

**ENHANCING CHILD NUTRITION THROUGH
ANIMAL SOURCE FOOD MANAGEMENT
(ENAM)**

PROJECT DESCRIPTION

The Enhancing Child Nutrition through Animal Source Food Management (ENAM) project is intended to improve poor feeding practices and inadequate diet quality that contribute to childhood malnutrition in targeted communities in Ghana. The project monitors the multiple pathways that might increase availability, accessibility and utilization of animal source foods (ASF) in the targeted communities by supporting a small microcredit program for mothers of children between two and five years of age in conjunction with training on nutrition and business development. It is expected that increasing the amount of money controlled by women, as well as increasing their understanding of child nutritional needs, will result in the women's channeling of additional income towards the purchase of ASF, and also increase the feeding of these products to their young children, thereby enhancing their growth, health and cognitive development. The ENAM team is assessing how the micro-credit programs and entrepreneurial and nutrition education interventions affect income, Animal Source Food (ASF) expenditures, and children's ASF intakes and nutritional status. Project interventions and/or monitoring efforts are carried out in three locations in Ghana, corresponding to the country's different ecological zones: Navrongo, a savannah grassland area in the north, Techiman, a transitional forest area in the center, and Winneba, a coastal savannah along the southern coast. In each ecological zone, the project operates in two intervention communities and two control communities.

LEAD PRINCIPAL INVESTIGATORS

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SUMMARY OF ACHIEVEMENTS

- Three micro-credit loan cycles through the 35 ENAM project Credit and Savings Associations were completed with 100% repayment of loans. Interviews with 206 participants and their control households showed that women who engaged in Animal Source Food (ASF) -related Income Generating Activities (IGA) earned, on average, 3.5 Ghanaian Cedis (one U.S. dollar ~ one Ghanaian Cedi) more per week than women engaged in IGA unrelated to ASF, a statistically significant amount. Diversity of ASF in the diet increased when mothers had an ASF-based income generation activity.
- Informal education training sessions were held monthly in ENAM's project communities, with a total of 3,596 female and 59 male attendees. The micro-credit intervention reached 163 women. In addition, six professional women and eleven professional men were trained by

Freedom from Hunger on implementing their “Credit with Education” program.

ENAM Non-Degree Training for 2006-2007			
Country	Male	Female	Total
Ghana	59	3596	3655

- Entrepreneurial education modules were completed and implemented in the intervention communities during the second micro-credit loan cycle.
- The project is promoting sustainability of the project activities through a community-based peer-educator program. A workshop was held to review nutrition education materials with 19 female and nine male staff from the Ministries of Health and Agriculture, NGO’s and the ENAM field project to revise the educational material into a low-literacy format.
- Three additional time points of longitudinal data collection were completed. The longitudinal database contains baseline and three follow-up

time points of data collection for each of the intervention and control households.

- A Memorandum of Understanding was signed between the ENAM project/University of Ghana, Freedom from Hunger, Ghana (FFHG) and Heifer International to facilitate activities associated with funding obtained through the Women in Development (WID) program. FFHG carried out training with rural banks and ENAM project staff on their “Credit with Training” approach for microcredit. GL-CRSP’s Avian Flu School project, in collaboration with Heifer International, carried out a three-day poultry training in Techiman.
- ENAM research has shown that increasing women’s income is associated with a positive nutritional outcome, namely improved quality of diet. Children’s intake of animal source foods was associated positively with income.
- Outcomes of the ENAM project community mobilization processes have included the formation of 35 community savings associations based on shared values and trust, the



Using a cooking competition as a learning tool on child feeding in Techiman, Ghana. Photo by Grace Marquis.

