeSPoL. The key informant interviews and focus group discussions were recorded, transcribed verbatim and translated into French when applicable.

Table 5. Overview of data collection tools

Study Tool	Content overview
COGES questionnaire	COGES level: capacity in school canteen and stock management* Member level: Knowledge of basic nutrition and hygiene; Capacity in school canteen and stock management
Students questionnaire	Food intake at home; Foods from school food sellers
Producer Associations questionnaire	– Association level: organizational capacity; use of MIS – Member level: Services received from the Association

Study Tool	Content overview
KII with School Principals	Importance of school canteens; Procurement of foods; Availability of registers; How best to make school canteens and local/regional procurement work
KII with communes	Ad hoc committee for maize procurement; Capacity to deliver; Implications for maize production, import, distribution, prices; How best to make the committee more effective
KII with PASDeR	Support to Producer Associations and to farmers
FGD with Umbrella Organization (Producer Association Members)	Current organizational capacity (meetings, articles of associations, rules, and regulations); Services offered to members; Expectations from the LRP project
FGD with Parents	Capacity for community mobilization for, and participation in school canteens (e.g. constructions, foods, cook); Culturally accepted foods
FGD with Women's groups/AME	Same as for parents. Plus: nutrition and hygiene
FGD with Teachers	Almost same as for school principals
FGD with Students	Culturally accepted foods; Preferred foods at home and at school (when they have money to buy); Perceptions on canteens

*To our knowledge, COGES members are not to be in charge of buying foods – this task is typically done by the funder (e.g. government, WFP, NGOs). COGES members by contrast are responsible for getting foods in stocks and monitoring their use.

3.5.2. Data collection team

Data collection was conducted by EVIHDAF local partner, *the l'Observatoire Démographique et Statistique des Populations Locales (ODeSPoL)* at the *Ecole Nationale de la Statistique, de la Planification et de la Démographie (ENSPD)*, University of Parakou, Benin. 24 enumerators and four qualitative researchers, all of whom had at least a bachelor's degree, were recruited and underwent a four-day training from May 24 to May 27, 2018. Training topics and activities included explanation of the context of the study, theoretical training on the questionnaires and interview guides, training on the KOBO-COLLECT application (for electronic data collection), and a practical pre-test implemented in the municipality of Parakou.

Four teams consisting of six enumerators (24 in total), one of whom was selected as supervisor, were in charge of the COGES and students surveys (70 schools/COGES and 2,021 students). Two additional enumerators had primary responsibilities for the Producer Association surveys, though they also helped with student questionnaires. The four qualitative researchers administered the FGDs (18 in total) and KIIs (16 in total). An overall supervisor oversaw the data collection, providing administrative, logistic and technical support to supervisors, enumerators and the qualitative research team and conducting routine spot checks for data quality. A Data Processing

Officer (DPO) was in charge of downloading the quantitative data and generating quality control tables to be used by the overall supervisor and the team supervisors. The DPO also converted the datasets from the tablets into STATA and performed data cleaning.

3.5.3. Data collection challenges and solutions

There were several challenges of note during the data collection process. Firstly, some school headmasters and teachers were hesitant to participate in anything related to school canteens due to the fact that the Benin Government has sanctioned punishments against some headmasters and teachers accused of embezzlement of school canteen commodities. In this tense environment, some headmasters refused to provide information relating to their school, including the number of students in their schools, making random sampling difficult. Moreover, some headmasters provided information that proved to be false in the field. In dealing with these challenges, the data collection team sensitized the headmasters on the purpose of the study and program activities, and recollected student numbers to ensure the student samplings were correct. Extra time was dedicated to these activities.

Another challenge was that several sampled students were absent from school for various reasons, including absence of community teachers due to recent strikes, the scheduling of additional school activities during the data collection period, and students staying at home to work on the farm during peak farming season. To accommodate these challenges, data collection teams worked around the schedules of the students or in cases where the foreseen student number was not reached, sampling was taken again.

Long distances, poor road quality, and poor directions in locating Producer Association members also posed challenges in data collection. Because it was the start of the farming season, farmers were also not readily available during the day. Data collection teams therefore rearranged their schedules to accommodate longer journeys to villages, spent extra time locating Producer Association members with the help of village leaders, and worked by night to survey those farmers who were unavailable during the day.

Furthermore, while members of each survey team understood several languages, including Bariba, Dendi, Fon and Nago, some sampled students and Producer Association members did not understand any language of the enumerators. This was mostly restricted to the areas where the Peulh language dominated. In these cases, other persons, including teachers and peers, aided in the translation of survey questions and answers.

Lastly, because the data collection period coincided with Ramadan, some sampled students were fasting. In order to avoid bias in the data, these students were replaced by other Muslim students in the sampling order who were not fasting.

3.6. Ethical Considerations

International and national ethical standards were adhered to during the implementation of the baseline study. The following ethical principles were adhered to during the interviews with children:

- Freely given consent was invited from all children, and from the parent s/guardians, ensuring that they understood that they can refuse any question or withdraw at any time.
- Children and parents were informed about the research.
- All data was kept confidential, and all personal identifiers were removed and assigned pseudonyms where appropriate.
- Participants were informed that if they divulge information suggesting that they or others are at risk of harm, the researcher has a duty of care to report this and to ensure support for the child (and to inform the participant that this is occurring).
- All study participants were left with a written record of the researchers' names and contact information.

Specific strategies were put in place when interviewing children. Appropriate measures were put in place to protect the privacy and wellbeing of young people surveyed and interviewed in research. The interview team was carefully screened and selected according to their suitability for interviewing young people. Surveys with students were carried out within the protected environment of the school setting. Aside from obtaining informed consent from students themselves, the permission of the school principals and teachers were obtained before conducting the interviews. The subject and general nature of the interview were explained in a simplistic manner in the local language and formal consent was obtained from both the student and an overseeing adult. For focus group discussions, additional consent was obtained from parents and guardians; the venue and time for the discussions was carefully selected to provide safety and confidentiality.

4. Results

While at endline the comparison study will examine differentials between the LRP project and the MGD canteens and government systems, this baseline study deals solely with the differences across the LRP intervention and comparison arms. Appendix A2 presents a full list of indicators for evaluating the LRP project, LRP vs MDG canteens, and LRP vs Government canteens. At endline, retrospective methods will be used where relevant, to collect the data needed to answer the questions to be answered by the comparison study, and insights from the qualitative investigations used to understand and contextualize the differences.

4.1. Producer Associations

4.1.1. Sample characteristics

As shown in Table 6, a total of 44 Producer Associations were surveyed, with 34 from the intervention districts and 10 from the comparison districts. In the intervention district, 88.3% of

all Producer Associations considered maize to be their most important crop, followed by rice (8.8%).

Table 6. Sample characteristics - Producer Associations

	Comparison districts	Intervention districts	Difference
Number of Producer Associations	10	34	24
Most important crop (%) [*]			
Maize	60.0	88.3	28.2
Rice	40.0	8.8	-31.2
Others (Soy)	0.0	2.9	2.9
Second most important crop (%) ^[NS]			
None	60.0	20.6	-39.4
Maize	10.0	2.9	-7.1
Rice	0.0	5.9	5.9
Cowpea	0.0	2.9	2.9
Others	30.0	67.7	37.7
Mean number of members ^a	43.5 (13.0)	44.3 (6.9)	0.8 ^{NS}
Mean number of female members ^a	15.2 (5.7)	9.12 (2.1)	-6.1 ^{NS}

^aValues in parentheses are standard error

Statistical significance level for distribution variables is in square brackets

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

In the comparison districts, 60% reported maize to be the most important, while 40% cited rice. The difference between the two arms is statistically significant. With 20.6% of all Producer Associations in the intervention districts and 60% in the comparison districts citing no crop of second importance, it is understood that many Producer Associations specialize in one crop.

Table 7. Sample characteristics - Producer Association individual members

	Comparison districts	Intervention districts	Difference
Number of individual members interviewed	40	136	96
By sex (%) [**]			
Male	27.5	13.2	-14.3
Female	72.5	86.8	14.3
Crops produced last season (%)			
Maize	85.0	94.9	9.9**
Rice	57.5	77.9	20.4**
Cowpea	80.0	51.5	-28.5***

	Comparison districts	Intervention districts	Difference
Shea collection	80.0	74.3	-5.7 ^{NS}
Others	100.0	100.0	Not applicable

Statistical significance level for distribution variables is in square brackets

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

The majority of Producer Association members interviewed were female (86.8% in the intervention districts and 72.5% in the comparison districts). In the intervention districts, the majority of Producer Association members produced rice (77.9%), shea (74.3%) and cowpea (51.5%) in the last farming season. In the comparison districts, 80% of all Producer Association members produced cowpea, 80% produced shea, and 57.5% produced rice last season (see Table 7).

4.1.2. Producer Associations' organizational capacity

A score for organizational capacity of Producer Associations was created from relevant questions in the quantitative survey completed for Producer Associations' management and individual members. These questions, and their coding as variables constrained to the interval [0,1], are summarized in Table 8.

Table 8. Generating Producer Association scores for organizational capacity

Variable	Coding
Questions to Producer Associations' Management	
1 Q20 Have you been supported by ProAgri? Q21 If Yes: which support (Q21a-e)?	Merge into a single variable: - 0 if Q20=No & Q22=No - Average of Q21a-e & Q23a-e, otherwise
2 Q22 Have you been supported by PASDeR? Q23 If Yes: which support (Q21a-e)?	
3 Q24 Do you have rules and regulations? If Yes: Do the documents exist?	0 if Q24=No; 0.5 if Q24=Yes & documents do not exist; 1 otherwise
4 Q25 on schedule for meetings of the management team, proof of last meeting, existence of proof.	Coded as: 0, 0.5, 1 (as above)
5 Q28 on schedule for activities to individual members, last meeting, proof of last meeting, existence of proof.	Coded as: 0, 0.5, 1 (as above)
Questions to Producer Associations' individual members	
6 Q36 Did you receive any training from your producer association (six areas listed)?	Average of the six sub-items, each of which is coded as: 0, 0.5, 1 (as above)
7 Q37 Did you sell your product through a group sale? Q38 If Yes: Were you satisfied?	Coded as: 0, 0.5, 1 (as above)
8 Q40 Did you sell your product through warrantage? Q41 If Yes: Were you satisfied?	Coded as: 0, 0.5, 1 (as above)

Two sub-scores for Producer Association management and members were created by averaging the corresponding variables. Giving more weight to the first sub-score was considered. However, lacking any objective assessment of the importance of both components, we resolved to using a simple average to determine the overall score. Scores are multiplied by 100, to vary between 0 and 100. Table 9 shows the organizational capacity scores.

Table 9. Producer Association organizational capacity scores

	Comparison districts	Intervention districts	Difference
Overall Score ^a	0.30 (0.05)	0.16 (0.03)	-0.14 **
Score derived from PA's Management ^a	0.30 (0.10)	0.20 (0.04)	-0.11 ^{NS}
Score derived from PA's Members ^a	0.29 (0.05)	0.12 (0.02)	-0.17***

^aValues in parentheses are standard error

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

Producers Associations from the comparison arm seem to exhibit stronger organizational capacity, compared to those from the intervention arm, with a statistically significant difference at the level of 5%. While the score derived from management does not vary across the two arms, individual members in the comparison group reported a higher score (0.29) than their peers in the intervention arm (0.12).

As explained by Producer Association management and members through interviews and focus groups, Producer Associations can play a key role in selling the products of their members and helping them to obtain agricultural inputs (seeds, fertilizers, insecticides) at affordable prices. Some members can also benefit from loans from some Producer Associations according to their production capacity, as well as diverse trainings on topics such as climate change and agricultural techniques. Members of the Producer Associations may also support each other in events. For example, when a member has a grand ceremony such as a baptism or burial, the cooperative assists him with both funding and physical support.

Despite these support structures available in some Producer Associations, many challenges in organizational capacity persist. Qualitative interviews suggest that while the Village Cooperative of Maize Producers has been able to provide supports mentioned above, the Village Cooperative of Rice Producers does not have the necessary means to support its members.

Furthermore, cooperatives are often plagued by difficulties in selling their agricultural products. The main reason for this is the fact that these cooperatives do not have reliable clients, and must constantly look for clients, as eloquently conveyed during the FGD in N'dali:

“Our major difficulty is about selling of products. Often, we need to sell products and get cash to resolve urgent matters, but we do not find any buyers. We received training on markets, and are able to estimate our margin per kilogram of product sold, but what we dearly need is a contract with a major buyer. Sometimes, we are obliged to travel all the way to Niger to look for prospective clients. “

Participants in the FGD in Tchaourou emphatically noted:

“Troubles selling our products is discouraging us. Imagine investing time and financial resources during the production cycle, only to realize that there is no buyer or that the buyer does not honor his commitment in terms of quantities, or payment schedule. This is what makes us [the Producer Association Management team] viewed by members as untrustworthy.”

The same concerns about the prospects of selling products were also expressed during the FGDs in Perere.

Across the three sites, respondents further suggested that CRS should indicate in advance the quantities (e.g. of maize and rice) needed, and pledge to buy these quantities. If not, producers may be left with quantities they may not be able to sell. In all three sites, producers cited a few examples in the past whereby institutions (e.g. the sub-Division office or “Arrondissement”) would contact them, request certain quantities of products, and in the end buy from wholesalers, only seeking producers to fill the gap. A key message across the three FGDs was the wish that CRS should trust the local producers, sign contracts with them and honor the deal. Producers interviewed clearly stated that they can deliver the required quantities on time.

Furthermore, interviews and focus group discussions with Producer Association management and members tells us that two categories of Producer Associations exist in the study area: the Village Cooperative of Maize Producers (CVPM) and the Village Cooperative of Rice Producers (CVPR), which is a nascent structure. These cooperatives have laws that govern their operation, however, the application of these laws remains questionable. As most of the members are illiterate, the groups are oftentimes led by a select few literate members who serve as the secretaries of the cooperatives. Meetings are organized once a month and minutes are recorded. Members of the groups declared having regularly paid their membership fees and meeting participatory commitments. Of the ten Producer Associations interviewed, eight had legal texts or were in the process of creating them, and all of them had active participation from their members. A list of these Producer Associations with their location, creation date, number of members, contribution of members and services offered is available in Appendix C2.

The Producer Associations see their collaboration with the LRP project as an opportunity for the sale of their products. The cooperatives interviewed stated that they could make available to CRS the quantity of food they will need.

4.1.3. Producer Associations' use of URP MIS

Producer Associations' representatives were asked (Q29): "In the last 12 months, have you used the URP MIS to improve your marketing and commercialization strategies?" The response to this question was used to generate the indicator for percentage of Producer Associations using the URP MIS. Data tells us that 11.8% of all Producer Associations in the intervention districts and 30% in the comparison districts use URP MIS. The difference is statistically significant at the level of 10% (see Table 10).

Table 10. Percentage of Producer Associations using URP MIS

	Comparison districts	Intervention districts	Difference
Use of URP Market Information System	30.0	11.8	-18.2*

*p<0.1; **p<0.05; ***p<0.01

According to interviews, some Producer Associations provide training in Market Information Systems. To broaden its range of information, some Associations of the department of Borgou will connect with other Associations in other departments (Bembereke, Nikki, Malanville, Bohicon, Cotonou) so as to be better informed about prices, terms of sale and potential buyers. Some Associations will negotiate partnerships with structures such as SOSSIA, SOBEBRA, ONASA, and PAM, to facilitate the sale of their products.

4.2. COGES capacity in school canteen and stock management

4.2.1. Sample characteristics

A total of 35 intervention schools and 35 comparison schools were surveyed to understand existing school canteen structures and their management, as shown in Table 11. None of the schools had a school canteen at the time of the survey, and only five intervention schools and three comparison schools had a canteen in the past. Of those schools that had a canteen in the past, all except for one intervention school had a COGES.

Table 11. Sample characteristics - Schools and COGES

	Comparison schools	Intervention schools	Difference
Number of schools	35	35	0

Mean school size (number of students) ^a	260.4 (17.3)	224.09 (18.1)	-36.3*
Number of schools that have a Canteen	0	0	0
Number of schools that ever had a Canteen	3	5	2
Number of schools that have/had a COGES	3	4	1
Number of Cooks	0	0	0
Female	0	0	0
Male	0	0	0
Number of Store Keepers	0	0	0
Female	0	0	0
Male	0	0	0

*p<0.1; **p<0.05; ***p<0.01; ^aValues in brackets are standard error

4.2.2. COGES capacity in school canteen and stock management

The generation of COGES score for capacity in school canteen and stock management followed the same steps as for the Producer Association score, with the difference that here we have three sub-groups of questions to COGES representatives, cooks, and store keepers. These questions, and their coding as variables constrained to the interval [0,1], are summarized in Table 12.

Table 12. Generating COGES scores for capacity in school canteen and stock management

Variable		Coding
Questions to COGES' Representatives		
1	Q16/17 Training on cooking food in last 2 years? Q19 topics of the training (Q19a-c)	0 if Q16/17=No; average of Q19a-c, otherwise
2	Q20/21 Training on stock management in last 2 years? Q23 topics of the training (Q23a-c)	0 if Q20/21=No; average of Q23a-c, otherwise
3	Q24/25 Training on food storage in last 2 years? Q27 topics of the training (Q27a-d)	0 if Q24/25=No; average of Q27a-d, otherwise
4	Q28/29 Training on hygiene in last 2 years? Q31 topics of the training (Q31a-c)	0 if Q28/29=No; average of Q31a-c, otherwise
5	Q32/33 Training on nutritious foods in last 2 years? Q35 topics of the training (Q35a-c)	0 if Q32/33=No; average of Q35a-c, otherwise
6	Q36/37 Training on ration measurement in last 2 years? Q39 topics of the training (Q39a-b)	0 if Q36/37=No; average of Q39a-b, otherwise
7	Q40/41 Training on canteen data collection in last 2 years? Q43 topics of the training (Q43a-c)	0 if Q40/41=No; average of Q43a-c, otherwise
8	Q44, 46, 47 on control of the quality and quantity of meals served to students (Person in charge; Control report; Existence of report)	Each of the three sub-items earns 0.33; Add all four answers.

Variable		Coding
9	Q48 Does this school have a tippy-tap handwashing? Q49 If Yes: Do students use it for handwashing?	Coded as: 0, 0.5, 1 (as in Table x for Producer Associations)
Questions to Cooks		
10	Q58/59 Naming of carbohydrates and lipids food	0 if wrong answer 1 if right answer
11	Q60/61 Naming of protein food	
12	Q62/63 Naming of fruits and vegetables	
13	Q64/65 Naming a consequence of malnutrition	
14	Q66 How often should a kitchen be swept?	
15	Q67 How often should a kitchen be washed?	
16	Q68 How often should pots and pans be washed?	
17	Q69/70 Importance of boiling eating utensils	Coded as: 0, 0.5, 1 (as above)
Questions to Store keepers		
18	Q82 How often should a food storeroom be swept?	0 if wrong answer 1 if right answer
19	Q83 How often should food storeroom be washed?	
20	Q84 Do you use water mixed with other products?	0 if No; 1 if Yes
21	Q86/87 Register to record type and quantity received? Filled at time of commodities in?	Coded as: 0, 0.5, 1 (as above)
22	Q88/89 Register to record type and quantity used? Filled at time of commodities out?	Coded as: 0, 0.5, 1 (as above)

As indicated above, only seven schools do have or ever had a COGES. All 63 others were assigned a zero score on capacity in school canteen and stock management. We generate three sub-scores for representatives, cooks, and store keepers, respectively, by averaging the corresponding variables. Like for the overall score of Producer Association's organizational capacity, we use a simple average to determine the overall score. Scores are multiplied by 100, to vary between 0 and 100. School-level weights are used.

Intervention schools received an overall score of .19, while comparison schools received an overall score of .23 (see Table 13). Training on important topics such as food storage, hygiene, nutritious foods, and data collection was limited. Scores were only calculated for COGES management, as there were no cooks and store keepers at the schools.

Table 13. COGES scores in school canteen and stock management

	Comparison schools	Intervention schools	Difference
Overall Score ^a	0.23 (0.2)	0.19 (0.1)	-0.04 ^{NS}
Score derived from COGES Management ^a	0.68 (0.7)	0.56 (0.3)	-0.12 ^{NS}
Score derived from COGES Cooks	0	0	0
Female	0	0	0

Male	0	0	0
Score derived from COGES Store Keepers	0	0	0
Female	0	0	0
Male	0	0	0

^aValues in brackets are standard error

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

According to interviews and focus groups with schools, the AME office is responsible for recruiting a service provider who prepares food for children. For this purpose, a teacher is also appointed to monitor the number of children per class, each morning. According to this number, foods are removed from the store, prepared, and served twice a day (breakfast and lunch). School managers, such as school directors or teachers, are often involved in school canteens' management.