ENAM Degree Training for 2006-2007					
Name (Last, First)	Nationality	Gender (M/F)	University	Discipline	Degree
Adjei, Gladys	Ghanaian	F	University of Ghana	Nutrition	MS
Agyei, Eric	Ghanaian	M	University of Ghana	Agriculture Extension	MS
Christian, Aaron	Ghanaian	M	University of Ghana	Nutrition	MS
Harding, Kimberly	Canadian	F	McGill University	Nutrition	MS
Homiah, Phillip	Ghanaian	M	University of Ghana	Agriculture Economics	MS
Kobati, Gloria	Ghanaian	F	University of Ghana	Nutrition	MS
Oluka, Samuel	Ugandan	M	University of Ghana	Nutrition	MS
Zuttah, Jacob	Ghanaian	M	University of Ghana	Agriculture Extension	MS

independent development of group bylaws and leadership capabilities, and communal activities. Association members have assisted each other in initiating communal activities, such as building smoking ovens and pooling resources for feed preparation for poultry operations.

- After collaborating with the Adventist Development and Relief Agency (ADRA) to show health promotion films on hygiene and malaria prevention to the entire community, communal labor groups formed to clean common areas in the communities.
- The ENAM project identified variations in food scarcity patterns in Ghana. Food shortages peaked during April-June, the primary rainy season in Ghana. The overall prevalence of food shortages was highest in the northern Guinea Savannah during this period, demonstrating the importance of targeting interventions by region and season.
- Data are being collected every four months to document improvement in food security among all households participating in the ENAM study and residing in the intervention and control communities. A modified version of the U.S. Food Insecurity questionnaire is being used.
- An ENAM study revealed that significantly more participants (100%) of the ENAM project had received a loan than non-participants (13.8%). More of the non-participants (92.5%) had either

never accessed loans before or had accessed loans only once, while most participants (70%) accessed loans twice or more within the period considered.

RESEARCH BRIEFS

GL-CRSP Research Brief 08-01-ENAM: A Qualitative Assessment of Support Programs for Caregivers' Income Generation Activities in Ghana

Authors: Grace S. Marquis, McGill University; Elizabeth Vogel, Esi Colecraft, Iowa State University; Owuraku Sakyi-Dawson, University of Ghana

Summary. The Enhancing Child Nutrition through Animal Source Food Management (ENAM) project was developed to address the effects of poverty on household food security and child nutrition in Ghana. Formative research in three regions of Ghana documented a perceived lack of income as the primary constraint to a household's ability to incorporate adequate amounts of animal source foods (ASF) in young children's diets. Increased consumption of ASF can enhance overall child nutrition and well-being, and prevent micronutrient deficiencies detrimental to growth and development. A review of 18 organizations was completed to identify strategies for supporting caregivers' income generation activities (IGA) in Ghana. Three strategies were identified: input credit, financial support and financial support using the credit union concept. Lending to groups

and designation of group members as guarantors for the loans were key components to the success of IGA programs. There was a low prevalence (22%) of support specifically targeting ASF-related IGA among the organizations reviewed. Although improved nutrition was a programmatic objective for most of the organizations, only two incorporated nutrition education in their activities. This lack of attention to nutrition in the majority of the microcredit programs reviewed is an important shortcoming. Nutrition and health interventions need to be integrated into IGA to assure that improved nutrition occurs with increased income. The lessons learned from these three approaches were used to design microcredit interventions for the ENAM project.



Community mapping exercise in Winneba, Ghana. Photo by Esi Colecraft.

GL-CRSP Research Brief 08-02-ENAM: Does the Type of Income Generating Activity Caregivers Engage in Influence Children's Animal Source Food Consumption?

Authors: Aaron Christian, ENAM Project, Ghana; Anna Lartey, University of Ghana; Esi Colecraft, Iowa State University; Owuraku Sakyi-Dawson, University of Ghana; Grace S. Marquis, McGill University