For the establishment of LRP canteens, because of the cases of misappropriation of food commodities in the past, populations prefer to manage school canteens by management committee (COGE) without involvement of teaching staff. According to some interviewees, teachers misappropriate food commodities for school canteens.

4.3. Students

4.3.1. Sample characteristics

As described in Table 14 below, a total of 1,989 students were surveyed, with an average of about 28 students at each school. About 51.7% of the student respondents were female, and 48.3% male. Overall, 21.7% were in grade two, 22.3% in grade three, 21.5% in grade four, 18.9% in grade five, and 15.6% in grade six.

Table 14. Sample characteristics - Students surveyed

	Comparison schools	Intervention schools	Difference
Average number of students surveyed per school ^a	28.5 (0.7)	28.3 (0.8)	-0.20 ^{NS}
Total number of students surveyed	988	1001	13
By sex (%) [^{NS}]			
Female	51.9	51.5	-0.4
Male	48.1	48.5	0.4
By grade (%) [^{NS}]			
CP (Grade 2)	21.7	21.8	0.1
CE1	20.2	24.4	4.2
CE2	21.5	21.6	0.1
CM1	20.1	17.6	-2.5

	Comparison schools	Intervention schools	Difference
CM2 (Grade 6)	16.5	14.7	-1.8

^aValues in brackets are standard error

Statistical significance level for distribution variables is in square brackets

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

4.3.2. Students' food consumption patterns

As indicated above, the initial indicator on the “percentage of students who consume culturally acceptable, high-quality nutritious food, based on one-day recall” proved challenging and complex to compute. This section presents the top 10 foods cited by the students, as generated from the following question (Q18): “Now I would like to ask you about meals you ate yesterday, during the day or at night. What meals did you eat yesterday? Did you eat this meal at home, at school, somewhere else? [FOR EACH MEAL, ASK SUBSEQUENT QUESTIONS ABOUT MEAL COMPOSITION AND LOCATION]”.

The first step to process this open-ended question consisted of harmonizing manually the names of meals cited by students (they used different names for the same meal). Each reported meal was then multiplied by the number of times it was mentioned, whether it was eaten at home, at school or somewhere else. Table 15 shows the top 10 meals cited by the students.

Table 15. Top 10 meals consumed by students based on one day recall

Food cited	Comparison schools	Intervention schools	Difference
1. Pate (Made of maize, sorghum, yam, cassava, rice)	41.4	43.9	2.5
2. Boiled Rice	13.7	12.9	-0.8
3. Mango	11.8	13.7	1.9
4. Porridge (Made of maize, sorghum, millet)	6.6	9.8	3.2
5. Boiled Yam (Pounded or not)	4.0	5.9	1.9
6. Macaroni	4.2	2.2	-2.0
7. Wake (Made of rice and cowpea)	3.8	1.2	-2.6
8. Beignet (Made of cowpea, maize, wheat)	2.1	2.4	0.3
9. Orange	2.0	1.0	-1.0
10. Acassa (Made of Maize)	1.6	1.2	-0.4
11. Others	8.8	5.8	-3.0
Total	100.0	100.0	
Number of occurrences (n)	1,512	1,596	4

The food overwhelmingly eaten by students in both the intervention and comparison arms is pate (made of maize, sorghum, yam, cassava, rice), cited in about 42% of all occurrences. Pate is followed by boiled rice (about 13%). There was a total of 3,108 occurrences of the foods cited (1,512 in the comparison area and 1,596 in the intervention area), indicating that students cited an average of 1.6 food occurrences. The fact that the study took place during Ramadan certainly explains this low frequency.

From the qualitative interviews, it appears that most households take three meals a day: morning - noon - evening. A minority of households have two meals a day (morning and evening). At the level of the students, there is a difference in the time of meal consumption. Some students reported that they used to eat four (4) times a day, namely: in the morning before going to school, at 10 am, at noon and in the evening. Others eat three times a day: 10am, noon and evening. A third group eats twice a day: at noon and in the evening. There is even one last group that eats five times a day: in the morning before going to school, at 10am, at noon - at 4 or 5pm and in the evening. These latter groups are in the minority.

4.3.3. Students' foods at school that they consume at home

The percentage of students reporting having consumed foods at school that they consume at home, based on one-day recall, was calculated. The indicator was generated from the last question: "Are the foods that you eat at the school similar to the foods you eat at home?". The detailed listing of foods eaten at school and at home (in Question 18) was also used to compute a percentage of the foods eaten at school that are also reported to be eaten at home. The reliability of each result was also tested. As described in Table 16, 21.3% of students in comparison schools and 23.5% of students in intervention schools reported having consumed foods at school that they consume at home. The difference is not statistically significant.

Table 16. Percentage of students reporting having consumed foods at school that they consume at home

	Comparison schools	Intervention schools	Difference
Total ^a	20.0 (1.3)	22.4 (1.4)	2.4 ^{NS}
Female ^a	18.9 (1.9)	22.8 (2.0)	3.9**
Male ^a	21.1 (1.9)	22.1 (2.0)	1.0 ^{NS}

^aValues in brackets are standard error

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

In the qualitative interviews, students reported consuming the following foods both at home and at school: corn or millet porridge, sorghum with sugar, and rice with tomato sauce, egg, or soy cheese. Students reported consuming the following foods at home, but not at school: pate with baobab sauce, dry okra with soy cheese, corn dough and cassava chips with gluey or okra sauce, cassava chip dough with sauce, crushed yams with peanut sauce, vegetable or sesame cheese, or meat, akassa and sauce, yikounou, and boiled yam and oil. The following foods were consumed at school but not at home: bodobodo, porridge and toubani, and wassa-wassa.

Overall, 21.2% of all students consumed the same foods at home and school. It is concluded that students that consume the same foods at home that they do at school bring food from home or buy the same foods from food vendors at the school. Because schools currently do not have canteens, the introduction of canteens may reduce sales from school food vendors. This decrease in sales to students will be measured at endline. The use of the double difference method will allow for the capture of effects related to the LRP project. The frequency of consumption and the diversity of the food were previously captured in the MAD, and the quality of the food can be captured through the collection of food samples from the sampled schools at the beginning of the new academic year, before implementation of the LRP canteen.

4.3.4. Students' minimum acceptable diet

Data on students' diets were gathered through quantitative student surveys. The students were asked to report all the items that they ate yesterday, and it was specified that they should consider food eaten during the day or the evening, and at school, at home or outside the home. The students were asked about food in groups of food items. The specific foods listed were discussed in the training and edited to include local fruits, vegetables, and dishes as appropriate. Foods were classified into the seven food groups as specified by USDA: 1) Grains, roots and tubers, 2) Legumes and nuts, 3) Dairy products (milk, yogurt, cheese), 4) Flesh foods (meat, fish, poultry and liver/organ meats), 5) Eggs, 6) Vitamin-A enriched foods, including vegetable oil, fruits and vegetables and 7) Other fruits and vegetables. Students were also asked how often they ate the day before. Any answer over seven was classified as seven times. A minimum acceptable diet is defined as eating four or more of these food groups, and a minimum frequency of three times a day. Each student was classified as receiving a minimum acceptable diet if they reported consumption of food items that fit into at least four of the categories listed above, and if they reported that they ate at least three times yesterday.

Based on this definition and analysis of the student survey data, 64.3% of students in intervention districts and 54.7% of students in comparison districts receive a minimum acceptable diet, a difference which is statistically significant (see [Table 17](#)).

Table 17. Percentage of students receiving a minimum acceptable diet

	Comparison districts	Intervention districts	Difference
Total ^a	54.7 (1.7)	64.3 (1.6)	9.6***
Female ^a	55.5 (2.54)	64.7 (2.3)	9.2***
Male ^a	54.0 (2.3)	64.0 (2.3)	10.1***

^aValues in brackets are standard error

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

Interviews with individual students gave insight into the type of foods that students are consuming. A list of these foods with their ingredients, according to where and when they were consumed by students, is available in Table 18 below. The majority of foods consumed are maize, potato or yam based.

Table 18. Types of foods eaten by students and their composition

	Type of meal	Composition of meal	Place of consumption of meals	Time of consumption
1	Corn or millet porridge, sorghum and sugar	corn, mil, sorghum, acidulated water, sugar	school, home, market	morning
2	Bodobodo	wheat, sugar, water	school, market	morning, evening
3	Porridge and toubani	sorghum or maize, water, beans, yam, oil, onion, salt, pepper	school	daytime
4	Pate and baobab sauce, dry okra and soy cheese	potash corn, cube, salt, baobab leaves, dry okra, soy, shea butter, water, mustard	home	noon, evening
5	Corn dough and cassava chips with gluey sauce, okra sauce or soy cheese sauce	wori maize, dossi, okra, potasse, cube, salt, soy, wori, dossi, crincrin shea butter, Yellow powder (kpararou), mustard, water	home	noon, evening
6	Cassava chip dough with sauce	wori maize, dossi, cube, salt, soy, beef skin, wori, dossi, shea butter, yellow powder (kpararou), water	home	noon, evening

	Type of meal	Composition of meal	Place of consumption of meals	Time of consumption
7	Crush yam with peanut sauce, vegetable, sesame cheese or meat	fresh or canned tomato pepper, salt, onion, garlic, peanut, soy, beef skin, sesame, vegetable, beef, chicken meat, rabbit meat, guinea fowl meat, partridge meat, agouti meat, water	home	noon, evening
8	Rice with tomato sauce and egg or soy cheese	tomato, pepper, salt, onion, garlic, soy, egg, kpararou, water	school, home, market	morning, noon
9	Akassa and sauce	maize, acidulated water pepper, salt, onion, pepper, garlic, mustard, kpararou, water	home	noon
10	Wassa-wassa	yam, peanuts oil, pepper, salt, onion, water	school	noon, evening
11	Yikounou	yam, maize, salt, shea butter, pepper, onion, water	home	noon
12	Boiled yam and oil	yam, peanut oil or shea butter, salt, pepper, onion, water	home	morning, noon

4.4. Commune level actors

A critical actor for successful delivery of the LRP intervention consists of the commune level ad hoc Committee set up by CRS to handle the procurement of maize. While there was no quantitative baseline indicator for this actor, eight key informant interviews (with two members per district) were conducted to better understand the newly set up Committee for Maize Procurement for school canteens. These individuals were asked about how the Committee manages procurement, its capacity to fulfill its mandate, limitations, and suggestions for success of the Committee. The Committee is composed of three members, including the chair. All members are appointed by the Education Unit of the Town Hall and are selected based on their current capacity in education, planning or local development within the Town Hall. All eight members interviewed recalled the discussions that took place during an introduction meeting organized by CRS on May 24, 2018 in Parakou.