Summary. ENAM researchers tested the hypothesis that children of caregivers engaged in Animal Source Food (ASF)-related Income Generating Activities (IGA) were more likely to consume ASF than children of caregivers engaged in IGA unrelated to ASF. Data were collected via interviewer administered survey questionnaires with caregivers of young children in two rural communities from each of the three

ecological zones (coastal, forest transitional and interior savannah zones) of Ghana. Approximately 84% of the 529 caregivers who were interviewed engaged in IGAs: of these approximately 31% (n=156) were engaged in an ASF-related IGA. Caregivers engaged in ASF-related IGA earned about 13,000 Ghanaian cedis (US\$1.42) more per week than caregivers engaged in IGA unrelated to ASF, but this difference was not statistically significant. Children's consumption of ASF differed by ecological zone. After controlling for the effect of ecological zone,

children of caregivers engaged in ASF related IGA were significantly more likely to have consumed organ meats (P=0.01), shellfish (P=0.005), and milk (P<0.008) in the past week than children of caregivers engaged in IGA unrelated to ASF. A caregiver being engaged in an ASF-related IGA was not a significant predictor of their children's ASF diversity score; however, in the coastal and forest zones, children of caregivers engaged in ASF-related IGA tended to have higher mean dietary ASF diversity scores than children of caregivers engaged in IGA unrelated to ASF. Caregivers' engagement in ASF-related IGA may be beneficial to children's dietary ASF intakes. Therefore, efforts to promote ASF-related IGA among more caregivers in the communities studied are likely to improve children's ASF intakes.

GL-CRSP Research Brief 08-03-ENAM: Participatory Rapid Assessment Summary

Authors: Grace S. Marquis, McGill University; Elizabeth Vogel, Esi Colecraft, Iowa State University; Owuraku Sakyi-Dawson, University of Ghana

Summary. Childhood malnutrition remains a significant public health problem in sub-Saharan Africa, largely caused by sub-optimal feeding practices and poor diet quality. Deficiencies in micronutrients can lead to poor growth and impaired cognitive performance, among other health problems. Improving diet quality through the consumption of animal source foods (ASF) is one approach to enhance child well-being and prevent deficiencies in micronutrients. A multidisciplinary team of researchers from Iowa State University and the University of Ghana are utilizing participatory rapid assessments (PRA) to analyze ASF accessibility, availability and utilization in Ghana. This brief reports on the methodology of PRA and describes some of the tools common to this community-focused research approach. Several of the approaches used in this study include interviews with key informants, wealth ranking, community mapping, focus groups, semi-structured interviewing, food tracking, linkage diagramming through consensus building, and group intervention selection. This experience confirms that PRA helps to facilitate a holistic conceptual framework that includes the perspectives of all stakeholders, leading to a more successful selection and implementation of interventions.

GL-CRSP Research Brief 08-04-ENAM: Enhancing Collaborations Between Research and Government Ministries: Lessons Learned from the ENAM Project in Ghana

Authors: Owuraku Sakyi-Dawson, Ben. K. Abunu, University of Ghana; Esi K. Colecraft, Iowa State University; Anna Lartey, University of Ghana; Grace S. Marquis, McGill University

Summary. The ENAM project is a research and development intervention in Ghana, funded by USAID through the Global Livestock Collaborative Research Support Program. To ensure sustainability of the activities that enhance feeding of animal source foods (ASF) to preschool children, it is important that the processes and products of the ENAM project become institutionalized in the relevant government ministries. This research brief provides an analytical description of the collaboration between the ENAM

project and relevant government ministries in Ghana and lessons for institutionalization to enhance ASF feeding to preschool children. The findings show that a high level of interactive participatory collaboration has been achieved between the ENAM project and the relevant government ministries at different hierarchical levels and at multiple stages of the intervention. The initial impact of the intervention is positive with regards to poverty reduction and enhanced ASF consumption, as well as the enthusiasm of the relevant government ministries. Collaborations, however, have not yet enabled the ministries to reach a point of self-mobilisation for sustainable institutionalization of the ENAM interventions. This brief outlines further efforts and activities that are required to be undertaken by the ENAM project to enhance its institutionalization in relevant government ministries.

ENAM Funding for 2006-2007	
Total Core Funding	\$305,840
Total Cost Share	\$32,746
Leveraged Funding	\$39,341
USAID Buy-ins	\$177,961

GL-CRSP Research Brief 08-05-ENAM: Development of a Nutrition Extension Course at the University of Ghana: A Step-By-Step Collaborative Process

Authors: Esi Colecraft, Iowa State University; Anna Lartey, University of Ghana; Grace Marquis, McGill University; Owuraku Sakyi-Dawson, Ben Abunu, University of Ghana; Lorna Butler, Iowa State University

Summary. The use of participatory and qualitative information gathering and sharing during the planning grant phase of the ENAM project allowed for context-specific and multidisciplinary analysis of the constraints to ASF in children’s diets in Ghana. This process led to the development of a demand-driven problem model specifying causal links to constraints limiting the use of ASF in children’s diets and interventions to address these constraints. To improve the capacity of future nutrition professionals

in the use of extension principles that incorporate the sustainable livelihoods strategy for diagnosing community nutrition problems and designing appropriate interventions, the ENAM project management team proposed that training in nutrition extension should be incorporated into the nutrition curriculum offered through the Department of Nutrition and Food Science at the University of Ghana. A step-by-step process was undertaken, which included consultations with an international nutrition extension specialist, consensus-building discussion sessions, a workshop with stakeholders working in governmental and non-governmental programs and at the university, the development of a course description and outline, and the submission of a course proposal to the University of Ghana Academic Board. This resulted in the approval of an interdisciplinary course entitled "Nutrition, Sustainable Livelihoods and Extension," as a third year undergraduate elective course offered through the Department of Nutrition and Food Science at the University of Ghana. Stakeholder recommendations for the future included the development of a nutrition extension short course to upgrade the skills of current nutrition practitioners.

ENAM PROJECT EXTERNAL EVALUATION PANEL REVIEW

In February 2007, the ENAM project underwent an External Evaluation Panel review conducted by Deborah Rubin, Nanna Roos and Alfred Neumann. The executive summary is provided below. A full report is available on the GL-CRSP website: <http://glcrsp.ucdavis.edu>.

Executive Summary

The External Evaluation Panel (EEP) review from February 16-28, 2007, found the Enhancing Child Nutrition through Animal Source Food Management (ENAM) project to be making excellent progress and working effectively. It has an exceptionally well-organized, well-trained team that has worked together from the initial discussion of the planning grant, US and Ghanaian partners together, to forge a truly integrated multi-disciplinary project.

The ENAM project is intended to improve the current poor feeding practices and inadequate diet quality that contribute to childhood malnutrition in targeted communities in Ghana. The project monitors the multiple pathways that might increase availability, accessibility, and utilization of animal source foods (ASF) in the targeted communities, especially for children between two and five years of age, by supporting a small microcredit program for mothers in this target group in conjunction with training on nutrition and business development. If the final results of the community intervention activities that combine income generative activities (IGA) with nutrition and microfinance education do show a significant increase of the intake on ASF by participants' involved in the study, then this will have important policy implications for Ghana and other parts of Africa. A successful set of results will demonstrate the value of this innovative and integrated approach to improve children's nutrition by addressing the multiple constraints on availability, access, and utilization of animal source foods (ASF). Based on their review, the panel is recommending extension of the ENAM project to September 30, 2008.

The positive accomplishments of the project thus far include:

- Successful achievement of all the major elements of its workplan on schedule;
- Development of excellent relationships at the University of Ghana;
- Formation of linkages with several key government ministries, including the Ministry for Food and Agriculture and the Ghana Health Services;
- Achievement of a strong student training program in field assessment techniques and data collection, as well as of degree-related course work;
- Cultivation of very strong community support, not only from the women participants in its credit groups, but also from local officials;
- Establishment of a functioning microcredit program that has helped its credit group members in establishing and expanding a range

of income generating activities (IGA);

- Identifying and addressing key gender issues in the project's design and implementation;
- Developing an integrated program of community level training for the caregivers on nutrition education and business development;
- Developing an upper-level cross-departmental university course on nutrition extension that has been approved by the university and is to be offered later this year;
- Forming linkages with NGOs (particularly Freedom from Hunger, Ghana and Heifer International, Ghana) for continuing key aspects of the project's development program.