4.4.1. Committee's capacity to deliver

While the Committee currently lacks activity, the key informant interviews indicate that the Committee is committed to the LRP project and is available to effectively support the LRP project in supplying maize to school canteens. The respondents voiced the eagerness and readiness of the Committee to receive specifications of the project and contribute to the success of the project. A respondent told us: *"I am able, willing and open to respond at all times to the project's needs"*. Another respondent, who reported to the Commune Secretary of Soya Producers, asserted: *"I know the cooperatives, their weaknesses and strengths; I know their capacity and am familiar with maize production areas. As we speak, I can tell you that if we go to zone x, we may find y tons maize"*.

The readiness of the Committee was also vividly expressed by a respondent in Parakou who reported that *"... we have visited all 11 intervention schools and met with the principals and parents to get their opinions and views on the relevance of our project"*. One of the respondents noted how the *Union Régionale des Producteurs (URP)* was represented at the introduction meeting in May, and several others hinted to the irreplaceable role of the URP in the work of the Committee. Respondents also reiterated that producers have the capacity to meet the needs of the LRP project.

4.4.2. Challenges

A majority of respondents noted that with the Committee's activities not having yet started, it may be difficult to objectively point to specific challenges. A few committee members viewed pricing as a major challenge. *"If the price is fixed unilaterally, and producers do not agree, our job will become difficult"*, observed a respondent. The concern about price was further elaborated by another respondent who warned that the news of major disagreement with one cooperative will spread quickly to the other cooperatives, since cooperatives are in constant communication. This will further undermine the work of the Committee.

A few respondents also viewed the fact that UCP will be the sole partner in selecting cooperatives as a potential challenge. *"If a decision is objectively wrong, could the Committee object?"*, asked a respondent.

4.4.3. Suggestions

When asked for suggestions on ways in which the Committee could be successful, some interviewees indicated that concrete suggestions were made during the May meeting and CRS pledged to take them into account. As expected, recommendations about price fixing were put forward, as described by a respondent who stated: *"I'd propose that CRS accepts that the committee conducts a small-scale research on market prices to inform the signing of contracts. Failure to do so, and fixing prices in advance, may get us into troubles"*.

The issue of transparency in the selection of cooperatives was also touched on by the respondents. It was also suggested that the small-scale research above include “*the storage capabilities of cooperatives in order to guide the selection*”. Importantly, it was suggested that the selection should not be left to UCP alone. A respondent noted: “*The selection of producers should be done [by UCP] in collaboration with the Committee. This will help avoid favoritism and the risk that some cooperatives selected may be unable to deliver*”. Another respondent added: “*UCP know producers on paper, whereas the Committee is in contact with them on a regular basis*”.

Expanding the mandate of the Committee to cover the three other cereals (rice, cowpea and shea) was proposed by one respondent.

5. Conclusions and Recommendations

The Baseline Study has established benchmark values against which progress on impact and outcome indicators can be tracked. Among the intervention schools, only 22.4% of students reported having consumed foods at school that they consume at home. Only 64.3% of students receive a minimum acceptable diet, and the majority of foods consumed are maize, potato or yam based.

In terms of COGES school canteen and stock management, intervention schools received an overall score of .19, while comparison schools received an overall score of .23. Training on important topics such as food storage, hygiene, nutritious foods, and data collection was limited, along with hygiene facilities in schools.

Producer Association in intervention areas scored 0.16 in organizational capacity, which is characterized by the existence of rules and regulations, scheduled meetings and documentation, trainings available to members, and support from ProAgri and PASDer. Furthermore, only 11.8% of Producer Associations in the intervention areas use URP market information systems, leaving large opportunities for improvement.

Information learned through this baseline study can also inform decision-making about early project implementation planning and execution. The following recommendations should be considered in program implementation:

Recommendation: Align the LRP project with stakeholder expectations

Key stakeholders have shared their expectations and recommendations with study staff, and this information is outlined in Tables 19 and 20 below:

Table 19. Stakeholder expectations

Stakeholder	Expectations
Students	<ul style="list-style-type: none"> - Have free access to the canteen without exclusion. - Have improved local dishes; - Have good quality food; - Have dishes that can improve their intelligence; - Have enough food; - Improved hygiene through the hand washing system.
School Directors	<ul style="list-style-type: none"> - A store for the storage of canteen products; - Help to set up a drinking water point; - Provision of products quarterly to avoid the storage of large quantities of products that can spoil by poor conservation; - Provide the school with the necessary quantity and quality of food; - Prepare meals at regular times (at noon only), so as not to disturb child labor at school.
APE /AME	<ul style="list-style-type: none"> - Train committee members in canteen management, stock monitoring and supplies.
Community	<ul style="list-style-type: none"> - Establish a Management Committee; - Buy products from local producers; - Choose a storekeeper for stock management; - Provide pesticides for stock treatment; - Supply food to local producers; - Install hand hygiene devices in schools.
Producers	<ul style="list-style-type: none"> - Know in advance the number of bags and the price of corn each year to avoid unpleasant surprises related to lack or surplus production; - Clearly define the supply conditions for school canteens through a contract with the LRP.

Table 20. Stakeholder suggestions and recommendations

Stakeholder	Suggestions and recommendations
Teachers and School Directors	<ul style="list-style-type: none"> - The canteen must be free. Children should not pay or be expected to contribute any materials such as firewood; - Implement a committee for canteen management; - Install drinking water points in schools to overcome lack of water; - Build a store by school to avoid food theft.
Community	<ul style="list-style-type: none"> - Ensure canteens are free for all children;

	<ul style="list-style-type: none"> - Monitor and control the management committee that will be implementing the school canteens; - Train cooks in hygiene; - Train the management committee in stock management.
Producers	<ul style="list-style-type: none"> - Improve knowledge on climate change through training; - Establish a win-win partnership with CRS as part of procurement; - Connect all suppliers of local products; - Avoid as much as possible intermediaries between the LRP project and cooperatives.
Procurement Committee	<ul style="list-style-type: none"> - Choose the producers in common agreement with the Union Communale des Producers (UCP), rather than having the UCP choose the producers and that the committee simply support; - Avoid favoritism in terms of producers.

To ensure successful partnership with communities and sustainability of the program, it is important to align program implementation with community needs and expectations as much as possible. Students expect to have free access to quality, nutrient-rich foods from school canteens without exclusions. Schools hope to be supported through the provision of storerooms and quality food products on a regular basis. Parent and mother associations that comprise many of the COGES expect to receive improved trainings on meal preparation, nutrition and canteen management. Communities, producers and schools alike encourage strong agreements between key stakeholders to allow for organized and reliable transactions that facilitate improved school canteen management.

Recommendation: Develop competent COGES through improved training

Because many schools do not currently have an active COGES, the LRP program should focus on supporting COGES that require revitalization or initiation. The organizational capacity and competency of COGES are central to the health of students and partnership with communities. Training on canteen management, including food storage, data collection, etc., should be prioritized for COGES members.

Recommendation: Ensure proper record-keeping to inform canteen management

Record of student attendance is important in planning meal quantity for school canteens and ensuring efficient use of food product and limited food waste. Interviews and focus group discussions with teachers tell us that teachers usually complete registers at the beginning of the year, but stop completing the registers mid-year due to time restrictions. In some schools, attendance register for teachers exist and are signed by every teacher daily. Teachers agree that registers are important but no specific suggestions for ensuring they are completed were made. It is therefore important that improved procedures for school attendance be put in place by school directors and teachers, with support from the LRP project.

Recommendation: Increase minimum acceptable diets through education

To ensure that more students achieve the minimum acceptable diet, it is important to also train COGES members on nutrition so that appropriate meals can be prepared for students. Furthermore, students and parents should be informed about the importance of nutrition and what a nutritious diet looks like.

6. Appendices A – Sampling characteristics and indicators

Appendix A1: Surveys sampling characteristics

	Comparison districts	Intervention districts	Difference
1. Producer Associations			
Number of Producer Associations	10	34	24
Most important crop (%) [*]			
Maize	60.0	88.3	28.2
Rice	40.0	8.8	-31.2
Others (Soy)	0.0	2.9	2.9
Number of individual members interviewed	40	136	96
Crops produced last season (%)			
Maize	85.0	94.9	9.9**
Rice	57.5	77.9	20.4**
Cowpea	80.0	51.5	-28.5***
Shea collection	80.0	74.3	-5.7 ^{NS}
Others	100.0	100.0	Not applicable
2. Schools			
2.1. COGES			
Number of schools	35	35	0
Number of schools that have a Canteen	0	0	0
Number of schools that ever had a Canteen	3	5	2
Number of schools that have/had a COGES	3	4	1
2.2. Students			
Total number of students surveyed ^a	988	1001	13
By sex (%) [^{NS}]			
Female	51.9	51.5	-0.4
Male	48.1	48.5	0.4
By grade (%) [^{NS}]			
CP (Grade 2)	21.7	21.8	0.1
CE1	20.2	24.4	4.2
CE2	21.5	21.6	0.1
CM1	20.1	17.6	-2.5
CM2 (Grade 6)	16.5	14.7	-1.8

^aValues in brackets are standard error; Statistical significance level for distribution variables is in square brackets

^{NS}Not significant at the level of 0.10; *p<0.1; **p<0.05; ***p<0.01

Appendix A2: Indicators for evaluating LRP, LRP vs MDG canteens, and LRP vs Governmental canteens

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
1. Producer Associations	0.30 (0.05)	0.16 (0.03)	-0.14 **				
Overall organizational capacity Score ^a	0.30 (0.05)	0.16 (0.03)	-0.14 **	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Score derived from PA's Management ^a	0.30 (0.10)	0.20 (0.04)	-0.11 ^{NS}	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Score derived from PA's Members ^a	0.29 (0.05)	0.12 (0.02)	-0.17***	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Use of URP Market Information System	30.0	11.8	-18.2*	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of umbrella and producer organizations staff trained in project approach and contractual requirements	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Volume of commodities (metric tons) sold by project beneficiaries	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of URP staff trained in climate smart agriculture and climate mainstreaming	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of trainings session held with climate smart	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
agriculture technologies and techniques integrated							
Percentage of targeted producers who demonstrate the use of improved maize production techniques in USDA-supported areas	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Value of sales by project beneficiaries	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Percent of tested commodities meeting quality standards	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of URP staff trained in use of electronic data collection tools	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Percentage of contracts signed with producer organizations where 100% of contractual obligations are respected	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of producers/umbrella organizations receiving training on contractual process and obligations and organizational capacity building	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
2. Schools							
2.1. COGES							

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
Overall Score in school canteen and stock management ^a	0.23 (0.2)	0.19 (0.1)	-0.04 ^{NS}	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Score derived from COGES Management ^a	0.68 (0.7)	0.56 (0.3)	-0.12 ^{NS}	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Score derived from COGES Cooks	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Score derived from COGES Store Keepers	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance (m3)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of COGES receiving organizational capacity building training and in planning, stock management, canteen management	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Percentage of key stakeholders (COGES-school management committees, parents, teachers and others) who reported having received on time, in quantity and quality, commodities for school canteen (disaggregated by criteria)	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of COGES members, mothers'	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
associations members and school cooks trained in nutrition and hygiene							
Percent of school cooks demonstrating the application of project promoted recipes	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of cooks and mother's association members trained in the application of project promoted recipes	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Percent of individuals (COGES/school cooks) who demonstrate application of promoted food and hygiene practices	0	0	0	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
2.2. Student							
Students who consumed foods at school that they consume at home ^a	20.0 (1.3)	22.4 (1.4)	2.4 ^{NS}	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Female ^a	18.9 (1.9)	22.8 (2.0)	3.9**	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Male ^a	21.1 (1.9)	22.1 (2.0)	1.0 ^{NS}	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Students receiving a minimum acceptable diet ^a	54.7 (1.7)	64.3 (1.6)	9.6***	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Female ^a	55.5 (2.54)	64.7 (2.3)	9.2***	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
Male ^a	54.0 (2.3)	64.0 (2.3)	10.1***	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Percentage of children who consume culturally accepted, high quality, nutritious food	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of daily school meals (lunch) provided to school-age children as a result of USDA assistance	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of students regularly (80%) attending USDA supported classrooms/schools	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
3. Other indicators							
Number of individuals benefiting directly from USDA-funded interventions	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of individuals benefiting indirectly from USDA-funded interventions	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of social assistance beneficiaries participating in productive safety nets as a result of USDA assistance	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Cost differential between local market commodity	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
and MGD (from purchase to distribution) (\$/MT)							
Cost per meal differential between local school feeding approach and MGD (\$/meal)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Quantity of commodity procured (MT) as a result of USDA assistance (by commodity and source country)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Cost of commodity procured as a result of USDA assistance (by commodity and source country)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Cost differential between domestic and MGD commodity procurement (\$/MT)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of commune level staff (CLOC and CPC) trained in local procurement, school feeding and canteen management	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Cost differential of transport, storage and handling of local and MGD procured commodities (\$/MT)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
Number of educational facilities (i.e. school buildings, classrooms, and latrines) rehabilitated/constructed as a result of USDA assistance (STOREROOMS)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of educational facilities (i.e. school buildings, classrooms, and latrines) rehabilitated/constructed as a result of USDA assistance (KITCHENS)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Cost of transport, storage and handling of commodity procured as a result of USDA assistance (by commodity)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Cost differential of distribution of local and MGD procured commodities (\$/MT)	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Time differential between purchase of commodities locally procured versus MGD (# of days, by commodity).	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Time differential between delivery of commodities locally procured versus	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
MGD (# of days, by commodity).							
Time differential between purchase order and distribution in targeted schools for commodities locally procured versus MGD (# of days).	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Time differential of distribution of commodities locally procured versus MGD (# of days, by commodity).	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Percent of central and communal staff receiving passing score on training post tests	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of commune level staff (CLOC and CPC members) trained in supportive supervision	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Level of functionality of the CPCs and CLOCs	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of policies, regulations and/or administrative procedures in each of the following stages of development as a result of USDA assistance	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

	LRP project			LRP vs MGD canteens		LRP vs Governmental canteens	
	Comparison districts	Intervention districts	Difference	MGD intervention districts	Difference (LRP-MGD)	Governmental canteens' districts	Difference (LRP-governmental)
Number of advocacy actions carried out	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Number of public-private partnerships formed as a result of USDA assistance	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline
Value of new public and private sector investments leveraged as a result of USDA assistance	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline	Not assessed for the baseline

7. Appendices B – Study Tools

Appendix B1: Producer Associations questionnaire

Hello. My name is _____, and I am working with Catholic Relief Services and their evaluation partner EVIHDAF. We are conducting a study and would like to ask you questions about the organization capacity of your producer association. The information collected will help Catholic Relief Services to support the establishment and functioning of school canteens in this commune, and to set up a local mechanism for the procurement of food commodities by these canteens. The survey will take about 20 minutes to complete. The information you provide will be kept confidential and will not be shared with other persons. Your participation in this survey is voluntary and you can choose not to answer any questions or not to participate. If you would like to know more about the survey, you can contact the following persons at CRS and EVIHDAF [OFFER THE CONTACT INFORMATION OF CRS AND ENSPD]. Do you have any questions for me? [ANSWER THE QUESTIONS].

1. Do you wish to participate in this survey? 0=No; 1=Yes
2. Can we start now? 0=No; 1=Yes
3. Date; Start time
4. Study Arm: 1=Intervention; 2=Comparison
5. Commune: 1=Parakou; 2=N'Dali; 3=Perere; 4=Tchaourou

Section A. Producer Association Level

6. Respondent's sex: 0=Female; 1=Male
7. Respondent's name
8. Respondent's age
9. Respondent's education level 0= none, 1= alphabetization in local language, 2= primary, 3= secondary first cycle, 4= secondary second cycle, 5= university
10. What is your main responsibility with this Producer Association? 1= President, 2= Vice-president, 3= Secretary, 4= Deputy Secretary, 5= Treasurer, 6= Deputy Treasurer, 7=Other (Specify)
11. How long have you been working with this Producer Association? (years)
12. What is the most important crop on which the Association works?
13. What is the average annual quantity of this crop that the association manages (through group sale or securing by warrant or other)? (tons)
14. Is there any other crop on which the association works? 0=No; 1=Yes (If No, Skip to Q17)
15. If yes: what is the second most important crop on which your association works?
16. What is the average annual quantity of this other crop that the association manages (through group sale or securing by warrant or other)? (tons)
17. How many producer members are part of your Producer Association?
18. How many of these are female?

19. What are the national, regional or communal organizations to which your Association belongs?
- Agence Béninoise de Karité (ABK),
 - Union Régionale des Producteurs de Riz (URPR)/ Union Communale des Producteurs de Riz (UCPR)
 - Union Régionale des Producteurs (URP)/ Union Communale des Producteurs (UCP)
 - Other (specify)
20. Have you ever been supported by the ProAgri? 0=No; 1=Yes (if No, skip to Q22)
21. If Yes: which support did you receive?
- training on agricultural practices (production, harvest, post-harvest, storage)
 - Training on value chain management
 - Training on farm management
 - Seed gift or subsidy,
 - materials gift or subsidy,
 - other input gift or subsidy (specify),
 - Market access
 - other (specify)
22. Have you ever been supported by the PASDeR? 0=No; 1=Yes (if No, skip to Q24)
23. If Yes: which support did you receive?
- training on agricultural practices (production, harvest, post-harvest, storage)
 - Training on value chain management
 - Training on farm management
 - Seed gift or subsidy,
 - materials gift or subsidy,
 - other input gift or subsidy (specify),
 - Market access
 - other (specify)
24. Do you have rules and regulations in your Association? 0=No; 1=Yes
- If Yes: Do these documents exist? 0=No; 1=Yes
25. Do you have a fixed schedule for meetings of the management team? 0=No; 1=Yes, proof not presented; 2=Yes, proof seen (If Yes, skip to Q27)
- If Yes: What is the frequency? 1= Weekly, 2= Twice a month; 3=Monthly; 4=Quarterly; 5=Twice a year, 6=Yearly; 7= other (specify)
- When was the last meeting? DD/MM/YYYY
- Do you have a proof of the last meeting? 0=No; 1=Yes
- If Yes: Does the proof exist? 0=No; 1=Yes
26. If No: How do you organize meetings of the management team?
- When/if the president or his deputies wants
 - When/if any management team member wants

- c. When/if any member requests
- d. When/ if there is a project
- e. When/ if there is another opportunity such as product demand
- f. Other (specify)

27. Do you have a fixed schedule for the activities of the producers in your Association? 0=No; 1=Yes

If Yes: What is the frequency? 1= Weekly, 2= Twice a month; 3=Monthly; 4=Quarterly; 5=Twice a year, 6=Yearly; 7= other (specify)

When was the last activity? DD/MM/YYYY

Do you have a proof of the last activity? 0=No; 1=Yes

If Yes: Does the proof exist? 0=No; 1=Yes

28. How do you support the farmers belonging to your Association?

- a. Training on agricultural practices
- b. Training on value chain management
- c. Training on farm management
- d. Seed gift or subsidy
- e. Materials gift or subsidy
- f. Other input gift or subsidy (specify),
- g. Market access
- h. Other (specify)

29. In the last 12 months, have you used the URP MIS to improve your marketing and commercialization strategies? 0=No; 1=Yes

If Yes: For what purpose?

- a. Producer prices
- b. Local market prices
- c. Regional market prices
- d. International market prices

30. Please provide me with a list of all members of the association showing their names and phone numbers. [IF POSSIBLE, TAKE A COPY OF THE LIST WITH YOUR PHONE OR COPY THE INFORMATION IN YOUR NOTEBOOKS, AND RETURN THE ORIGINAL. DON'T KEY IN THE LIST IN YOUR TABLET; IT IS TO BE USED TO DRAW A RANDOM SAMPLE OF MEMBERS TO BE INTERVIEWED]

Section B. Farmer Level

Do you wish to participate in this survey? 0=No; 1=Yes

Can we start now? 0=No; 1=Yes

Date; Start time

Study Arm: 1=Intervention; 2=Comparison

Commune: 1=Parakou; 2=N'Dali; 3=Perere; 4=Tchaourou

31. Respondent's sex: 0=Female; 1=Male

32. Respondent's name

33. Respondent's age

34. Respondent's education level 0= none, 1= alphabetization in local language, 2= primary, 3= secondary first cycle, 4= secondary second cycle, 5= university

35. Last season, did you produce any of the following crops? (LIST CROPS ONE BY ONE. IF YES, ASK SUBSEQUENT QUESTIONS ABOUT CULTIVATED AREA AND QUANTITY PRODUCED)

Crops	Did you produce (0=no, 1= yes)	Cultivated area (ha) last season	Quantity produced last season		
			Quantity produced	Unit of measurement 1= Basin, 2= Bag, 3= cart, 4=other (specify)	Weight that contain the unit (kg)
a. Maize?					
b. Rice?					
c. Cowpea?					
d. Shea collection?					
e. Roots and tubers?					
f. Other cereals?					
g. Other leguminous?					
h. Vegetables & fruits?					