The EEP offers the following recommendations to guide efforts in the extension year of the current project:

Give priority to data entry and analysis.

- Hire additional staff to ensure rapid data entry and analysis;
- Clarify and document project policies on key issues related to use and ownership of data emerging from the project;
- Jointly clarify the data analysis plan and establish who is to work with which data set.

Give priority to writing reports and publishing on both the initial research results as they emerge and on the methodologies used in establishing the various components of the project.

- Clarify and document the research question that is related to each project activity;
- Jointly develop a written statement on the principles of authorship for reports and papers to be written and published using project data;
- Jointly develop a publications plan identifying which topics are to be written up, in what sequence, and by whom;
- Jointly discuss and agree on the level of effort needed to accomplish these tasks;
- Include a write up of the process taken in developing the project methodology and key deliverables.

Postpone planned workshop to 2008.

- Build into the workplan for 2007-2008 the time and budget needed to liaise with key stakeholders (e.g., University of Ghana, key ministries, NGOs, rural banks, and communities) and engage their cooperation, participation, and support for the workshop;
- Plan for dissemination of the final report and one page fact sheets at the workshop.

Solidify linkages with key partners.

- With the GL CRSP – involve Avian Flu School trainings in a village poultry component;
- With USAID-WID office – develop a plan to measure change in women's income levels from baseline to end of project as well as changes in use of funds for children's nutrition;
- Improve reporting on linkages and leveraged funds;
- Establish relations with the Municipal Assembly and other District and Municipal governmental groups;
- Follow up with the Ministry of Women and Children.

Plan for institutionalization and sustainability.

- Develop non-degree short course on nutrition extension;
- Initiate thinking for relevant courses on other cross-disciplinary topics;
- Expand linkages across University of Ghana campus (e.g., School of Public Health);
- Approach the Ministry of Cooperatives to initiate the process of registering ENAM credit groups as cooperatives to access additional government and NGO services;
- Follow up with multiple Ministries to encourage their uptake of specific project deliverables;
- Hold discussions with key Ministries to identify policy-relevant research gaps that can be addressed through ENAM research efforts.

Refine objectives for Uganda component.

- Minimize time and funds expended on additional strengthening of the Ugandan component during the extension period to better consolidate results in Ghana.

PUBLICATIONS

Colecraft, E., G.S. Marquis, R. Aryeetey, O. Sakyi-Dawson, A. Lartey, B. Ahunu, E. Canacoo, L.M. Butler, H.H. Jensen, E. Huff-Lonergan. "Constraints on the use of animal source foods for young children in Ghana: A participatory rapid appraisal approach." *Ecology of Food and Nutrition* 45: 351-377, 2006.

PLANNED PUBLICATIONS

Marquis, G.S., K.B. Harding, M. Fox, E. Colecraft, O. Sakyi-Dawson. "Seasonal patterns of severe food shortages vary by region in Ghana." *Federation of American Societies for Experimental Biology (FASEB)*, 2007 (Abstract submitted and approved).

Colecraft, E.K., G.S. Marquis, A. Lartey, O. Sakyi-Dawson, B. Ahunu, L. Butler, M. Reddy, H. Jensen, E. Lonergan. "Regional differences in the magnitude and pattern of purchased ready-to-eat foods in the diets of rural Ghanaian children." *FASEB*, 2007 (Abstract submitted and approved).

Colecraft, E.K., G.A. Adjei, A. Lartey, G.S. Marquis. "Contribution of animal source foods to the total iron intake of children in coastal Ghana." *FASEB*, 2007 (Abstract submitted and approved).

Christian, A.K., A. Lartey, E. Colecraft, O. Sakyi-Dawson, B. Ahunu, G.S. Marquis. "Caregivers' income generation activities, income and child animal source food diversity." *FASEB*, 2007 (Abstract submitted and approved).

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COLLABORATING INSTITUTIONS

Iowa State University (*lead institution*)

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Makerere University, Uganda
McGill University, Canada
University of Ghana
Volunteer Efforts for Development Concerns (VEDCO), Uganda