36. Did you receive any training from your producer association in the following areas? (LIST TRAINING AREAS ONE BY ONE. IF YES, ASK SUBSEQUENT QUESTIONS ABOUT TOPIC COVERED AND USE OF TECHNIQUES)

Training thematic	Did you receive (0=no, 1=Yes, proof not presented; 2=Yes, proof seen)	If Yes, for which crop? 1=Maize; 2=Rice; 3=Cow pea; 4=Other	If Yes, Main topic covered	If Yes, Did you ever use the techniques the Association taught you? 0=No; 1=Yes	If No: why 1=Difficult to implement, 2=Costly to implement, 3=Access to equipment, 4= other (specify)	If Yes: were you satisfied with these techniques? 0=No; 1=Yes	If No why? 1= the promised results were not obtained 2= other (specify)
Production level improvement							
Harvest practices							
Post-harvest practices							
Storage practices							

Marketing and commercialization strategies							
Market Information System (MIS)							
Other (specify)							

37. In the last 12 months, did you sell your product through a group sale organized by your Association? 0=No; 1=Yes (If No, Skip to Q40)

38. If Yes: Were you satisfied with the group sale? 0=No; 1=Yes (If Yes, Skip to Q40)

39. If No: Why were you not satisfied with the group sale?

- a. Price was low
- b. I was not paid on time
- c. Did not trust management team
- d. Other (specify)

40. In the last 12 months, did you sell your product through warrantage organized by your Association? 0=No; 1=Yes (If No, Skip to Q39)

41. If Yes: Were you satisfied with the group sale? 0=No; 1=Yes (If Yes, Skip to Q43)

42. If No: Why were you not satisfied with the warrantage?

- a. Price was low
- b. I was not paid on time
- c. Did not trust management team
- d. Loan conditions were not attractive
- e. Other (specify)

43. End time

44. GPS Coordinates

Appendix B2: COGES questionnaire

Hello. My name is _____, and I am working with Catholic Relief Services and their evaluation partner EVIHDAF. We are conducting a study and would like to ask you questions about school canteens in certain districts. The information collected will help Catholic Relief Services to support the establishment and functioning of school canteens in this commune, and to set up a local mechanism for the procurement of food commodities by these canteens. The survey will take about 20 minutes to complete. The information you provide will be kept confidential and will not be shared with other persons. Your participation in this survey is voluntary and you can choose not to answer any questions or not to participate. If you would like to know more about the survey, you can contact the following persons at CRS and EVIHDAF [OFFER THE CONTACT INFORMATION OF CRS AND ENSPD]. Do you have any questions for me? [ANSWER THE QUESTIONS].

1. Do you wish to participate in this survey? 0=No; 1=Yes
2. Can we start now? 0=No; 1=Yes
3. Date; Start time
4. Commune: 1=Parakou; 2=N'Dali; 3=Perere; 4=Tchaourou
5. Study Arm: 1=Intervention; 2=Comparison
6. School Name and ID [ID with 2 digits: numbering from 01 to e.g. 11 for Parakou-Intervention]:

Section A. COGES/School level [by COGES chair or representative]

7. Respondent's sex: 0=Female; 1=Male
8. Respondent's name
9. Respondent's age
10. Respondent's education level: 0=None, 1=Alphabetization in local language, 2=Primary, 3=Secondary first cycle, 4=Secondary second cycle, 5=Tertiary
11. Does this school have a canteen? 0=No; 1=Yes [if Yes, Skip to Q15]
12. Has this school ever had a canteen in the past? 0=No; 1=Yes (If No, Skip to Q44)
13. Why did the canteen stop activities?
 - a. End of the supporting project
 - b. Bad management
 - c. Other reasons
14. If Q13=c, please explain
15. Is or was there ever any COGES? 0=No; 1=Yes
16. Did any person involved in the canteen management receive any training on cooking food? 0=No; 1=Yes (If No, Skip to Q20)
17. When was the training on cooking food? (Year)
18. How many persons have been trained on cooking food for this school?
19. What are the topics on which they were trained?
 - a. How to cook some commodities to ensure good nutritional quality of the meals
 - b. Portions
 - c. How to make a traditional stove to ensure comfort when cooking
 - d. Other (specify)
 - e. Don't remember
20. Did any person involved in the canteen management receive any training on stock management? 0=No; 1=Yes (If No, Skip to Q24)
21. When was the training on stock management? (Year)
22. How many persons have been trained on stock management for this school?
23. What are the topics on which they were trained?

- a. How to fill the stock registers
 - b. How to stock out products
 - c. How to handle spoiled/expired foods
 - d. Other (specify)
 - e. Don't remember
24. Did any person involved in the canteen management receive any training on food storage?
0=No; 1=Yes (If No, Skip to Q28)
25. When was the training on food storage? (Year)
26. How many persons have been trained on food storage for this school?
27. What are the topics on which they were trained?
- a. Cleaning the storeroom and its environment before storage
 - b. Commodity piling techniques
 - c. Hygiene during storage
 - d. Commodity pests and rodents
 - e. Other (specify)
 - f. Don't remember
28. Did any person involved in the canteen management receive any training on hygiene?
0=No; 1=Yes (If No, Skip to Q32)
29. When was the training on hygiene? (Year)
30. How many persons have been trained on hygiene for this school?
31. What are the topics on which they were trained?
- a. Hand washing
 - b. Kitchen cleaning
 - c. Utensils cleaning
 - d. Kitchen garbage management
 - e. Other (specify)
 - f. Don't remember
32. Did any person involved in the canteen management receive any training on nutritious foods? 0=No; 1=Yes (If No, Skip to Q36)
33. When was the training on nutritious foods? (Year)
34. How many persons have been trained on nutritious foods for this school?
35. What are the topics on which they were trained?
- a. Energy foods (carbohydrate and lipids)
 - b. Health foods (fruits and vegetables)
 - c. Mental force food (protein)
 - d. Other (specify)
 - e. Don't remember
36. Did any person involved in the canteen management receive any training on ration measurement? 0=No; 1=Yes (If No, Skip to Q40)
37. When was the training on ration measurement?

38. How many persons have been trained on ration measurement for this school?
39. What are the topics on which they were trained?
- Rationing (portion size based on nutritional needs)
 - Measurement unit
 - Other (specify)
 - Don't remember
40. Did any person involved in the canteen management receive any training on canteen data collection? 0=No; 1=Yes (If No, Skip to Q46)
41. When was the training on canteen data collection?
42. How many persons have been trained on canteen data collection for this school?
43. What are the topics on which they were trained?
- Student satisfaction
 - Quality of the meals
 - Quantity of meals
 - Other (specify)
 - Don't remember
44. In this school is there a person in charge of controlling the quality and quantity of meals served to students? 0=No, 1=Yes (If No, Skip to Q48)
45. If Yes: What is the frequency of control? 1=Daily; 2=Weekly; 3=Twice a month; 4=Monthly; 5=Quarterly; 6=Other (Specify)
46. Is a control report usually produced? 0=No, 1=Yes (If No, Skip to Q48)
47. If Yes: Does the last report exist? 0=No, 1=Yes
48. Does this school have a tippy-tap handwashing available for students? 0=No, 1=Yes (If No, Skip to Q50)
49. If Yes: Do students use it for handwashing? 0=No, 1=Yes
50. Are you aware that school canteens will be set up in some schools in this district? 0=No; 1=Yes
51. Do you have any idea on the importance of school canteens? 0=No; 1=Yes (If No, skip to Q53)
52. If yes, what do school canteens contribute to?
- Improve school enrollment
 - Improve school attendance
 - Improve students' nutritional status
 - Improve performance
 - Contribute to poverty reduction
 - Others (specify)
 - Don't know

IF Q11=No, STOP

53. If the school has a canteen, what are the names of the cooks and the storekeepers?

Name	Role	Mobile phone number

Section B. For Cooks

Do you wish to participate in this survey? 0=No; 1=Yes

Can we start now? 0=No; 1=Yes

Date; Start time

Commune: 1=Parakou; 2=N'Dali; 3=Perere; 4=Tchaourou

Study Arm: 1=Intervention; 2=Comparison

School Name and ID [ID with 2 digits: numbering from 01 to e.g. 11 for Parakou-Intervention]:

54. Respondent's sex: 0=Female; 1=Male

55. Respondent's name

56. Respondent's age

57. Respondent's education: 0=None, 1=Alphabetization in local language, 2=Primary, 3=Secondary first cycle, 4=Secondary second cycle, 5=Tertiary

58. Do you know some commodities which provide energy (carbohydrates and lipids)? 0=No; 1=Yes (If No, skip to Q60)

59. If yes, give one example.

60. Do you know some commodities which provide mental force (protein)? 0=No; 1=Yes (If No, skip to Q62)

61. If yes, give one example.

62. Do you know some commodities which provide health (fruits and vegetables)? 0=No; 1=Yes (If No, skip to Q64)

63. If yes, give one example.

64. Do you know some consequences of malnutrition? 0=No; 1=Yes (If No, Skip to Q66)

65. If yes, give one example.

66. How often should a kitchen be swept to ensure proper hygiene?

- a. Before each utilization
- b. After each utilization
- c. At the end of each day
- d. when it is needed
- e. other (specify)
- f. I do not know

67. How often should a kitchen be washed to ensure proper hygiene?

- a. Before each utilization
- b. After each utilization
- c. At the end of each day
- d. when it is needed
- e. other (specify)
- f. I do not know

68. How often should pots and pans be washed to ensure proper hygiene?

- a. Before each utilization
- b. After each utilization
- c. At the end of each day
- d. when it is needed
- e. other (specify)
- f. I do not know

69. Is it important to boil the eating utensils (spoons) after each use? 0=No; 1=Yes (If No, skip to Q71)

70. If yes, why? 1= to prevent the propagation of sicknesses from one user to another, 2=other (specify), 3= Don't know

71. How many times does (did) the canteen feed the students per day?

72. Does (did) the canteen serve breakfast? 0=No; 1=Yes (If No, skip to Q74)

73. If Yes: Does (did) the quantity given to each student depend on their age? 0=No; 1=Yes

74. Does (did) the canteen serve lunch? 0=No; 1=Yes (If No, skip to Q76)

75. If Yes: Does (did) the quantity given to each student depend on their age? 0=No; 1=Yes

76. Does (did) the canteen serve afternoon tea? 0=No; 1=Yes (If No, Stop)

77. If Yes: Does (did) the quantity given to each student depend on their age? 0=No; 1=Yes

Section C. For Storekeepers

Do you wish to participate in this survey? 0=No; 1=Yes

Can we start now? 0=No; 1=Yes

Date; Start time

Commune: 1=Parakou; 2=N'Dali; 3=Perere; 4=Tchaourou

Study Arm: 1=Intervention; 2=Comparison

School Name and ID [ID with 2 digits: numbering from 01 to e.g. 11 for Parakou-Intervention]:

78. Respondent's sex: 0=Female; 1=Male

79. Respondent's name

80. Respondent's age

81. Respondent's education: 0=None, 1= Alphabetization in local language, 2=Primary, 3= Secondary first cycle, 4=Secondary second cycle, 5=Tertiary

82. How often should a food storeroom be swept to ensure proper hygiene?

- a. Before each utilization

- b. After each utilization
 - c. At the end of each day
 - d. when it is needed
 - e. other (specify)
 - f. I do not know
83. How often should a food storeroom be washed to ensure proper hygiene?
- a. Before each utilization
 - b. After each utilization
 - c. At the end of each day
 - d. when it is needed
 - e. other (specify)
 - f. I do not know
84. Do you use water mixed with other products to wash the storeroom? 0=No; 1=Yes (If No, Skip to Q86)
85. If Yes: Which products?
- a. Salt
 - b. Bleach
 - c. Soap (liquid, powder ...)
 - d. Other (specify)
86. Does (did) the school have a register to record the type and quantity of commodities received for the canteen? 0=No; 1=Yes (If No, skip to Q88)
87. If Yes: Do (did) you fill the register at the time you received the commodities? 0=No; 1=Yes
88. Does (did) the school have a register to record the type and quantity of commodities used for the canteen every day? 0=No; 1=Yes (If No, skip to Q90)
89. If Yes: Do (did) you fill the register at the time you used the commodities for the canteen? 0=No; 1=Yes
90. End time
91. GPS Coordinates

Appendix B3: Students questionnaire

Hello. My name is _____, and I am working with Catholic Relief Services and their evaluation partner EVIHDAF. We are conducting a study and would like to ask you questions about your nutrition and the foods you eat at home or in school. The information collected will help Catholic Relief Services to support the establishment and functioning of school canteens in this commune, and to set up a local mechanism for the procurement of food commodities by these canteens. The survey will take about 20 minutes to complete. The information you provide will be kept confidential and will not be shared with other persons. Your participation in this survey is voluntary and you can choose not to answer any questions or not to participate. If you would like to know more about the survey, you can contact the following persons at CRS and EVIHDAF [OFFER THE CONTACT INFORMATION OF CRS AND ENSPD]. Do you have any questions for me? [ANSWER THE QUESTIONS].

1. Do you wish to participate in this survey? 0=No; 1=Yes

2. Can we start now? 0=No; 1=Yes

Section A. Background

3. Date; Start time

4. Commune: 1=Parakou; 2=N'Dali; 3=Perere; 4=Tchaourou

5. Study Arm: 1=Intervention; 2=Comparison

6. School Name and ID [ID with 2 digits: numbering from 01 to e.g. 11 for Parakou-Intervention]:

7. Respondent's sex: 0=Female; 1=Male

8. Respondent's name

9. Respondent's age

10. Respondent's grade 1= CI, 2= CP, 3= CE1, 4= CE2, 5= CM1, 6= CM2

11. Does your household have any of the following items:

Household Item	(0=no, 1=yes, 8=Other(Specify))
a) Electricity (SBEE)?	
b) Solar energy?	
c) Power generator?	
d) Radio?	
e) TV?	
f) Phone?	
g) Fridge?	
h) Bicycle?	
i) Motorbike?	
j) Car or Truck?	
k) Cart?	
l) Tractor?	
m) Land for farming?	
n) Land in city for building?	

12. [TRY TO UNDERSTAND WITH WHOM THE STUDENT LIVES] What is the primary occupation of the head of your household? 0=Unemployed, 1=Agricultural Work, 3=Day laborer, 4=Trader, 5= Office worker, 6=Artisan/Craftsman, 7= Retired, 8= other (specify)

Section B. Food intake

13. Do you usually eat breakfast? 0=No; 1=Yes

14. Do you usually eat lunch? 0=No; 1=Yes

15. Do you usually eat dinner? 0=No; 1=Yes

16. Did you eat at home (in the morning) before departing for school yesterday? 0=No; 1=Yes

17. Did you eat during school yesterday (or the last school day)? 0=No; 1=Yes

18. **Now I would like to ask you about meals you ate yesterday**, during the day or at night. What meals did you eat yesterday? (FOR EACH MEAL, ASK SUBSEQUENT QUESTIONS ABOUT MEAL COMPOSITION AND LOCATION)

18a. Did you eat yesterday evening? 0=No; 1=Yes [FOR EACH MEAL, ASK QUATIONS THAT ARE APPLICABLE]

If No, Go to Q 18b; If Yes, Fill the table below

Name of the meal	Describe the meal composition (e.g : rice+ cowpea+ tomato soup made of palm oil with egg and cow cheese)	Where did you eat the meal? 1=at home; 2= at school; 3=elsewhere; 4= at home and at school; 5= at home and elsewhere; 6= at school and elsewhere; 7= at home, at school and elsewhere.

18b. Did you eat lunch yesterday? 0=No; 1=Yes [FOR EACH MEAL, ASK QUATIONS THAT ARE APPLICABLE]

If No, Go to Q 18c; If Yes, Fill the table below

Name of the meal	Describe the meal composition (e.g : rice+ cowpea+ tomato soup made of palm oil with egg and cow cheese)	Where did you eat the meal? 1=at home; 2= at school; 3=elsewhere; 4= at home and at school; 5= at home and elsewhere; 6= at school and elsewhere; 7= at home, at school and elsewhere.

18c. Did you eat yesterday between lunch time and evening? 0=No; 1=Yes [FOR EACH MEAL, ASK QUATIONS THAT ARE APPLICABLE]

If No, Go to Q 18d; If Yes, Fill the table below

Name of the meal	Describe the meal composition (e.g : rice+ cowpea+ tomato soup made of palm oil with egg and cow cheese)	Where did you eat the meal? 1=at home; 2= at school; 3=elsewhere; 4= at home and at school; 5= at home and elsewhere; 6= at school and elsewhere; 7= at home, at school and elsewhere.

18d. Did you eat yesterday morning before classes? 0=No; 1=Yes [FOR EACH MEAL, ASK QUATIONS THAT ARE APPLICABLE]

If No, Go to Q 18e; If Yes, Fill the table below

Name of the meal	Describe the meal composition (e.g : rice+ cowpea+ tomato soup made of palm oil with egg and cow cheese)	Where did you eat the meal? 1=at home; 2= at school; 3=elsewhere; 4= at home and at school; 5= at home and elsewhere; 6= at school and elsewhere; 7= at home, at school and elsewhere.

18e. Did you eat yesterday between morning and lunch time? 0=No; 1=Yes [FOR EACH MEAL, ASK QUATIONS THAT ARE APPLICABLE]

If No, Go to Q 20; If Yes, Fill the table below

Name of the meal	Describe the meal composition (e.g : rice+ cowpea+ tomato soup made of palm oil with egg and cow cheese)	Where did you eat the meal? 1=at home; 2= at school; 3=elsewhere; 4= at home and at school; 5= at home and elsewhere; 6= at school and elsewhere; 7= at home, at school and elsewhere.

19. FOOD ITEMS IN YESTERDAY’S DIET – FILL THE TABLE BELOW USING INFORMATION IN THE TABLE ABOVE. DON’T ASK QUESTIONS TO STUDENTS. FILL IN THE TABLE RIGHT AT THE END OF THE INTERVIEW)

Food items	Tick all that applies
a. Any (other) porridge or gruel?	
b. Tea or coffee?	
c. Any food made of maize?	
d. Any food made of rice?	
e. Bread, noodles, or other foods made from cereals (sorghum, millet, wheat, etc.)?	
f. Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside?	
g. Any foods made of fruit and green vegetable?	
h. White potatoes, white yams, cassava, or any other foods made from roots?	
i. Any dark green leafy vegetables?	
j. Ripe mangos, papayas, or water melon?	
k. Any other fruits or vegetables?	
l. Liver, kidney, heart or other organ meats?	
m. Any meat, such as beef, pork, goat, sheep, chicken, or duck?	
n. Eggs?	
o. Fresh or dried fish or shellfish?	
p. Any food made of cowpea?	

Food items	Tick all that applies
q. Any food made of soya, peas, lentils, or nuts?	
r. Cheese, yogurt, or other milk products?	
s. Any food made of shea butter?	
t. Any other oil, fats, or butter, or foods made with any of these items?	
u. Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits?	
v. Any other solid or semi-solid food?	
w. Grubs, snails, insects, other small protein food?	
x. Foods made with red palm oil, palm nut, or palm nut pulp?	

Now I would like to ask you about food you consume at school

Section C. Food at school

20. Do you eat at the school canteen? 0=No; 1=Yes (if No, Skip to Q24)
21. Do you usually feel full after eating at the school canteen? 0=No; 1=Yes
22. Do you eat every school day at the school canteen? 0=No; 1=Yes (If Yes, Skip to Q25)
23. If No: Why don't you eat at the school canteen every school day?
- I do not attend school every school day
 - Sometimes I do not have value for money
 - Sometimes I do not like the foods
 - I get hungry and eat before the school canteen serves food
 - Other (specify)
24. If Q20=No: Why don't you eat at the school canteen?
- No canteen
 - I do not like the foods
 - I get hungry and eat before the school canteen serves food
 - Other (specify)
25. Do you usually buy food in school during the breaks? (10:15 AM or 12:00 or 4:00 PM or 5 PM) 0=No; 1=Yes (If No, Skip to Q27).
26. Do you usually feel full after eating the food you buy during the school breaks?
27. If Q25=No, Why don't you buy food in school during the breaks? 0=food provided by the canteen, 1=no money to buy food, 2=don't like the food sold, 3=other
28. If Q20 and Q25=No, (you don't buy food in school and you don't eat at school canteen), how do you eat? 0= do not eat anything, 1= go to home to eat, 2= share friends' meals
29. Are the foods that you eat at the school similar to the foods you eat at home? 0=No; 1=Yes
30. End time
31. GPS Coordinates

Appendix B4: Key informant interview guides

Hello. My name is _____, and I am working with Catholic Relief Services and their evaluation partner EVIHDAF. We are conducting a study and would appreciate your participation. We are interested in hearing about how your Association functions. This information will help CRS learn more about the management of school canteens and develop a program to improve school feeding programs.

This interview should last for about one hour. We would like to tape the discussion so that we can make sure to capture the thoughts, opinions and ideas we hear from the group. Your identity will be kept private and we will not associate your name with anything you say in the focus group. You may refuse to answer any question or withdraw from the discussion at any time. You or your organization's participation in a CRS program is not contingent on participation in this focus group. However, we hope that you will participate in this survey since your opinions are important to us.

Do you wish to participate in this focus group? (receive a verbal yes from each participant). Do you have any questions for me before we begin? (answer any questions).

Interview Guide - School Principals

1. What is your vision regarding school feeding?
2. In your opinion, are there differences between schools with canteens and those without, with regard to:
 - Probe: School enrolment?
 - Probe: School attendance?
 - Probe: School participation and attention?
 - Probe: Student success?
3. A new project will soon be implemented to support school canteens in selected schools of this district, using local commodities bought from local farmers. If your school was selected to have a canteen, what will you do to support the success of the canteen?
 - Probe: What management procedures will you put in place to ensure its success?
 - Probe: What do you think of local procurement of commodities from local/regional producers?
4. Daily registers are needed to effectively monitor school canteens. Yet, it is usually hard to get these registers that are supposed to be filled by teachers in the morning and in the afternoon. How do you explain this problem?
 - Probe: What are the constraints for student registers?
 - Probe: What are the constraints for teacher registers?

How would you ensure the daily filling of both the student and the teacher' registers in order to contribute to the effectiveness and the efficiency of the project?

Thank You

Interview Guide – Communes/Districts

Commune's newly set up committee for procurement of maize for school canteens will be a key actor for the implementation of school canteens. Tell us about the committee.

- Probe: How does it work?
- Probe: How does the committee plan to manage procurement?
- Probe: What is its capacity to fulfill its mandate?
- Probe: What are its limitations?
- Probe: What are the suggestions to make the committee a success?

Thank You

Interview Guide – PASDeR

1. CRS will be setting up a local mechanism for procurement for school canteens in four districts in the department of Borgou. As PASDeR is an important actor of the rural development in Benin, what are the types of support you provide to farmers which could contribute to improvement in timely food supply?
 - Probe: Farming activity support?

- Probe: Value chain reinforcement?
2. Do you think the LRP project could improve local food production and distribution?
 - Probe: If Yes, how? why?
 - Probe: If No, why not?
 3. What are the similarities and complementarity between the LRP project and PASDeR?
 - Probe: Support to farmers and producer associations?
 - Probe: What else?
 4. How could you collaborate with, or support the LRP project?

Thank You

Interview Guide – ProAgri

1. CRS will be setting up a local mechanism for procurement for school canteens in four districts in the department of Borgou. As ProAgri is an important actor of the rural development in Benin, what are the types of support you provide to farmers which could contribute to improvement in timely food supply?
 - Probe: Farming activity support?
 - Probe: Value chain reinforcement?
2. Do you think the LRP project could improve local food production and distribution?
 - Probe: If Yes, how? why?
 - Probe: If No, why not?
3. What are the similarities and complementarity between the LRP project and ProAgri?
 - Probe: Support to farmers and producer associations?
 - Probe: What else?
4. How could you collaborate with, or support the LRP project?

Thank You

Appendix B5: Focus group discussion guides

Hello. My name is _____, and I am working with Catholic Relief Services and their evaluation partner EVIHDAF. We are conducting a study and would appreciate your participation. We are interested in hearing about how your Association functions. This information will help CRS learn more about the management of school canteens and develop a program to improve school feeding programs.

This focus group should last for about one hour. We would like to tape the discussion so that we can make sure to capture the thoughts, opinions and ideas we hear from the group. Your identity will be kept private and we will not associate your name with anything you say in the focus group. You may refuse to answer any question or withdraw from the discussion at any time. You or your organization's participation in a CRS program is not contingent on

participation in this focus group. However, we hope that you will participate in this survey since your opinions are important to us.

Do you wish to participate in this focus group? (receive a verbal yes from each participant). Do you have any questions for me before we begin? (answer any questions)

Focus Group Discussion with Umbrella Organizations (Producer Associations)

1. Can you describe how your Association is organized and run?

- Probe: Does your Association have rules and regulations? If yes, please describe them. If no, why not?
- Probe: How are management meetings organized and run? (schedule, management, meeting minutes, constraints, etc.)
- Probe: How are farmer members managed and supported? (record keeping, communication, gender considerations, training, constraints, etc.)

2. Please tell me about the services offered to your members

- Probe: Is any training provided? If yes, what kind of training? (themes, methods, supporting institutes, etc.)
- Probe: Is any support provided for production, harvest, post-harvest and storage practices?
- Probe: Are members supported to use MIS for marketing and sales? If yes, how? On which topics (price, demand, supply, group sale, contracts, etc.)? If No, why?
- Probe: Are gifts, subsidies or other inputs ever provided to Association members? Please describe them and how they are offered. (inputs, kind of subsidies, supporting institutes, beneficiaries' selection, gender considerations, etc.)
- Probe: Any other services?

3. What can you tell me about climate change and how it affects agriculture?

- Probe: How do temperatures and rain levels vary?
- Probe: How does climate change affect agriculture? (yield, income, etc.)
- Probe: Do you know of any strategies to deal with the negative effects of climate change?

4. LRP project – A project will soon be implemented in this district to set up a local mechanism for procurement of commodities for school canteens. If your association was selected to supply crops, how would it manage this new agreement?

- Probe: What would be your expectation for the members?
- Probe: What would be your expectation for the association?

Thanks for your contribution

Focus Group with Discussion with Parents

1. Can you please tell me about the eating habits of most families and students in your community?

- Probe: How often and how much food do families eat at home? (time of the most important meal at home, quantity, etc.)
- Probe: How do most students eat before, during and after school? (meal at home before going to school, fee for meal at school, etc.)

2. What foods are commonly consumed in your community?

- Probe: What does the typical meal cooked at home look like? LIST OF MEALS, COMMODITIES AND ITEMS USED, OIL USED, PROTEIN SOURCE, VEGETABLES, ETC.
- Probe: How can we best make these foods available to students at school?

3. Do you think school canteens serve a good purpose in your community? Why? Why not?

- Probe: Tell me about your past experience with school canteens
- Probe: How might school canteens benefit students and schools? (Link between school canteen and students' performance, schooling enrolment, attendance, participation etc.)

4. LRP project – A new project will soon be implemented to support school canteens in selected schools of this district. If your school was selected to have a canteen, how do you think that school canteen might run?

- Probe: What would be your expectation for the students?
- Probe: What would be your expectation for the school?
- Probe: What would be your expectation for community?
- Probe: What would be the contribution of parents for the effectiveness and efficiency of the project?

5. How might your community be able to support this school canteen?

- Probe: Has your community or could your community ever provide any material support for the construction of canteen buildings?
- Probe: Have community members or could community members ever donate food preparation or cooking services?
- Probe: Are there farmers in your community who have ever or might ever contribute their crops to school canteens?

Thanks for your contribution

Focus Group with Women's Groups and AME

1. Can you please tell me about the eating habits of most families and students in your community?

- Probe: How often and how much food do families eat at home? (time of the most important meal at home, quantity, etc.)
- Probe: How do most students eat before, during and after school? (meal at home before going to school, fee for meal at school, etc.)

2. What foods are commonly consumed in your community?

- Probe: What does the typical meal cooked at home look like? LIST OF MEALS, COMMODITIES AND ITEMS USED, OIL USED, PROTEIN SOURCE, VEGETABLES, ETC.
- Probe: What nutrients to these foods provide?
- Probe: How can we best make these foods available to students at school?

3. Can you tell me about hygiene practices commonly followed?

- Probe: How are kitchens and storerooms kept clean? How often are these cleaning activities done? (sweeping, washing, methods to fight the pests, etc.)
- Probe: How and how often should eating utensils be washed?
- Probe: What handwashing practices should be followed? What handwashing facilities are available in your community?

4. Do you think school canteens serve a good purpose in your community? Why? Why not?

- Probe: Tell me about your past experience with school canteens.
 - Probe: How might school canteens benefit students and schools? (Link between school canteen and students' performance, schooling enrolment, attendance, participation ...)
- 6. LRP project** – A new project will soon be implemented to support school canteens in selected schools of this district. If your school was selected to have a canteen, how do you think that school canteen might run?
- Probe: What would be your expectation for the students
 - Probe: What would be your expectation for the school
 - Probe: What would be your expectation for community
 - Probe: What would be the contribution of parents for the effectiveness and efficiency of the project.
- 7. How might your community be able to support this school canteen?**
- Probe: Has your community or could your community ever provide any material support for the construction of canteen buildings?
 - Probe: Have community members or could community members ever donate food preparation or cooking services?
 - Probe: Are there farmers in your community who have ever or might ever contribute their crops to school canteens?

Thanks for your contribution

Focus Group with Teachers

1. Do you think school canteens serve a good purpose in your community? Why? Why not?

- Probe: Tell me about your past experience with school canteens.
 - Probe: How might school canteens benefit students and schools? (Link between school canteen and students' performance, schooling enrolment, attendance, participation, etc)
 - Probe: What is your vision for school feeding programs?
- 2. LRP project** - A new project will soon be implemented to support school canteens in selected schools of this district, using local commodities bought from local farmers. If your school was selected to have a canteen, how do you think that canteen might run?
- Probe: What would be your expectation for the students?
 - Probe: What would be your expectation for the school?
 - Probe: How could the community manage the stock and the canteen for the effectiveness and the efficiency of the project?
 - Probe: What would be the contribution of teachers for the effectiveness and efficiency of the school canteen?
- 3. Daily registers** are needed to effectively monitor school canteens. Yet, it is usually hard to get these registers that are supposed to be filled by teachers in the morning and in the afternoon. How do you explain this problem?
- Probe: What are the constraints for student registers?
 - Probe: What are the constraints for teacher registers?
- How would you ensure the daily filling of both the student and the teacher registers in order to contribute to the effectiveness and the efficiency of the project?

Thanks for your contribution